

The Great Grid Upgrade

Sea Link

Preliminary Environmental Information Report

Volume: 2

Part 2 Suffolk Onshore Scheme

Appendix 2.6.A Preliminary Contamination Risk
Assessment

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Contents

2.6.A.1	Introduction	1
2.6.A.2	Methodology	3
2.6.A.3	Preliminary Contamination Assessment	8
2.6.A.4	References	10

Table of Tables

Table 2.6.A.1 Criteria for classifying the potential for generating contamination	4
Table 2.6.A.2 Classification of probability (based on C552 (Ref. 2.6.A.10))	5
Table 2.6.A.3 Classification of consequence	6
Table 2.6.A.4 Classification of risk (based on C552 (Ref. 2.6.A.10))	7
Table 2.6.A.5 Risk rating definitions (based on C552 (Ref. 2.6.A.10))	7
Table 3.6.A.1 Potential sources of contamination	8

Sea Link

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2.6.A.1 Introduction

Overview

- 2.6.A.1.1 This preliminary contamination risk assessment has been produced to accompany the Preliminary Environmental Information Report (PEIR). This appendix has been prepared to provide baseline information on potentially contaminated land within the study area for the Suffolk Onshore Scheme (the 'Proposed Project') and provide a preliminary risk assessment.
- 2.6.A.1.2 As described in **Part 2, Chapter 6 Geology and Hydrogeology** of the PEIR, the study area for land contamination comprises the physical extents of the Suffolk Onshore Scheme draft Order Limits plus a buffer zone of 250m.

Structure of the Appendix

- 2.6.A.1.3 The structure of this assessment is as follows:
- Chapter 2 Methodology – which presents information on the methodology followed in this chapter and the accompanying classification table; and
 - Chapter 3 Preliminary Contamination Assessment – which presents a desk-based review of readily available historical Ordnance Survey (OS) maps supplemented by reference to earlier maps where available and historical aerial photography. The chapter includes a qualitative Tier 1 preliminary contamination risk assessment using a Conceptual Site Model to identify 'source-pathway-receptor' linkages to assess the potential risk and hazards, if any, associated with existing contamination in the ground.

Sources of Information

- 2.6.A.1.4 The following primary sources of information were used in the compilation of this assessment:
- British Geological Survey (BGS) 1:50,000 scale geological mapping (Ref. 2.6.A.1);
 - BGS GeoIndex Viewer (Ref. 2.6.A.2);
 - Defra mapped information, via Multi-Agency Geographic Information for the Countryside (MAGIC) interactive map (Ref. 2.6.A.3) for groundwater Source Protection Zones (SPZ), aquifer designations, hydrological features, groundwater vulnerability, drinking water safeguard zones and statutory designated sites;
 - Historical mapping from the National Library of Scotland (Ref. 2.6.A.4);
 - Google Earth Historical Aerial Photography;
 - Historical Aerial Photography from Britain from Above (Ref. 2.6.A.5); and

- The Environment Agency dataset for the locations of historical landfills (Ref. 2.6.A.6) and permitted landfill sites and waste sites (Ref. 2.6.A.7) and category 1 and 2 pollution incidents (Ref. 2.6.A.8).

2.6.A.2 Methodology

Introduction

2.6.A.2.1 The assessment of land contamination within the study area has been undertaken following a staged approach as recommended by the guidance provided in Land Contamination Risk Management (LCRM) (Ref. 2.6.A.9). This presents a three-stage process to the management of contaminated land:

- Stage 1 – risk assessment;
- Stage 2 – options appraisal; and
- Stage 3 – remediation.

2.6.A.2.2 The Stage 1 risk assessment is undertaken in a phased manner comprising three tiers, as follows:

- Tier 1 – Preliminary Risk Assessment (PRA) – a qualitative assessment of historical and published information in order to develop a preliminary conceptual site model to inform a preliminary risk assessment;
- Tier 2 – Generic Risk Assessment – a quantitative assessment using published criteria to screen site specific ground condition data; and
- Tier 3 – Detailed Risk Assessment – a quantitative assessment involving the generation of site specific assessment criteria.

