



MORGAN AND MORECAMBE OFFSHORE WIND FARMS: TRANSMISSION ASSETS

Outline contaminated land and groundwater discovery strategy
F04



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Glossary

Term	Meaning
Code of Construction Practice	A document detailing the overarching principles of construction, contractor protocols, construction-related environmental management measures, pollution prevention measures, the selection of appropriate construction techniques and monitoring processes.
Construction	Any activity involved with the provision of a new structure (or structures), its modification or refurbishment.
Development Consent Order	An order made under the Planning Act 2008, as amended, granting development consent.
Effect	The term used to express the consequence of an impact. The significance of effect is determined by correlating magnitude of the impact with the importance, or sensitivity, of the receptor or resource in accordance with defined significance criteria.
Free phase	Contamination which is present as a discrete substance rather than mixed with water or soil, commonly used to refer to Light Non-Aqueous Phase Liquid (LNAPL) floating on a layer of water or visible at surface
Impact	Change that is caused by an action/proposed development, e.g., land clearing (action) during construction which results in habitat loss (impact).
Landfall	The area in which the offshore export cables make landfall (come on shore) and the transitional area between the offshore cabling and the onshore cabling. This term applies to the entire landfall area at Lytham St. Annes between Mean Low Water Springs and the transition joint bays inclusive of all construction works, including the offshore and onshore cable routes, intertidal working area and landfall compound(s).
Light Non-Aqueous Phase Liquid	Light Non-Aqueous Phase Liquid (LNAPL) is a liquid which is less dense than water and does not mix with water and so floats. Common contaminants which fit this category are hydrocarbons such as kerosene, diesel and petrol.
Local Authority	A body empowered by law to exercise various statutory functions for a particular area of the United Kingdom. This includes County Councils, District Councils and County Borough Councils.
Mean Low Water Springs	The height of mean low water during spring tides in a year.
Morecambe OWL	Morecambe Offshore Windfarm Limited is owned by Copenhagen Infrastructure Partners' (CIP) fifth flagship fund, Copenhagen Infrastructure V (CI V).
Morgan and Morecambe Offshore Wind Farms: Transmission Assets	The offshore and onshore infrastructure connecting the Morgan Offshore Wind Project and the Morecambe Offshore Windfarm to the national grid. This includes the offshore export cables, landfall site, onshore export cables, onshore substations, 400 kV grid connection cables and associated grid connection infrastructure such as circuit breaker compounds. Also referred to in this report as the Transmission Assets, for ease of reading.
Morgan OWL	Morgan Offshore Wind Limited is a joint venture between JERA Nex bp (JNbp) and Energie Baden-Württemberg AG (EnBW).

Term	Meaning
Onshore export cables	The cables which would bring electricity from the landfall to the onshore substations.
Onshore export cable corridor	The corridor within which the onshore export cables will be located.
Onshore substations	The onshore substations will include a substation for the Morgan Offshore Wind Project: Transmission Assets and a substation for the Morecambe Offshore Windfarm: Transmission Assets. These will each comprise a compound containing the electrical components for transforming the power supplied from the generation assets to 400 kV and to adjust the power quality and power factor, as required to meet the UK Grid Code for supply to the National Grid.
Remediation	The action(s) required to remove unacceptable risks posed to human health, the environment or controlled waters, such that the land is suitable for its intended use.
Site specific target level	Target concentrations set to remediate (clean up) soil or groundwater contamination.
Substation	Part of an electrical transmission and distribution system. Substations transform voltage from high to low, or the reverse by means of electrical transformers..
Transmission Assets	See Morgan and Morecambe Offshore Wind Farms: Transmission Assets (above).
Validation	A stage of assessment which provides assurance that remediation has been undertaken successfully.

