High-Level Assessment of Sediment Disturbance

DATE:	22 March 2024	**CONFIDENTIALITY:**	Confidential
SUBJECT:	High-Level Assessment of Sediment Disturbance		
PROJECT:	MUPP Xlinks	**AUTHOR:**	Sophie Bingham
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INTRODUCTION

This technical note provides a high-level assessment of potential sediment dispersion, along the UK Offshore Cable Corridor (OCC), to support the physical processes Preliminary Environmental Impact Assessment (PEIR) chapter.

This technical note sets out the baseline data and methodology used to complete this assessment. The results are presented in **Table 2** and **Table 3**, and **Appendix A**. Assumptions and limitations are presented, along with conclusions and recommended next steps.

BASELINE DATA

Subtidal Grab Samples

51 sediment grab stations were sampled along the Offshore Cable Corridor. The majority of stations were sampled with a Double Van Veen (DVV) grab (2 x 0.1 m^2) with stations with coarser sediments sampled with a 0.01 m^2 mini-Hamon grab. Samples were acquired to provide data on physico-chemistry and macrofauna at sampling stations. The locations of the grab stations can be found in **Appendix B**.

Typically, the sediments along the Offshore Cable Corridor are classified as 'Very Fine' to 'Medium' sands, with median particle size (d_{50}) values between 0.07 mm and 0.47 mm. Coarser sediment of 'Very Fine Pebbles' and 'Medium Pebbles' were found at two grab stations only (UK_37 and UK_52).

Figure 1 below shows how the median particle size varies relative to the water depth. Chainage 0.0 is located at the EEZ boundary.