2.6.A.2.3 This appendix provides a PRA (Tier 1) of ground conditions within the Suffolk Onshore Scheme and identifies locations where there is potential for existing contamination. The results of the PRA form the basis for the baseline conditions and assessment within the Environmental Impact Assessment (EIA) PEIR.

Initial Assessment

2.6.A.2.4 The first stage of the PRA was to undertake an initial assessment to determine potential locations/sites for existing sources of contamination within the study area. These were identified based on the historical and current land use information determined from a variety of information sources including historical ordnance survey mapping and aerial imagery.

2.6.A.2.5 The sites were then given a classification score representing their potential for generating contamination that could impact on identified receptors. The criteria used in this assessment for classifying hazards/potential for generating contamination is presented in Table 2.6.A.1, which has been developed using the guidance within LCRM (Ref. 2.6.A.9).

Table 2.6.A.1 Criteria for classifying the potential for generating contamination

Classification score	Potential for generating contamination
Very Low	Land Use Examples: Residential, retail or office use, agricultural.
Low	Land Use Examples: Recent small scale industrial and light industry
Moderate	Land Use Examples: Railway yards, collieries, scrap yards, inert landfills
High	Land Use Examples: Heavy industry, non-hazardous landfills, hazardous landfills
Very High	Land Use Examples: Hazardous landfills, large gas works, chemical works

- 2.6.A.2.6 Sites/areas that are classified as having a very low or low potential for generating contamination are scoped out of further assessment on the basis that there is no source of significant contamination and therefore no source-pathway-receptor pollutant linkage which could result in significant effects.
- 2.6.A.2.7 Sites/areas that are identified as having a moderate or above potential for generating contamination have been taken forward for further assessment.
- 2.6.A.2.8 This approach has been undertaken as it is considered to be proportionate for the scale and nature of the project and the activities that will be undertaken and allows a targeted approach as required by EIA Regulations.

Further Assessment

- 2.6.A.2.9 The sites taken forward for further assessment have been assessed as having a moderate or above potential for generating contamination which could result in a (source-pathway-receptor) pollutant linkage and therefore potential significant effects. The sites were taken forward to assess the potential pollutant linkage in order to evaluate whether the presence of a source of contamination could potentially lead to harmful consequences.
- 2.6.A.2.10 A pollutant linkage consists of the following three elements:
 - A source of contamination or hazard that has the potential to cause harm or pollution;
 - A pathway for the hazard to move along / generate exposure; and,
 - A receptor which is vulnerable to the potential adverse effects of the hazard.
- 2.6.A.2.11 Whilst the contamination may be a hazard it would not constitute a risk unless a pathway and receptor are also present and a pollutant linkage can be determined. Therefore, in assessing the potential for contamination to cause a significant effect: the extent and nature of the potential source or sources of contamination must be assessed; any pathways present must be identified; and sensitive receptors or resources must be identified and appraised to determine their value and sensitivity to contamination related impacts.
- 2.6.A.2.12 Each tier of the Stage 1 risk assessment comprises the following four stages:

- Hazard Identification – which involves identifying potential contaminant sources within the study area;
- Hazard Assessment – assessing the potential for unacceptable risks by identifying what pathways and receptors could be present, and what pollutant linkages could result (forming the Conceptual Site Model);
- Risk Estimation – predict what degree of harm or pollution might result and how likely; and
- Risk Evaluation – evaluating whether the risk is acceptable or whether further assessment, remediation or mitigation is required.