Acronyms

Acronym	Meaning
BAOL	Blackpool Airport Operations Limited
CoCP	Code of Construction Practice
DCO	Development Consent Order
V/O	Visual or olfactory

Units

Unit	Description
kV	Kilovolt

1 Outline Contaminated Land and Groundwater Discovery Strategy

1.1 Introduction

- 1.1.1.1 This document forms the Outline Contaminated Land and Groundwater Discovery Strategy prepared for the Morgan and Morecambe Offshore Wind Farms: Transmission Assets (referred to hereafter as ‘the Transmission Assets’).
- 1.1.1.2 This Outline Contaminated Land and Groundwater Discovery Strategy has been updated for Deadline 4 to include the following:
- Update to Requirement 8 wording in line with the draft Development Consent Order (DCO) (document reference C1 (REP3-009)) to include Blackpool Airport Operations Limited (BAOL) as a consultee along with the relevant management plans upon which BAOL will be consulted by the relevant planning authority.
 - Clarification of the roles and responsibilities for implementing this outline management plan
 - Clarification that the measures within this outline management plan will be implemented during the onshore site preparation works
 - Clarification on the discovery strategy methodology.
- 1.1.1.3 The Outline Contaminated Land and Groundwater Discovery Strategy was updated at Deadline 5 to include the following:
- Clarification that the Outline Contaminated Land and Groundwater Discovery Strategy set out the process for identifying any suspected areas of contamination and any remedial measures which may be required (in line with CoT30)
 - Clarification of the process that will be implemented where areas of potentially significant contamination cannot be avoided (in line with CoT118).
- 1.1.1.4 The Outline Contaminated Land and Groundwater Discovery Strategy was also updated at Deadline 6 to include the following:
- Measures (commitments) adopted as part of the Transmission Assets relating to the Outline Contaminated Land and Groundwater Discovery Strategy.

1.2 Implementation

1.2.1 Overview

This Outline Contaminated Land and Groundwater Discovery Strategy forms an appendix to the Outline Code of Construction Practice (CoCP) (document reference J1). Following the granting of consent for the Transmission Assets, detailed Contaminated Land and Groundwater Discovery Strategies will be

prepared as a part of the detailed Code of Construction Practice(s) on behalf of Morgan OWL and/or Morecambe OWL, prior to commencement of the relevant stage of works and will follow the principles established in this Outline Contaminated Land and Groundwater Discovery Strategy. The detailed Contaminated Land and Groundwater Discovery Strategies will require approval by the relevant planning authority following consultation with relevant stakeholders. The Applicants and all appointed contractors will be responsible for the implementation of the detailed Contaminated Land and Groundwater Discovery Strategies.

- 1.2.1.1 The Applicants have committed to implementation of detailed Contaminated Land and Groundwater Discovery Strategies via the following commitment, CoT30 (see Volume 1, Annex 5.3: Commitments Register, document reference F1.5.3), and is secured by inclusion of Requirement 8 of the draft Development Consent Order (DCO) (document reference C1) Schedules 2A & 2B. Below sets out the requirement wording for Project A (Project B's requirement mirror those of Project A for this requirement and are, therefore, not repeated):

8.—(1) No stage of the Project A onshore works or Project A intertidal works may commence until for that stage a code of construction practice has been submitted to and approved by the relevant planning authority following consultation as appropriate with –

(a) Lancashire County Council;

(b) Natural England;

(c) the Environment Agency;

(d) in relation to the Project A intertidal works or, if applicable to the Project A offshore works, the MMO; and

(e) in relation to the Project A Blackpool Airport works, BAOL, to the extent specified in the outline code of construction practice.

(2) Each code of construction practice must accord with the outline code of construction practice and include, as appropriate to the relevant stage...

(n) contaminated land and groundwater discovery strategy (in accordance with the outline contaminated land and groundwater discovery strategy)...

(3) The code of construction practice approved in relation to the relevant stage of the Project A onshore works and Project A intertidal works must be followed in relation to that stage of the Project A onshore works and Project A intertidal works.

- 1.2.1.2 Requirement 8(1)(e) identifies BAOL as a named consultee prior to the approval by the relevant planning authority of detailed codes of construction practice. BAOL will be consulted in relation to a stage of construction that includes either the Project A Blackpool Airport Works or the Project B Blackpool Airport Works. With regards to the management plans to be appended (as appropriate to the relevant stage) to the detailed codes of construction practice, BAOL will be consulted on the Contaminated Land and Groundwater Discovery Strategy (in accordance with the outline

Contaminated Land and Groundwater Discovery Strategy) by the relevant planning authority.

1.2.1.3 The Transmission Assets may adopt a staged approach to the approval of DCO requirements. This will enable requirements to be approved in part or in whole, prior to the commencement of the relevant stage of works in accordance with whether staged approach is to be taken to the delivery of the each of the offshore wind farms.

