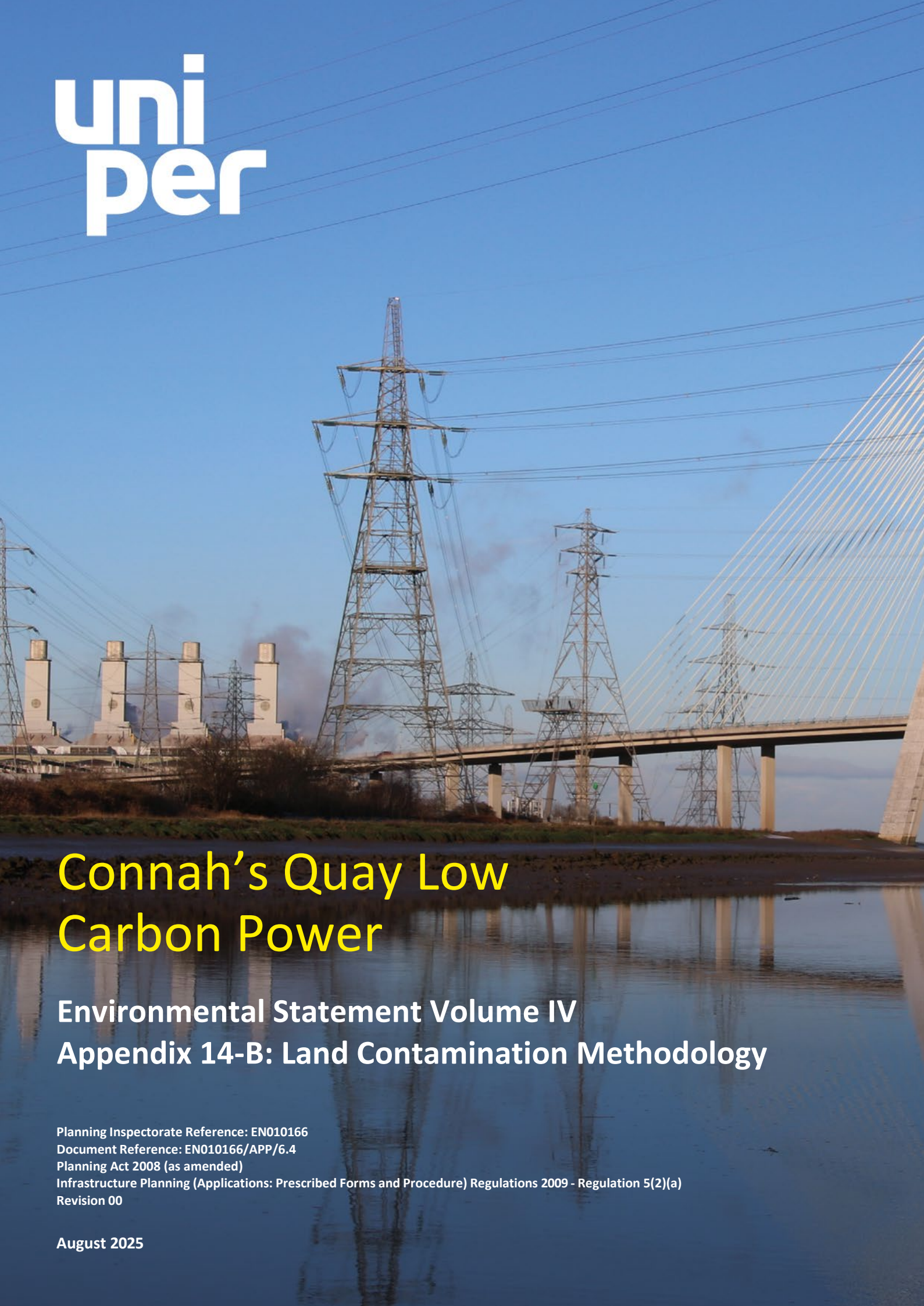

Connah's Quay Low Carbon Power

Environmental Statement Volume IV
Appendix 14-B: Land Contamination Methodology

Planning Inspectorate Reference: EN010166
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Planning Act 2008 (as amended)
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Prepared for:
Uniper UK Limited

Prepared by:
AECOM Limited

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1. Land Contamination Methodology

1.1 Introduction

1.1.1 In line with the Environment Agency's Land Contamination Risk Management (LCRM) (Ref 1), formally adopted by Natural Resources Wales (NRW) in February 2021, the assessment of land contamination uses a tiered, risk-based approach, as summarised below:

- Tier 1: qualitative risk assessment based on a desktop study of available information to identify potential sources of contamination, receptors to contamination and potential pathways between them. The identified sources, pathways and receptors are presented in the form of a Conceptual Site Model (CSM) showing the potential contaminant linkages (PCL);
- Tier 2: If PCL are identified, this means there is a theoretical risk to receptors from contamination and intrusive investigation should be used to provide data to inform a generic quantitative risk assessment (GQRA). The GQRA involves comparison of site-specific, laboratory analytical data against appropriate generic assessment criteria (GAC) for human health and/ or controlled waters which represent minimal or tolerable risk; and
- Tier 3: detailed quantitative risk assessment to identify whether contamination identified above minimal or tolerable risk levels represents an unacceptable risk and therefore requires remediation.