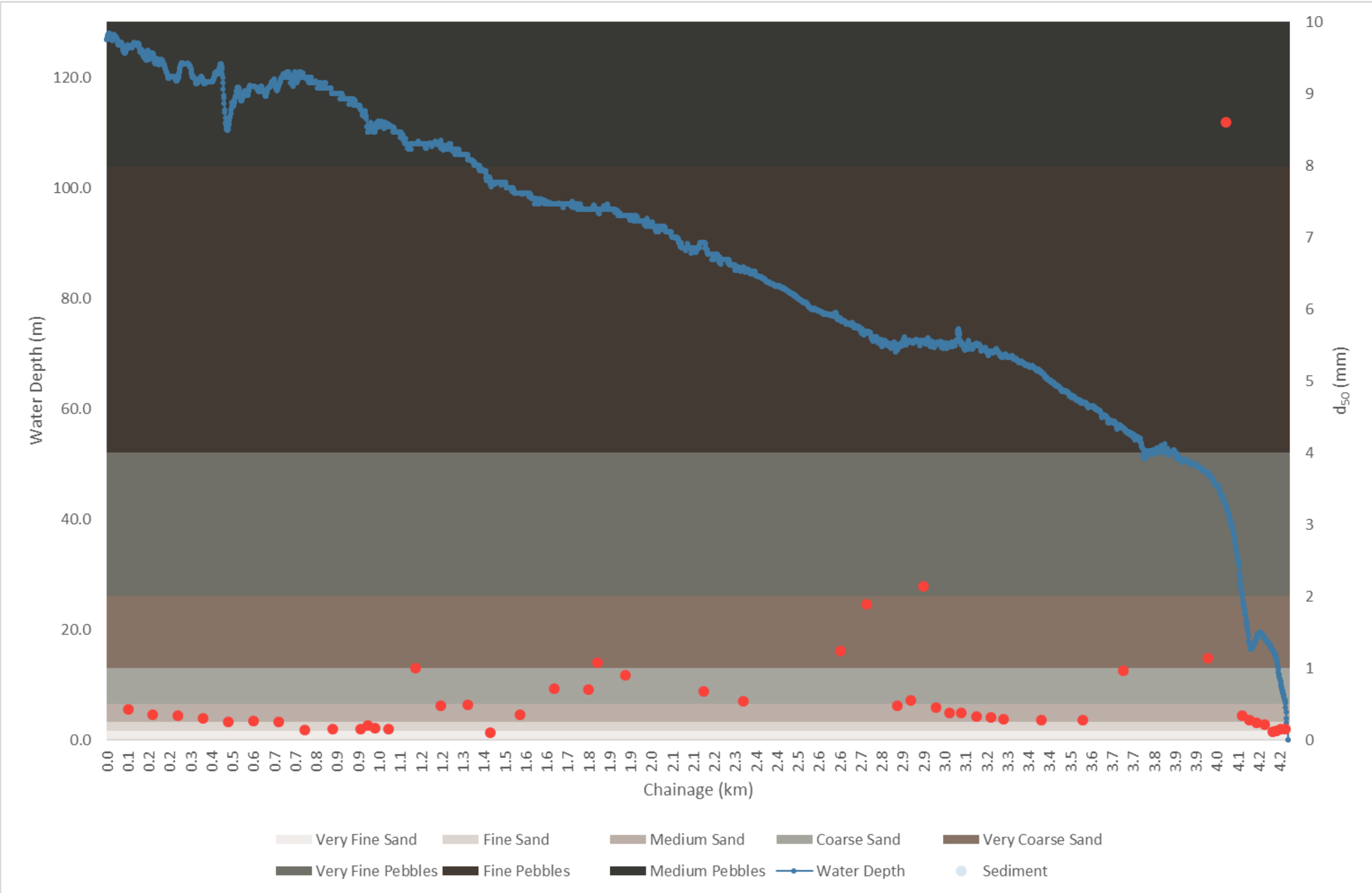


Figure 1: Wentworth Classification of Sediment along the Offshore Cable Corridor

Current Data

Depth-averaged current data were extracted from DHI's global MIKE 21 model. The current data were extracted at the same locations as the sediment grab stations, for a period between 1 September 2023 and 31 October 2023 in order to capture peak spring and peak neap current variations (as a worst case).

For the purposes of this high-level assessment of sediment dispersion, the peak spring and peak neap depth-averaged currents were converted to bed currents using Equation's 26a and 26b from 'Dynamics of Marine Sands' (Soulsby, 1997). This method is appropriate for use over a flat bed and considers bed roughness (varies depending on sediment type) and boundary layer thickness (which is defined as 'the region in which the frictional and turbulent effects of the seabed are experienced'). However, it does also assume constant temperature throughout the water column. Therefore, this method may provide inaccurate results[1] for grab stations UK_01 to UK_31 where clear temperature stratification of the water column was observed, with a thermocline evident at 30 m.

The average peak spring bed current velocity was 0.25 m/s, with a maximum bed current velocity of 0.45 m/s at grab station UK_61, located within Bideford Bay at a water depth of 6.6 m. The average peak neap bed current velocity was 0.11 m/s.

[1] The thermocline may have the effect of semi-isolating bottom waters, meaning that the assumptions adopted will tend to be worst case / precautionary from an EIA perspective i.e. they would tend to overestimate bed currents.

METHODOLOGY

Initiation of Sediment Motion

Prediction of the degree of sediment motion on account of baseline/ background bed currents is useful to set the context for any potential Proposed Development impact considerations.

To determine whether the peak spring and peak neap bed current velocities would result in the initiation of movement of the sediment on the seabed, the depth-averaged threshold of motion was calculated using Equations 72a and 72b in 'Dynamics of Marine Sands' (Soulsby, 1997). Inputs included the median particle size, particle density (2,600 kg/m^3 for sand), water density (1,025 kg/m^3), kinematic viscosity of water (1.36x10^{-6} for UK waters, assuming an approximate temperature of 13 °C and a salinity of 35 ppt).

The depth-averaged threshold of motion was converted to a threshold of motion at the bed using Equation's 26a and 26b from 'Dynamics of Marine Sands' (Soulsby, 1997). If the current velocity is greater than the threshold of motion (both at the bed), it is assumed that the motion of the bed sediment is initiated.

During peak spring tides, motion of sediment was found to be initiated at 40 grab stations (during peak velocities only). At the following grab stations, no initiation of movement of sediment is anticipated. The Wentworth Classification of the median particle size for each grab station is identified.

- UK_16: Coarse Sand
- UK_17: Medium Sand
- UK_18: Medium Sand
- UK_21: Coarse Sand
- UK_23: Coarse Sand
- UK_24: Very Coarse Sand
- UK_27: Coarse Sand
- UK_30: Coarse Sand
- UK_33: Very Coarse Sand
- UK_34: Very Coarse Sand
- UK_37: Very Fine Pebbles
- UK_52: Medium Pebbles

The above shows that, as expected, the larger/ coarser sediments are less likely to move during peak spring current velocities. The exception to this is where coarser sediments were still predicted to be mobilised, at grab stations UK_31, UK_36 and UK_46 (all coarse sand), and UK_51 (very coarse sand), on account of greater predicted bed currents (averaging 0.31m/s, with a maximum bed current of 0.39 m/s at UK_51).