1.2.1.4 For onshore and intertidal works (landward of Mean Low Water Springs (MLWS)), this approach will be governed by the inclusion of Requirement 3 within the draft DCO, which requires notification to be submitted to the relevant planning authority/authorities detailing whether Project A or Project B relevant works will be constructed in a single stage; or in two or more stages to be approved prior to the commencement of the authorised development.

1.2.2 Purpose and scope of this Outline Contaminated Land and Groundwater Discovery Strategy

1.2.2.1 The purpose of this Outline Contaminated Land and Groundwater Discovery Strategy is to set out the process for identifying any suspected areas of contamination and any remedial measures which may be required during the onshore site preparation works and construction activities of the Transmission Assets landward of MLWS. Detailed strategies will identify the construction protocol for discovery of any currently unknown contamination and any remedial measures that may be required (CoT30).

1.2.2.2 The objective of the Outline Contaminated Land and Groundwater Discovery Strategy is to ensure effective management of previously unidentified soil and/or groundwater contamination that may be encountered in order to minimise risks to environmental and human health receptors for the construction phase of the Transmission Assets.

1.2.2.3 Where areas of potentially significant contamination (e.g. landfills) cannot be avoided within the Transmission Assets Order Limits, ground investigation or other appropriate measures (e.g. use Personal Protective Equipment and/or hazard signage) will be implemented to mitigate potential impacts to, or effects on sensitive receptors. Where ground investigation identifies potential risks to sensitive receptors from contamination, a remediation strategy would be prepared in consultation with the Environment Agency (CoT118).

1.2.2.4 Onshore site preparation works are defined in article 2 of the draft DCO (document reference C1 (REP3-009)). The Outline Contaminated Land and Groundwater Discovery Strategy applies to onshore site preparation works and construction activities for the Transmission Assets located landward of MLWS.

1.2.2.5 Onshore site preparation works will be undertaken prior to the commencement of construction. These works will be undertaken in accordance with this Outline Contaminated Land and Groundwater Discovery Strategy as certified through the DCO.

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- 1.2.2.6 The measures within this outline management plan are in accordance with best practice and are appropriate to manage the impacts associated with onshore site preparation works.

1.3 Roles and responsibilities

1.3.1 Overview

- 1.3.1.1 The key roles and associated responsibilities with regards to this Outline Contaminated Land and Groundwater Discovery Strategy are set out below. The Construction (Design and Management) Regulations 2015 also identify the legal duties, responsibilities and obligations of all the major roles within the construction team.
- 1.3.1.2 The responsibilities of each role will be refined as necessary in the detailed Contaminated Land and Groundwater Discovery Strategy.

1.3.2 Applicants

- 1.3.2.1 The Applicants will be responsible for the following:
- Ensuring that the Outline Contaminated Land and Groundwater Discovery Strategy is implemented effectively
 - Giving necessary direction to contractors (for example, setting contractual obligations)
 - Preparing the detailed Contaminated Land and Groundwater Discovery Strategies and undertaking reviews and refinements of the Contaminated Land and Groundwater Discovery Strategies (where necessary) in conjunction with the Principal Contractors.

1.3.3 Principal Contractors

- 1.3.3.1 Principal Contractors will be appointed by Morgan OWL and Morecambe OWL and have the overall responsibility for:
- Delivering the outline and detailed Contaminated Land and Groundwater Discovery Strategy on behalf of the Applicants
 - Ensuring all procedures in the outline and detailed Contaminated Land and Groundwater Discovery Strategies are followed
 - Ensuring all contractors are suitably qualified and experienced in implementing the measures within the outline and detailed Contaminated Land and Groundwater Discovery Strategy
 - Maintaining records relevant to the outline and detailed Contaminated Land and Groundwater Discovery Strategies.

1.3.4 Contractors/sub contractors

- 1.3.4.1 Contractors and sub-contractors will be required to understand their responsibilities and implement the measures within the Outline Contaminated Land and Groundwater Discovery Strategy.