1.2 Screening assessment (undertaken as part of Tier 1)

1.2.1 A qualitative assessment of the risks posed by land contamination within the study area has been undertaken as part of the Environmental Statement (ES) (**Appendix 14-C: Potential Areas of Contamination and Further Risk and Impact Assessment** (**EN010166/APP/6.4**)) by first assigning a 'baseline risk score' to each identified historical or current area of potential land contamination identified in the baseline review. The baseline risk score has been determined using **Table 1**, **Table 2**, and **Table 3** below. The baseline risk score is based partly on the relationship between the identified area of potential land contamination and its proximity zone to the Proposed Development (**Table 1**) together with the nature of the current and / or historical land use, as certain land uses typically result in a greater potential for contamination of the ground to have occurred (**Table 2**). The baseline risk score then considers the relationship between the proximity zone, contaminative land and proposed cut / fill of the Proposed Development design at its closest point (**Table 3**).

1.2.2 The lower the baseline risk score then the lower the perceived level of risk.

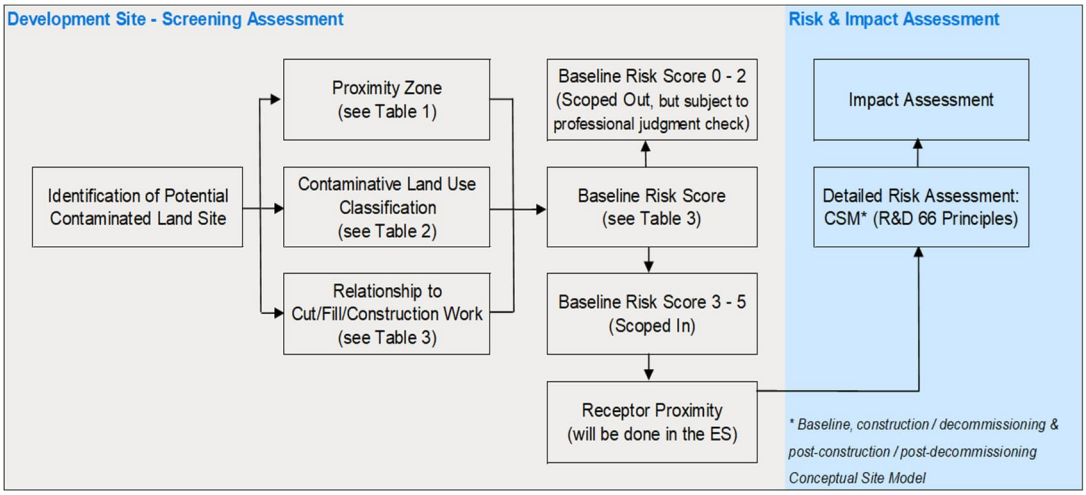
1.2.3 Professional judgement has been applied in reviewing the generated baseline risk scores. Generally, baseline risk scores of two or less are considered not to pose a significant risk and will not be considered for further

assessment. Baseline risk scores of three or more will be considered for further risk and impact assessment.

1.2.4 The next stage of screening relates to a review of sensitive receptors and their proximity to the potential area of land contamination. A combination of this review and the baseline risk score defines whether a site advances to the detailed assessment stage for further risk and impact assessment which is described in Section 1.3. The review of sensitive receptors and their proximity to the potential contaminated site has been completed as part of the ES and presented within **Appendix 14-C: Potential Areas of Contamination and Further Risk and Impact Assessment** (**EN010166/APP/6.4**).

1.2.5 A flow chart summarising the screening, risk and impact assessment steps is presented in **Plate 1**.

Plate 1: Land contamination assessment flow chart



Land contamination methodology tables

1.2.6 The below tables describe the additional details for the approach to assessment for land quality for the Proposed Development.

Table 1: Proximity zone definition

Zone Number	Definition
Zone 1	All land on or within the footprint of the Proposed Development and including a 10 m margin.
Zone 2	All land within 50 m of the edge of Zone 1 land.
Zone 3	All land from between 50 and 250 m from the edge of Zone 1 land.

Table 2: Potentially contaminative land uses

Class	Generic Description	Typical Land Uses
Class 1	Low risk of potential contamination, or less hazardous chemicals in use.	• Farms (ancillary buildings and areas for storing chemicals, fuel etc.) • Warehouses • Goods yards • Hospitals • Builders yards • Retail and business parks
Class 2	Medium risk of potential contamination, more hazardous chemicals in possible use.	• Engineering workshops • Railways / disused railway lines • Brick works • Dry cleaners (retail) • Sewage works • Former clay pits and quarries • Cement / asphalt works • Car breakers • Garage workshops • Waste transfer facilities • Paper works • Power stations • Glass works • Timber treatment works • Foot and mouth burials • Metal manufacturing and plating • Depots • Scrap yards
Class 3	High risk of potential contamination, hazardous chemicals likely to be present.	• Gas and coke works • Landfills and historic landfills • Petrol filling stations • Oil depots • Iron and steel works • Historical foundries • Chemical works