Conversely, during peak neap currents, motion was only found to be initiated at 8 grab stations (UK_53 to UK_61). These stations are located within Bideford Bay where larger bed currents (0.16 m/s to 0.22 m/s) and shallower water depths (<24 m) are anticipated.

Suspension of Sediment

Further calculations were completed to determine whether the sediment at each grab station would remain in suspension if motion was initiated. This involved calculating the settling velocity and the skin friction velocity. An understanding of the potential for sediments to remain in suspension is key to any consideration of sediment dispersal / distribution effects.

The settling velocity, defined as the terminal velocity of a particle still in fluid, was calculated using Equations 101a, 101b and 101c from 'Dynamics of Marine Sands' (Soulsby, 1997). The equations take into account the diameter and density of the sediment, and the viscosity of water.

The skin friction velocity, defined as the friction between the solid surface of the sediment and the water flowing over it, was calculated using Equation 35 from 'Dynamics of Marine Sands' (Soulsby, 1997). The equation assumes a flat seabed, with no ripples, dunes or sand waves. Key inputs include the median grain size, height above the bed (assumed to be 0.01m – noting the calculation is highly sensitive to this parameter which indicates a potential limitation of this semi-empirical method) and the bed current.

If the skin friction velocity is found to be greater than the settling velocity, it can be assumed that the sediment will remain in suspension once motion is initiated. This was found to be the case at the following grab stations, during peak spring current velocities:

- UK_09
- UK_10
- UK_11
- UK_15
- UK_19
- UK_56
- UK_57
- UK_58
- UK_59
- UK_61

Sediment was estimated to remain in suspension at the following grab stations, during peak neap current velocities:

- UK_57
- UK_58
- UK_59
- UK_61

For each of the above grab stations, further analysis was undertaken to determine the duration that the sediment could potentially remain in suspension. The hourly depth-averaged current velocities were extracted from DHI's global model for the peak spring tidal cycle. These velocities were converted to bed velocities. This data was then used to calculate the skin friction and settling velocities at hourly intervals over the tidal cycle. The total time that sediment could remain suspended was estimated based on the maximum number of consecutive hours the skin friction velocity was greater than the settling velocity (refer to the results for grab station UK_09 in **Table 1** below as an example).

Table 1: Example of Maximum Time that Sediment remains in Suspension during a Peak Spring Tide (Grab Station UK_09)

TIME (HRS)	MODELLED DEPTH-AVERAGED CURRENTS, U_T (M/S)	BED CURRENT, $U_{T(Z)}$ (M/S)	SKIN FRICTION VELOCITY, U_{*S} (M/S)	SETTLING VELOCITY, W_S (M/S)	SEDIMENT REMAINS IN SUSPENSION?
6	0.38	0.11	0.007	0.0091	No
5	0.39	0.11	0.007	0.0091	No
4	0.56	0.16	0.010	0.0091	Yes
3	0.71	0.20	0.013	0.0091	Yes
2	0.73	0.20	0.013	0.0091	Yes

1	0.61	0.17	0.011	0.0091	Yes
0	0.44	0.12	0.008	0.0091	No
1	0.38	0.11	0.007	0.0091	No
2	0.51	0.14	0.009	0.0091	Yes
3	0.65	0.18	0.012	0.0091	Yes
4	0.69	0.19	0.012	0.0091	Yes
5	0.60	0.17	0.011	0.0091	Yes
6	0.44	0.12	0.008	0.0091	No

Based on the above example, the maximum time that sediment could remain in suspension at grab station UK_09 is estimated as 4 hours.

Sediment Dispersion

The data/ results above may be combined to estimate sediment dispersion distances and directions. This will inform site specific sediment 'plume' type impact considerations.

To calculate the distance that the sediment could disperse over, for the 10 grab stations where sediment may remain in suspension during peak spring currents (worst case), tidal ellipses were created using the calculated bed current (converted to knots) and the direction of the current (extracted from DHI's global model). An example tidal ellipse, for grab station UK_09, can be found in **Figure 2** below.