2.6.A.2.13 To determine the risk to the identified receptor, both the probability (Table 1.2.A.2) and the potential degree of harm to a receptor (consequence – Table 1.2.A.3) are used and the risk estimated for each pollutant linkage using the matrix in Table 1.2.A.4, which is based on standard industry guidance provided within the Construction Industry Research and Information Association (CIRIA) report C552, Contaminated Land Risk Assessment (Ref. 2.6.A.10). The risk classifications are defined in Table 1.2.A.5. Definitions of receptor sensitivity are provided in **Table 2.6.9 of Part 3 Chapter 6 Geology and Hydrogeology** of the PEIR.

Table 2.6.A.2 Classification of probability (based on C552 (Ref. 2.6.A.10))

Classification	Definition
High likelihood	There is a pollution linkage and an event either appears very likely in the short-term and almost inevitable over the long-term, or there is already evidence at the receptor of harm / 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.

Table 2.6.A.3 Classification of consequence

Classification	Examples
Severe	<p>Human health effect - exposure likely to result in 'significant harm' as defined in the Defra (2012) Part 2A Statutory Guidance.</p> <p>Controlled water effect - short-term risk of pollution (note: Water Resources Act contains no scope for considering significance of pollution) of sensitive water resource. Equivalent to Environment Agency Category 1 incident (persistent and/or extensive effects on water quality leading to closure of potable abstraction point or loss of amenity, agriculture or commercial value.</p> <p>Ecological effect - short-term exposure likely to result in a substantial adverse effect.</p> <p>Catastrophic damage to crops, buildings or property.</p>
Medium	<p>Human health effect - exposure could result in 'significant harm'.</p> <p>Controlled water effect - equivalent to Environment Agency Category 2 incident requiring notification of abstractor.</p> <p>Ecological effect - short-term exposure may result in a substantial adverse effect.</p> <p>Damage to crops, buildings or property.</p>
Mild	<p>Human health effect - exposure may result in 'significant harm.'</p> <p>Controlled water effect - equivalent to Environment Agency Category 3 incident (short lived and/or minimal effects on water quality).</p> <p>Ecological effect - unlikely to result in a substantial adverse effect.</p> <p>Minor damage to crops, buildings or property. Damage to building rendering it unsafe to occupy (for example foundation damage resulting in instability).</p>
Minor	<p>No measurable effect on humans. Protective equipment is not required during site works.</p> <p>Equivalent to insubstantial pollution incident with no observed effect on water quality or ecosystems.</p> <p>Repairable effects to crops, buildings or property. The loss of plants in a landscaping scheme. Discolouration of concrete.</p>

Table 2.6.A.4 Classification of risk (based on C552 (Ref. 2.6.A.10))

		Consequence			
		Severe	Medium	Mild	Minor
Probability	High Likelihood	Very High	High	Moderate	Low
	Likely	High	Moderate	Moderate	Low
	Low Likelihood	Moderate	Moderate	Low	Very low
	Unlikely	Low	Low	Very low	Very low

Note: This risk matrix applies to qualitative risk assessment only.

Table 2.6.A.5 Risk rating definitions (based on C552 (Ref. 2.6.A.10))

Risk Classification	Description
Very high	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.
High	Harm is likely to arise to a designated receptor from an identified hazard. Realisation of the risk is likely to present a substantial liability.
Moderate	It is possible that harm could arise to a designated receptor from an identified hazard. However, it is either relatively unlikely that any such harm would be severe, or if any harm were to occur it is more likely that the harm would be relatively mild.
Low	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	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.

2.6.A.3 Preliminary Contamination Assessment

Initial Assessment

- 2.6.A.3.1 Much of the draft Order Limits and study area appears to have remained as undeveloped agricultural land since the earliest available historical mapping from the National Library of Scotland, dated 1885 (Ref. 2.6.A.4). In these areas it is considered that there is a very low risk of potential sources of significant existing contamination and therefore they are not taken forward for further assessment on the basis that significant effects are not likely. The locations of these areas can be identified on **Volume 3, Part 2, Figure 2.6.4 Potential Sources of Contamination** as any areas outside of those discussed below.
- 2.6.A.3.2 There are three areas/sites within the study area where historical or current land uses may have resulted in existing contamination. Where identified, readily available information relating to these sites and their associated Potential Sources of Contamination (PSC) has been gathered and is presented in the table below with a corresponding Classification Score for their potential for generating contamination.