1.3.5 Training and competence

- 1.3.5.1 The Principal Contractor(s) will be responsible for overseeing and enforcing the procedures in the Contaminated Land and Groundwater Discovery Strategies such that potential adverse impacts to human health or the environment from any activities involving handling of potential pollutants are avoided or mitigated.
- 1.3.5.2 Through toolbox talks, construction workers will be educated on those aspects of environmental management as appropriate to the task assigned to them.
- 1.3.5.3 All site personnel involved in the construction works will be briefed on the likely nature and type of soils that could indicate the presence of contamination.
- 1.3.5.4 A watching brief comprising the monitoring of works by way of observation for previously unidentified contamination is to be undertaken by the Principal Contractor(s) during the construction phase. Details of the watching brief and method of reporting will be provided in the detailed Contaminated Land and Groundwater Discovery Strategies.

1.4 Commitments

- 1.4.1.1 Through the EIA process, the Applicants have identified commitments which seek to eliminate or reduce impacts or adopt best practice guidance as part of the Transmission Assets and are recorded within Volume 1, Annex 5.3: Commitments Register of the ES (document reference F1.5.3). Where relevant, commitments have been detailed within subsequent sections of this Outline Contaminated Land and Groundwater Discovery Strategies. All relevant commitments associated with onshore and intertidal construction are provided in full within Table 1-1. These will be included within and developed further as part of the detailed Contaminated Land and Groundwater Discovery Strategies.

Table 1-1: Measures (commitments) adopted as part of the Transmission Assets relevant to the Outline Contaminated Land and Groundwater Discovery Strategy

Commitment (CoT) number	Measure adopted	How the measure will be secured (article references may be subject to change during DCO Examination)	Where is the commitment reference within the document?
CoT30	An Outline Contaminated Land and Groundwater Discovery Strategy, as part of the Outline CoCP has been submitted with the application for development consent, to identify any suspected areas of contamination and any remedial measures which may be required. Detailed strategies will identify the construction protocol for discovery of any currently unknown contamination and any remedial measures that may be required.	DCO Schedules 2A & 2B, Requirement 8 (Code of Construction Practice)	Section 1.2.1
CoT118	Where areas of potentially significant contamination (e.g. landfills) cannot be avoided within the Transmission Assets Order Limits, ground investigation or other appropriate measures (e.g. use Personal Protective Equipment and/or hazard signage) will be implemented to mitigate potential impacts to, or effects on sensitive receptors. Where ground investigation identifies potential risks to sensitive receptors from contamination, a remediation strategy would be prepared in consultation with the Environment Agency.	DCO Schedules 2A & 2B, Requirement 8 (Code of Construction Practice)	Section 1.2.2

1.5 Methodology

- 1.5.1.1 Discovery Strategies for any previously unanticipated and un-encountered contamination will be implemented as part of the Transmission Assets. It will also include details of a watching brief to be kept by the Principal Contractors.
- 1.5.1.2 The watching brief and method of reporting will be provided in the detailed Contaminated Land and Groundwater Discovery Strategies.
- 1.5.1.3 Where visual or olfactory (V/O) evidence of significant contamination (that has not been previously encountered), is identified, construction activities will be stopped, and a suitably qualified environmental consultant will be contacted. Evidence of soil/groundwater contamination may include:
- The presence of free phase contamination (liquids or sheens)
 - Fibrous or cement bound materials (potentially asbestos containing materials) Photographic examples are provided by the Health and Safety Executive (Asbestos image gallery (hse.gov.uk));
 - Significant staining and discolouration of exposed soils
 - Oily sheen on the surface of groundwater
 - V/O evidence of organic contamination (i.e. hydrocarbons, solvents, etc).
 - discovery of other unknown, unusual or unexpected potentially hazardous material
- 1.5.1.4 Areas where unexpected contamination is suspected or encountered will be photographed and annotated on a site drawing. Any construction activities in the area where this material was encountered will cease until an appropriate plan for testing and the subsequent dealing with the contamination has been put in place in accordance with the Contaminated Land (England) Regulations 2006.
- 1.5.1.5 Specific risk assessments will take place prior to any construction work in line with health and safety requirements to enable appropriate measures and personal protective equipment (PPE) to be implemented.
- 1.5.1.6 The Contaminated Land and Groundwater Discovery Strategies will require that any contamination, including contaminated groundwater, that is discovered during construction which was not previously identified must be reported as soon as reasonably practicable to the relevant authority, and a risk assessment will be completed in consultation with the authority. Soil (soil vapour/ groundwater) samples will be collected and analysed. The risks associated with contamination will be assessed. When required, a remediation strategy will be designed and agreed with the relevant authority before implementation.

