

# **XLINKS' MOROCCO-UK POWER PROJECT**

## **Environmental Statement**

**Volume 3, Appendix 8.3: Sediment Sample Chemistry Results**

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## XLINKS' MOROCCO – UK POWER PROJECT

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## Glossary

| Term  | Meaning  |
|---|--|
| Environmental Impact Assessment                 | The process of identifying and assessing the significant effects likely to arise from a project. This requires consideration of the likely changes to the environment, where these arise as a consequence of a project, through comparison with the existing and projected future baseline conditions.                         |
| Offshore Cable Corridor                         | The proposed corridor within which the onshore High Voltage Direct Current (HVDC) Cables would be located.   |
| The Project (Xlinks' Morocco- UK Power Project) | The overall scheme from Morocco to the national grid, including all onshore and offshore elements of the transmission network and the generation site in Morocco (referred to as the 'Project').   |
| Proposed Development                            | The element of Xlinks' Morocco-UK Power Project within the UK. The Proposed Development covers all works required to construct and operate the offshore cables (from the UK Exclusive Economic Zone to Landfall), Landfall, onshore Direct Current and Alternating Current cables, converter stations, and road upgrade works. |

## Acronyms

| Acronym | Meaning                            |
|---------|------------------------------------|
| DVV     | Double Van-Veen (Grab Sampler)     |
| ES      | Environmental Statement            |
| HVDC    | High Voltage Direct Current        |
| ISQG    | Interim Sediment Quality Guideline |
| PEL     | Probable Effects Level             |
| TEL     | Threshold Effects Level            |

# 1 SEDIMENT SAMPLE CHEMISTRY RESULTS

## 1.1 Introduction

- 1.1.1 This document forms Volume 1, Appendix 8.3: Sediment Sample Chemistry Results of the Environmental Statement (ES) prepared for the United Kingdom (UK) elements of Xlinks' Morocco UK Power Project (the 'Project'). For ease of reference, the UK elements of the Project are referred to as the 'Proposed Development', which is the focus of the ES. The ES presents the findings of the Environmental Impact Assessment process for the Proposed Development.
- 1.1.2 The purpose of this appendix is to present the results of chemical laboratory analysis undertaken on sediment grab samples collected from 51 stations along the Offshore Cable Corridor.
- 1.1.3 The majority of stations were sampled with a DVV grab (2 x 0.1 m<sup>2</sup>) with stations with coarser sediments sampled with a 0.01 m<sup>2</sup> mini-Hamon grab. The locations of the grab stations can be found on Volume 3, Figure 8.8: Locations of Sediment Data of the ES.
- 1.1.4 The sediment particle size analysis is summarised in Volume 3, Appendix 8.1 Sediment Source Concentrations and Assessment of Disturbance of the ES. Typically, the sediments along the Offshore Cable Corridor are classified as 'Very Fine' to 'Medium' sands, with median particle size (d<sub>50</sub>) values between 0.07 mm and 0.47 mm.
- 1.1.5 The sediment samples were analysed for metals and Polycyclic Aromatic Hydrocarbons (PAHs) with results presented in this Appendix. Results are compared to Sediment Quality Guidelines (SQGs), namely Cefas 'Action Level' 1 and 2 (gov.uk, 2023) and Interim Sediment Quality Guidelines (ISQGs) / Threshold Effects Levels (TELs) and Probable Effects Levels (PELs), from CCME (1999).
- 1.1.6 The Cefas Action Levels are used to determine the contaminant loading of a material - generally used as part of a 'weight of evidence' approach to assessing dredged material and its suitability for disposal to sea. Below Action Level 1, contaminant levels are generally considered to be of no concern and, above Action Level 2, materials are considered to be unsuitable for disposal at sea.
- 1.1.7 The TEL and PEL approach consider the sediment contamination concentration at which a toxic response is observed in benthic organisms. For the TEL, a toxic response has started to be observed. For the PEL, a large percentage of benthic organisms will show a toxic response.
- 1.1.8 A discussion of the sediment chemistry results is included in Chapter 8: Physical Processes of the ES.