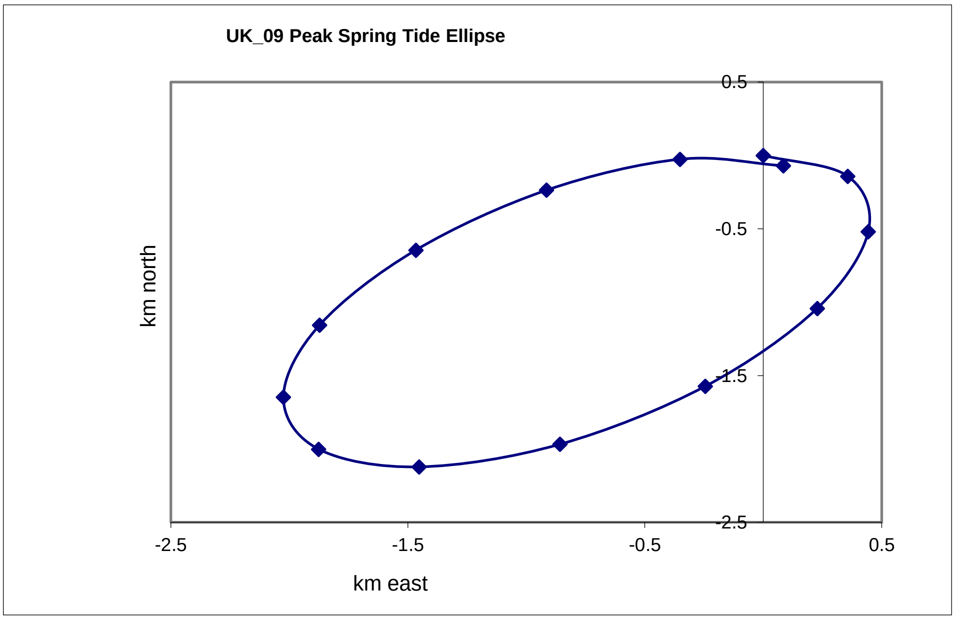


Figure 2: Example Tidal Ellipse for Peak Spring Currents (Grab Station UK_09)

During peak spring tides, the maximum distance travelled varied from approximately 0.7 km in deep water, to approximately 4 km in coastal waters (at grab stations located within Bideford Bay).

RESULTS

The results from the high-level assessment of sediment dispersion can be found in **Table 2** and **Table 3** below. For the full analysis results, refer to **Appendix A.**

The assessment found that sediments can be mobilised under baseline conditions during peak spring tide (and peak neap tide) current velocities (i.e. over the peak of the tidal cycle). This peak period represents approximately <3% of the overall time in that month – noting the month chosen represented a worst case over the year. This applies across most of the Offshore Cable Corridor, due to the predominantly sandy bed sediment.

Where sediments are disturbed by Proposed Development activities, sediment could be held in suspension at 10 locations during peak spring currents and is expected to travel towards the south-west. The maximum distance travelled has been estimated to be 4 km.

For peak neap currents, sediment could be held in suspension at 4 locations and travel in a north-easterly direction. The maximum distance travelled has been estimated to be 1.1 km.

Table 2: Results of Sediment Dispersion for Peak Spring Currents

GRAB STATION ID	WATER DEPTH (M)	D_{50} (MM)	WENTWORTH CLASSIFICATION	ESTIMATED PEAK SPRING BED CURRENT, $U_{T(Z)}$ (M/S)	SEDIMENT MOBILISED AND REMAINS IN SUSPENSION	MAXIMUM TIME IN SUSPENSION (HRS)	PREDOMINANT DIRECTION TRAVELLED	MAXIMUM DISTANCE TRAVELLED (KM)
UK_09	123.3	0.13	Fine Sand	0.20	Yes	4	South-West	~1.9
UK_10	120.2	0.14	Fine Sand	0.20	Yes	3	South-West	~1.3
UK_11	117.4	0.15	Fine Sand	0.19	Yes	2	South-West	~0.7
UK_15	114.3	0.14	Fine Sand	0.18	Yes	2	South-West	~0.7
UK_19	104.1	0.09	Very Fine Sand	0.18	Yes	5	South-West	~2.0
UK_56	22.3	0.21	Fine Sand	0.32	Yes	1	South-West	~0.1
UK_57	20.1	0.11	Very Fine Sand	0.33	Yes	5	South-West	~3.8
UK_58	18.5	0.12	Very Fine Sand	0.34	Yes	5	South-West	~3.9
UK_59	13.5	0.14	Fine Sand	0.39	Yes	4	South-West	~3.3
UK_61	10.1	0.15	Fine Sand	0.45	Yes	4	South-West	~3.8