1.6 Procedures where previously unidentified contamination is encountered

- 1.6.1.1 Where unexpected contamination is encountered, the Principal Contractor(s) must implement measures onsite, in accordance with the Construction Industry Research and Information Association (CIRIA, 2023) where practicable, to assess and control risks resulting from the disturbance of potential contamination. The Principal Contractor(s) is to quantify the extent of the potential risk from the contamination and follow a risk-based approach in accordance with Land contamination: risk management (Environment Agency, 2020).
- 1.6.1.2 In accordance with best practice, work in the immediate area of concern would be made safe and secure and stopped until a suitably qualified specialist (in consultation with the Environment Agency and relevant planning authority) is able to make an assessment. The assessment may involve the sampling and testing of the suspected contaminated material, as deemed necessary by the qualified specialist. The mitigation plan for land contamination encountered is included in **section 1.7**.
- 1.6.1.3 Further, as soon as reasonably practicable after finding the unexpected contamination, the qualified specialist must report this to the Environment Agency and the relevant planning authority where necessary.
- 1.6.1.4 Upon completion of the assessment by a suitably qualified specialist, if remediation is considered necessary, then, a written scheme and programme for the remedial measures to be taken to render the land fit for its intended purpose must be submitted to and agreed in writing with the Environment Agency and the relevant planning authority.
- 1.6.1.5 Where identified contaminated materials have been, or are to be, disturbed, the following measures will be adhered to where necessary:
- The provision of Personal Protective Equipment (PPE) to construction personnel. PPE shall be proportionate to the risk and may include items such as gloves, barrier cream, overalls, dust masks and respirators to minimise direct contact exposure with contaminated materials. The precise PPE requirements would be identified following an appropriate hazard assessment.
 - The provision of suitable hygiene facilities and clean welfare facilities for all construction site workers.
 - The monitoring of confined spaces for the potential accumulation of ground gases, and the restricting of access to confined spaces to suitably trained personnel and use of specialist PPE where necessary. These measures must also be implemented where concentrations of ground gases have been recorded above long-term and/or short-term workplace exposure limits (Health and Safety Executive, 2020).

1.7 Mitigation plan

1.7.1.1 Should unexpected contamination be identified during excavation works, where applicable the following mitigation procedures must be implemented and adhered to:

- Works within the immediate area of concern should be made safe and secure to prevent the spread of contamination and stopped immediately.
- Report the discovery to the Principal Contractor(s) Project Manager and Environmental team, who would then inform the Environment Agency and the relevant local authority, and seek expert advice from a suitably qualified specialist.
- Notify other construction workers in adjacent working areas to prevent their contact with the suspected contaminated material.
- Undertake a risk assessment to minimise the risk to health and safety of site workers, including the identification of suitable PPE to mitigate any potential exposure and acceptable working methods.
- As deemed necessary by the qualified specialist, undertake an assessment of the suspected contaminated material, for example via chemical testing to characterise the suspected contaminated material. As required, agree changes to the existing site proposals and method statements.
- All excavated materials proposed for reuse would be required to meet site-specific material acceptability criteria. Contaminated materials that cannot be reused onsite would be disposed offsite. A hazardous waste assessment would be undertaken to first classify the waste material in accordance with Technical Guidance WM3 (Environment Agency, 2014). Once classified, further Waste Acceptance Criteria (WAC) testing would be undertaken, as required, to allow landfill operators to determine if they can accept the waste. The disposal of contaminated materials must comply with all relevant waste management regulations.
- Should remediation be required, a written scheme and programme for the remedial measures must be produced outlining the appropriate measures to be taken to render the land fit for its intended purpose. This must be submitted to the Environment Agency and the relevant planning authority.
- Inform the landowner and occupier of the identification of contamination.
- The location of any such contamination encountered shall be recorded, including the results of chemical testing, the volumes sentenced for treatment by remediation, and where relevant the validation data showing compliance with the relevant site-specific material acceptability criteria, and the location of the area of use of any remediated material within the Transmission Assets.

1.8 References

Construction Industry Research and Information Association (CIRIA) (2023) Environmental good practice on site guide (fifth edition).

Environment Agency (2014) Technical Guidance WM3: Waste Classification
- Guidance on the classification and assessment of waste, Updated
September 2021.

Health and Safety Executive (2020) EH40/2005 Workplace exposure limits.