MUPP Xlinks Sediment Sample Chemistry Results

| Organics & Nutrients         | Unit  | UK_01 | UK_02 | UK_03 | UK_04 | UK_05 | UK_06 | UK_07 | UK_09 | UK_10 | UK_11 | UK_13  | UK_14 | UK_15  | UK_16  | UK_17 | UK_18 | UK_19 | UK_20 | UK_21 | UK_23  | UK_24 | UK_27 | UK_30 | UK_31 |
|------------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--------|-------|--------|--------|-------|-------|-------|-------|-------|--------|-------|-------|-------|-------|
| Total Organic Matter         | % M/M | 2.60  | 1.80  | 1.70  | 1.80  | 2.50  | 3.00  | 2.20  | 3.70  | 3.40  | 4.00  | 3.90   | 4.00  | 3.20   | 2.30   | 2.60  | 3.10  | 6.20  | 3.20  | 3.80  | 2.60   | 2.30  | 2.30  | 2.40  | 2.80  |
| Total Organic Carbon         | % M/M | 0.50  | 0.43  | 0.35  | 0.32  | 0.51  | 0.68  | 0.55  | 0.83  | 0.81  | 0.83  | 0.69   | 0.86  | 0.72   | 0.54   | 0.61  | 0.55  | 1.19  | 0.63  | 0.46  | 0.44   | 0.40  | 0.33  | 0.43  | 0.45  |
| Moisture Content             | % M/M | 30.30 | 22.40 | 33.50 | 30.30 | 33.50 | 31.10 | 31.60 | 37.80 | 34.00 | 41.50 | 37.80  | 35.80 | 35.20  | 16.00  | 29.60 | 35.50 | 49.00 | 27.90 | 21.30 | 20.00  | 20.40 | 14.80 | 25.20 | 30.60 |
| Extractable Organic Halogens | mg/kg | 30.90 | 34.00 | <0.20 | <0.20 | <0.20 | 42.10 | 65.60 | 20.60 | 68.00 | 87.80 | 107.00 | <0.20 | 118.00 | <0.20  | <0.20 | <0.20 | <0.20 | <0.20 | 21.80 | 29.60  | <0.20 | <0.20 | <0.20 | <0.20 |
| Organics & Nutrients         | Unit  | UK_33 | UK_34 | UK_35 | UK_36 | UK_37 | UK_38 | UK_39 | UK_40 | UK_41 | UK_42 | UK_43  | UK_44 | UK_45  | UK_46  | UK_51 | UK_52 | UK_53 | UK_54 | UK_55 | UK_56  | UK_57 | UK_58 | UK_59 | UK_61 |
| Total Organic Matter         | % M/M | 2.40  | 2.10  | 2.50  | 2.70  | 2.00  | 2.50  | 1.80  | 2.10  | 1.90  | 1.90  | 1.60   | 1.70  | 1.80   | 1.90   | 2.30  | 1.80  | 2.40  | 2.40  | 2.60  | 2.70   | 4.20  | 3.90  | 2.40  | 2.40  |
| Total Organic Carbon         | % M/M | 0.40  | 0.26  | 0.41  | 0.53  | 0.33  | 0.49  | 0.38  | 0.42  | 0.34  | 0.38  | 0.29   | 0.30  | 0.27   | 0.27   | 0.44  | 0.32  | 0.40  | 0.42  | 0.41  | 0.45   | 0.96  | 0.85  | 0.35  | 0.37  |
| Moisture Content             | % M/M | 13.60 | 14.80 | 27.70 | 32.60 | 19.20 | 26.30 | 24.20 | 31.60 | 28.90 | 30.20 | 30.30  | 20.60 | 24.50  | 13.90  | 27.80 | 22.40 | 25.50 | 27.00 | 29.30 | 29.30  | 33.10 | 31.50 | 28.90 | 28.00 |
| Extractable Organic Halogens | mg/kg | <0.20 | <0.20 | 31.00 | <0.20 | 21.40 | <0.20 | 25.30 | 21.40 | 22.20 | 24.10 | 26.20  | 26.20 | 24.40  | 115.00 | 42.40 | 94.40 | 96.40 | 27.00 | <0.20 | 107.00 | 30.90 | <0.20 | 33.80 | 67.90 |



## 1.2 References

CCME (1999). Canadian sediment quality guidelines for the protection of aquatic life: Summary tables. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers for the Environment, Winnipeg.

Gov.uk (2023). <https://www.gov.uk/guidance/marine-licensing-sediment-analysis-and-sample-plans>