Table 3: Results of Sediment Dispersion for Peak Neap Currents

GRAB STATION ID	WATER DEPTH (M)	D_{50} (MM)	WENTWORTH CLASSIFICATION	ESTIMATED PEAK NEAP BED CURRENT, $U_{T(Z)}$ (M/S)	SEDIMENT MOBILISED AND REMAINS IN SUSPENSION	MAXIMUM TIME IN SUSPENSION (HRS)	PREDOMINANT DIRECTION TRAVELLED	MAXIMUM DISTANCE TRAVELLED (KM)
UK_57	20.1	0.11	Very Fine Sand	0.17	Yes	3	North-East	~1.0
UK_58	18.5	0.12	Very Fine Sand	0.17	Yes	3	North-East	~1.1
UK_59	13.5	0.14	Fine Sand	0.19	Yes	2	North-East	~0.7
UK_61	10.1	0.15	Fine Sand	0.22	Yes	2	North-East	~0.8

ASSUMPTIONS AND LIMITATONS

Despite known limitations, the results provide a reasonable estimate of potential sediment dispersion (distance and direction).

The following assumptions and limitations are recognised as part of this assessment:

- This is a high-level analysis, using semi-empirical methods which have recognised limitations. For example, the calculations assume a flat, sandy bed (not applicable at all grab stations) and a constant temperature throughout the water column.
- This approach is based on 2d depth-averaged currents, converted to bed currents. 3D effects are not considered, nor are the effects of surges or waves (which could be influential in shallow water).
- The analysis considered within this report indicates that sediment is only mobilised/ put into suspension (under baseline conditions) during peak spring (and neap) tide current velocities, which represents <3% of the overall time (for the worst-case months tested).
- The metocean data has been extracted from DHI's global model. This data is modelled and has not been calibrated/ validated against measured data (metocean data are not available for this project).
- The results do not include concentrations of sediment likely to be suspended due to the plant to be used (for different activities at different locations) as further detail is needed in this respect from the contractor/ designer. Peak, near activity concentration uplifts may be considered separately to this sediment dispersion assessment.
- The assessment process does not consider the resuspension of sediments within the tidal cycle.

CONCLUSIONS AND NEXT STEPS

Proposed Development activities (e.g. construction activities such as trenching) have the potential to disturb seabed sediment and an assessment of sediment dispersion was required to inform Environmental Impact Assessment (EIA).

A high-level assessment of potential sediment dispersion has been undertaken, using tidal current velocities (obtained from the DHI MIKE Global Tide Model) and the results from the sub-tidal sediment grab surveys.

The assessment showed that sediment will be mobilised along most of the Offshore Cable Corridor (characterised by predominantly sandy bed sediments) under baseline conditions. Baseline sediment mobilisation can occur during peak spring (and neap) tide current velocities (representing approximately <3% of overall time of the worst case months tested.

If disturbed by activities associated with the Proposed Development, sediment would be expected to go into suspension at a maximum of 10 locations (out of the 51 representative locations) and is expected to travel towards the south-west (peak springs) or north-east (peak neaps). The maximum distance travelled has been estimated to be 4 km (during peak spring tide conditions). Whilst concentrations are unknown, the volumes of dispersed sediment are likely to be generally small – given the small scale and transient nature of the activities (at any one location).

It is recommended that the scope of these assessments is discussed with regulators to confirm if the current level of detail is sufficient to support the final EIA studies (sufficient to support final Environmental Statement assessments).

REFERENCES

Soulsby (1997), Dynamics of marine sands : a manual for practical applications; Telford, London, 1997.