Table 3: Baseline risk score

Potentially Contaminative Land Use Class	Proximity to Order limits	Relationship to Cut / Fill / Construction Work	Baseline Risk Score
Class 1 Low Risk	Zone 1	Earthworks fill	2
		Earthworks cut / at grade	3
		Bored excavation	0
	Zone 2	Earthworks fill	1
		Earthworks cut / at grade	2
		Bored excavation	0
	Zone 3	Earthworks fill	0
		Earthworks cut / at grade	1
		Bored excavation	0
Class 2 Medium Risk	Zone 1	Earthworks fill	3
		Earthworks cut / at grade	4
		Bored excavation	2
	Zone 2	Earthworks fill	2
		Earthworks cut / at grade	3
		Bored excavation	2
	Zone 3	Earthworks fill	1
		Earthworks cut / at grade	2
		Bored excavation	1
Class 3 High Risk	Zone 1	Earthworks fill	4
		Earthworks cut / at grade	5
		Bored excavation	3
	Zone 2	Earthworks fill	3
		Earthworks cut / at grade	4
		Bored excavation	3

Potentially Contaminative Land Use Class	Proximity to Order limits	Relationship to Cut / Fill / Construction Work	Baseline Risk Score
	Zone 3	Earthworks fill	2
		Earthworks cut / at grade	3
		Bored excavation	2

1.3 Risk and impact assessment

1.3.1 Initially, this has involved creating a baseline CSM for the potential contaminated land sites identified as part of the screening assessment (not the Proposed Development itself); broadly using the preliminary CSM developed in the Phase 1 desk-based assessment, provided in **Appendix 14-A: Geo-Environmental Desk Based Assessment** (**EN010166/APP/6.4**).

1.3.2 The first stage to the CSM has been to look at grouping the sites that have been taken through to this stage of the assessment, where it is appropriate to do so, based on common land uses, e.g. landfills, industrial / commercial sites, etc. Not all sites have been grouped; selected key individual sites have been assessed as standalone sites (based on their potential for contamination / proximity to the site / size).

1.3.3 Potential risks have been determined and assessed based on the likelihood (or probability) and consequence using the principles given in the National House Building Council (NHBC), Environment Agency and Chartered Institute of Environmental Health (CIEH) report R&D66 (2008) (Ref 2). This provides guidance on development and application of the consequence and probability matrix to risk assessment and broad definitions of consequence and is widely used for a range of developments. The risk classification matrix is presented in **Table 4**.

Table 4: Estimation level of risk

Probability	Consequence			
	Severe	Medium	Mild	Minor
High likelihood	Very high risk	High risk	Moderate risk	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

1.3.4 The approach to assessing the potential impacts of the Proposed Development from, and to land contamination, have been based on comparing the risk levels at baseline and the assessed risk levels for the

construction / decommissioning and post-construction / post-decommissioning stages respectively, to evaluate the change in risk at each stage; this defines the magnitude of impact classification for land contamination. This stage of the assessment is detailed further in **Chapter 14: Geology and Ground Conditions**, Table 14-6 (**EN010166/APP/6.2.14**).

1.3.5 Evaluation of the magnitude of impact (Table 14-6 of **Chapter 14: Geology and Ground Conditions** (**EN010166/APP/6.2.14**)) and the sensitivity / value of the receptor (Table 14-5 of **Chapter 14: Geology and Ground Conditions** (**EN010166/APP/6.2.14**)) has defined the significance of the effects of land contamination (Table 14-7 of **Chapter 14: Geology and Ground Conditions** (**EN010166/APP/6.2.14**)). Reference has been made to Design Manual for Roads and Bridges (DMRB), LA109 Geology and Soils (2019) (Ref 3), LA104 Environmental Assessment and Monitoring (2020) (Ref 4) and LA113 Road Drainage and the Water Environment (2020) (Ref 5), which although applicable to road schemes, is considered to provide a suitable framework within which to conduct Environmental Impact Assessment (EIA) for ground conditions on developments which include linear elements (including the Proposed Development).

1.3.6 The full assessment of the potential impacts of the Proposed Development has been completed as part of the ES and presented within **Appendix 14-C: Potential Areas of Contamination and Further Risk and Impact Assessment** (**EN010166/APP/6.4**).

References

Ref 1. Environment Agency (2020, updated 2025). Online guidance for the management of land contamination 'Land contamination: risk management' (LCRM), adopted by Natural Resources Wales (NRW) in 2021 [online]. Available at: https://www.gov.uk/government/publications/land-contamination-risk-management-lcrm (Accessed 28/07/2025)

Ref 2. National House Building Council (NHBC), Environment Agency and Chartered Institute of Environmental Health (CIEH) report R&D66 (2008). Guidance for the Safe Development of Housing on Land Affected by Contamination.

Ref 3. Standards for Highways (2019). Design Manual for Roads and Bridges (DMRB), LA109 Geology and Soils (2019).

Ref 4. Standards for Highways (2020). DMRB, LA104 Environmental Assessment and Monitoring (2020).

Ref 5. Standards for Highways (2020). DMRB, LA113 Road Drainage and the Water Environment (2020).