Table 3.6.A.1 Potential sources of contamination

PSC Number	Name	Location	Description	Potential for generation contamination
PSC within draft Order Limits				
2	Historical Pits	Various located across the study area	Present since the earliest reviewed mapping dated 1885. Former pits and worked areas of ground, typically limited in size. Most first recorded in the late 1800s / early 1900s and typically not recorded after 1950 and potentially infilled. These pits have not been recorded as landfills in the information reviewed to date.	Low
10	Railway Line (Great Eastern Railway East Suffolk Line and Aldeburgh Branch)	Crosses the draft Order Limits in the far northwest, to the northeast of Saxmundham.	Present since the earliest reviewed mapping dated 1885. The East Suffolk line and Aldeburgh Branch Railway line does not appear to be on embankment or in cut and therefore appears to have been	Low

constructed approximately “at-grade”.

PSCs within wider study area

14.	Historical Pits and Quarries	Various located within wider study area. Present since the earliest mapping dated 1885.	Former pits and quarries, typically limited in size. Most first recorded in the late 1800s / early 1900s and typically not recorded after 1950 and potentially infilled.	Low
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2.6.A.3.3 The initial assessment has identified three areas with a low potential for generating contamination and these have been scoped out of further assessment on the basis that significant effects in relation to contamination are unlikely.

2.6.A.3.4 No sites have been identified with a moderate or above potential for generating contamination and therefore a further assessment has not been undertaken.

2.6.A.4 References

- Ref. 2.6.A.1 British Geological Survey, 1996, 1:50,000 Scale geological map, Sheet 191 Saxmundham
- Ref. 2.6.A.2 British Geological Survey Geindex Onshore, 2022 [online]. Available at: <https://mapapps2.bgs.ac.uk/geindex/home.html> [Accessed June 2023]
- Ref. 2.6.A.3 Multi-Agency Geographic Information for the Countryside (MAGIC) interactive map, 2022 [online]. Available at: <https://magic.defra.gov.uk/MagicMap.aspx> [Accessed June 2023]
- Ref. 2.6.A.4 National Library of Scotland – map images, 2022, [online]. Available at: <https://maps.nls.uk/geo/explore/side-by-side/#zoom=5&lat=56.00000&lon=-4.00000&layers=1&right=ESRIWorld> [Access June 2023]
- Ref. 2.6.A.5 Britain from Above, 2022 [online]. Available at: <https://britainfromabove.org.uk/en> [Accessed June 2023]
- Ref. 2.6.A.6 Environment Agency Historic Landfill Sites, 2023 [online]. available at: <https://www.data.gov.uk/dataset/17edf94f-6de3-4034-b66b-004ebd0dd010/historic-landfill-sites> [Accessed June 2023]
- Ref. 2.6.A.7 Environment Agency Permitted Waste Sites-Authorised Landfill Site Boundaries, 2023 [online]. Available at: <https://www.data.gov.uk/dataset/ad695596-d71d-4cbb-8e32-99108371c0ee/permitted-waste-sites-authorized-landfill-site-boundaries> [Accessed June 2023]
- Ref. 2.6.A.8 Environment Agency Environmental Pollution Incidents (Category 1 and 2)[online]. Available at: <https://www.data.gov.uk/dataset/c8625e18-c329-4032-b4c7-444b33af6780/environmental-pollution-incidents-category-1-and-2> [Accessed June 2023]
- Ref. 2.6.A.9 Land Contamination Risk Management (LCRM), 2021 [online]. Available at: <https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm> [Accessed June 2023]
- Ref. 2.6.A.10 CIRIA, 2001, Contaminated land risk assessment, a guide to good practice (C552)

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