APPENDIX A

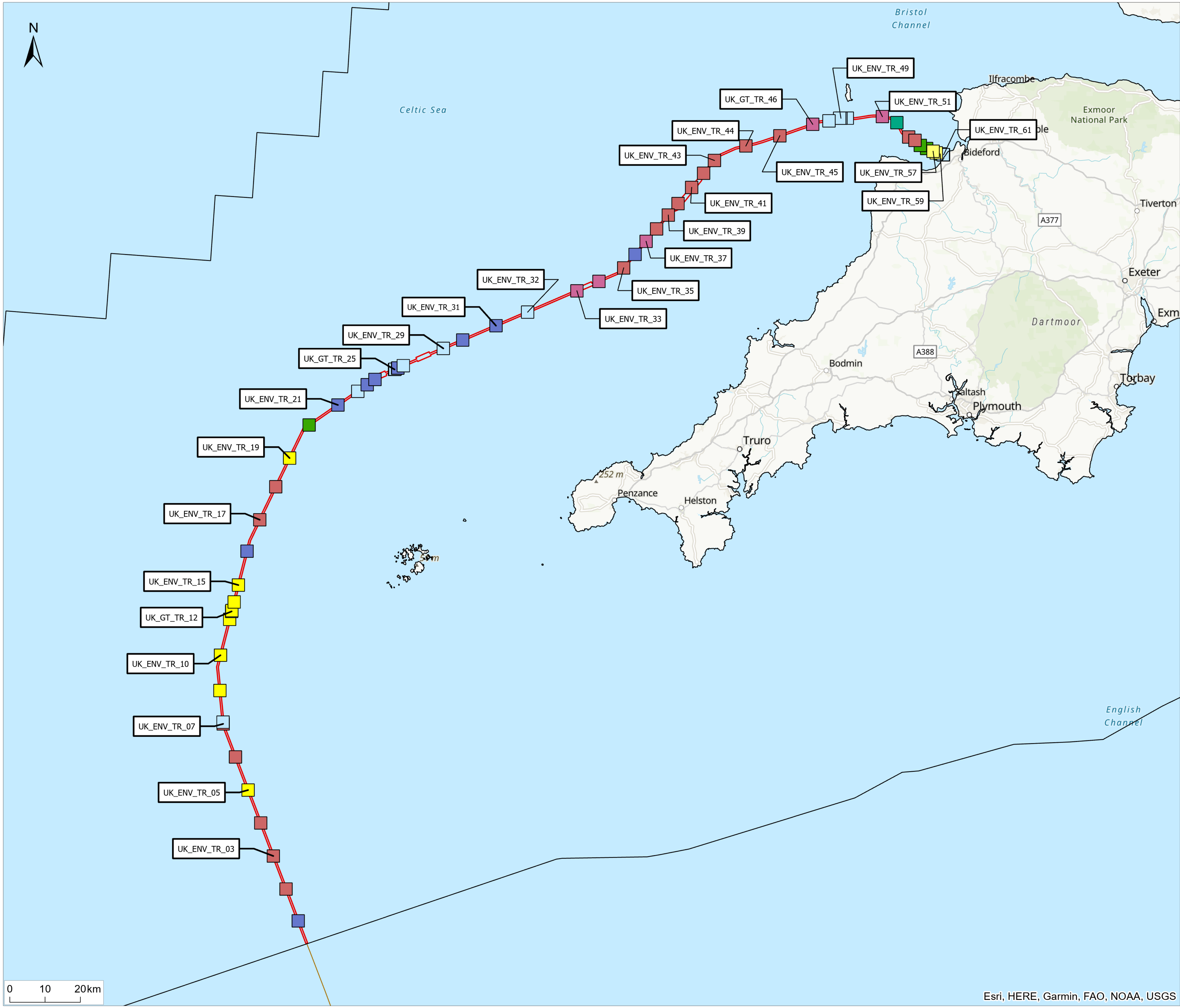
Appendix A.1: Sediment Dispersion Results for Peak Spring Currents

Sediment Sampling Station	Chainage	Water Depth (m)	D_{50} (mm)	Wentworth Classification	Modelled Depth-Averaged Currents, u_t (m/s)	Bed Current, $u_{t(z)}$ (m/s)	Is Motion of Sediment Initiated?	Settling Velocity, w_s (m/s)	Skin Friction Velocity, u_{*s} (m/s)	Sediment Remains in Suspension?	Max. Time in Suspension (Hrs)	Direction Travelled	Max. Distance Travelled (km)
UK_01	0.1	125.8	0.42	Medium Sand	0.86	0.35	Yes	0.05	0.03	No			
UK_02	0.2	124.4	0.35	Medium Sand	0.86	0.27	Yes	0.04	0.02	No			
UK_03	0.3	119.8	0.33	Medium Sand	0.86	0.27	Yes	0.04	0.02	No			
UK_04	0.4	119.4	0.29	Medium Sand	0.86	0.27	Yes	0.03	0.02	No			
UK_05	0.5	111.0	0.24	Fine Sand	0.82	0.23	Yes	0.03	0.02	No			
UK_06	0.6	118.4	0.26	Medium Sand	0.79	0.24	Yes	0.03	0.02	No			
UK_07	0.7	118.6	0.25	Medium Sand	0.76	0.24	Yes	0.03	0.02	No			
UK_09	0.8	120.0	0.13	Fine Sand	0.73	0.20	Yes	0.01	0.01	Yes	4 Hours	South West	1.89
UK_10	0.9	117.0	0.14	Fine Sand	0.70	0.20	Yes	0.01	0.01	Yes	3 Hours	South West	1.28
UK_11	1.0	114.2	0.15	Fine Sand	0.68	0.19	Yes	0.01	0.01	Yes	2 Hours	South West	0.68
UK_13	1.0	110.0	0.19	Fine Sand	0.67	0.19	Yes	0.02	0.01	No			
UK_14	1.0	110.5	0.16	Fine Sand	0.67	0.19	Yes	0.01	0.01	No			
UK_15	1.0	111.0	0.14	Fine Sand	0.66	0.18	Yes	0.01	0.01	Yes	2 Hours	South West	0.66
UK_16	1.1	108.0	1	Coarse Sand	0.64	0.20	No	0.11	0.02	No			
UK_17	1.2	107.5	0.47	Medium Sand	0.63	0.20	No	0.06	0.02	No			
UK_18	1.3	106.0	0.48	Medium Sand	0.63	0.20	No	0.06	0.02	No			
UK_19	1.4	100.7	0.09	Very Fine Sand	0.63	0.18	Yes	0.00	0.01	Yes	5 Hours	South West	2.02
UK_20	1.5	99.0	0.34	Medium Sand	0.62	0.19	Yes	0.04	0.01	No			
UK_21	1.7	97.0	0.71	Coarse Sand	0.63	0.20	No	0.09	0.02	No			
UK_23	1.8	96.0	0.7	Coarse Sand	0.63	0.20	No	0.09	0.02	No			
UK_24	1.8	96.0	1.07	Very Coarse Sand	0.63	0.20	No	0.12	0.02	No			
UK_27	1.9	95.0	0.9	Coarse Sand	0.62	0.19	No	0.10	0.02	No			
UK_30	2.2	90.0	0.67	Coarse Sand	0.64	0.20	No	0.08	0.02	No			
UK_31	2.3	85.4	0.53	Coarse Sand	0.67	0.21	Yes	0.07	0.02	No			
UK_33	2.6	76.1	1.24	Very Coarse Sand	0.74	0.24	No	0.13	0.02	No			
UK_34	2.7	73.8	1.88	Very Coarse Sand	0.74	0.24	No	0.17	0.02	No			
UK_35	2.8	70.9	0.47	Medium Sand	0.75	0.24	Yes	0.06	0.02	No			
UK_36	2.9	72.0	0.55	Coarse Sand	0.76	0.25	Yes	0.07	0.02	No			
UK_37	2.9	72.3	2.13	Very Fine Pebbles	0.77	0.11	No	0.18	0.01	No			
UK_38	3.0	71.7	0.45	Medium Sand	0.78	0.25	Yes	0.06	0.02	No			
UK_39	3.1	71.2	0.37	Medium Sand	0.79	0.26	Yes	0.05	0.02	No			
UK_40	3.1	71.9	0.37	Medium Sand	0.80	0.26	Yes	0.05	0.02	No			
UK_41	3.2	71.6	0.32	Medium Sand	0.81	0.26	Yes	0.04	0.02	No			
UK_42	3.2	70.2	0.31	Medium Sand	0.81	0.26	Yes	0.04	0.02	No			
UK_43	3.3	69.6	0.28	Medium Sand	0.80	0.26	Yes	0.03	0.02	No			
UK_44	3.4	66.4	0.27	Medium Sand	0.86	0.28	Yes	0.03	0.02	No			
UK_45	3.6	61.2	0.27	Medium Sand	0.97	0.31	Yes	0.03	0.02	No			
UK_46	3.7	56.3	0.96	Coarse Sand	1.15	0.37	Yes	0.11	0.03	No			
UK_51	4.0	48.3	1.14	Very Coarse Sand	1.20	0.39	Yes	0.12	0.03	No			
UK_52	4.0	42.6	8.6	Medium Pebbles	1.16	0.17	No	0.37	0.02	No			
UK_53	4.1	26.7	0.33	Medium Sand	1.02	0.34	Yes	0.04	0.03	No			
UK_54	4.1	17.3	0.27	Medium Sand	1.02	0.36	Yes	0.03	0.03	No			
UK_55	4.2	18.3	0.23	Fine Sand	0.98	0.31	Yes	0.02	0.02	No			
UK_56	4.2	18.4	0.21	Fine Sand	0.99	0.32	Yes	0.02	0.02	Yes	1 Hour	South West	0.05
UK_57	4.2	16.3	0.11	Very Fine Sand	1.03	0.33	Yes	0.01	0.02	Yes	5 Hours	South West	3.79
UK_58	4.2	14.7	0.12	Very Fine Sand	1.06	0.34	Yes	0.01	0.02	Yes	5 Hours	South West	3.92
UK_59	4.2	9.8	0.14	Fine Sand	1.14	0.39	Yes	0.01	0.03	Yes	4 Hours	South West	3.33
UK_61	4.2	6.6	0.15	Fine Sand	1.26	0.45	Yes	0.01	0.03	Yes	4 Hours	South West	3.81

Appendix A.2: Sediment Dispersion Results for Peak Neap Currents

Sediment Sampling Station	Chainage	Water Depth (m)	D_{50} (mm)	Wentworth Classification	Modelled Depth-Averaged Currents, u_t (m/s)	Bed Current, $u_{t(z)}$ (m/s)	Is Motion of Sediment Initiated?	Settling Velocity, w_s (m/s)	Skin Friction Velocity, u_{*s} (m/s)	Sediment Remains in Suspension?	Max. Time in Suspension (Hrs)	Direction Travelled	Max. Distance Travelled (km)
UK_01	0.1	125.8	0.42	Medium Sand	0.35	0.14	No	0.05	0.01	No			
UK_02	0.2	124.4	0.35	Medium Sand	0.35	0.11	No	0.04	0.01	No			
UK_03	0.3	119.8	0.33	Medium Sand	0.35	0.11	No	0.04	0.01	No			
UK_04	0.4	119.4	0.29	Medium Sand	0.35	0.11	No	0.03	0.01	No			
UK_05	0.5	111.0	0.24	Fine Sand	0.33	0.09	No	0.03	0.01	No			
UK_06	0.6	118.4	0.26	Medium Sand	0.32	0.10	No	0.03	0.01	No			
UK_07	0.7	118.6	0.25	Medium Sand	0.30	0.09	No	0.03	0.01	No			
UK_09	0.8	120.0	0.13	Fine Sand	0.29	0.08	No	0.01	0.01	No			
UK_10	0.9	117.0	0.14	Fine Sand	0.28	0.08	No	0.01	0.01	No			
UK_11	1.0	114.2	0.15	Fine Sand	0.27	0.08	No	0.01	0.01	No			
UK_13	1.0	110.0	0.19	Fine Sand	0.27	0.08	No	0.02	0.01	No			
UK_14	1.0	110.5	0.16	Fine Sand	0.27	0.08	No	0.01	0.01	No			
UK_15	1.0	111.0	0.14	Fine Sand	0.27	0.07	No	0.01	0.00	No			
UK_16	1.1	108.0	1	Coarse Sand	0.26	0.08	No	0.11	0.01	No			
UK_17	1.2	107.5	0.47	Medium Sand	0.25	0.08	No	0.06	0.01	No			
UK_18	1.3	106.0	0.48	Medium Sand	0.25	0.08	No	0.06	0.01	No			
UK_19	1.4	100.7	0.09	Very Fine Sand	0.25	0.07	No	0.00	0.00	No			
UK_20	1.5	99.0	0.34	Medium Sand	0.25	0.08	No	0.04	0.01	No			
UK_21	1.7	97.0	0.71	Coarse Sand	0.25	0.08	No	0.09	0.01	No			
UK_23	1.8	96.0	0.7	Coarse Sand	0.25	0.08	No	0.09	0.01	No			
UK_24	1.8	96.0	1.07	Very Coarse Sand	0.25	0.08	No	0.12	0.01	No			
UK_27	1.9	95.0	0.9	Coarse Sand	0.25	0.08	No	0.10	0.01	No			
UK_30	2.2	90.0	0.67	Coarse Sand	0.27	0.08	No	0.08	0.01	No			
UK_31	2.3	85.4	0.53	Coarse Sand	0.28	0.09	No	0.07	0.01	No			
UK_33	2.6	76.1	1.24	Very Coarse Sand	0.31	0.10	No	0.13	0.01	No			
UK_34	2.7	73.8	1.88	Very Coarse Sand	0.32	0.10	No	0.17	0.01	No			
UK_35	2.8	70.9	0.47	Medium Sand	0.33	0.11	No	0.06	0.01	No			
UK_36	2.9	72.0	0.55	Coarse Sand	0.33	0.11	No	0.07	0.01	No			
UK_37	2.9	72.3	2.13	Very Fine Pebbles	0.34	0.05	No	0.18	0.00	No			
UK_38	3.0	71.7	0.45	Medium Sand	0.34	0.11	No	0.06	0.01	No			
UK_39	3.1	71.2	0.37	Medium Sand	0.35	0.11	No	0.05	0.01	No			
UK_40	3.1	71.9	0.37	Medium Sand	0.35	0.11	No	0.05	0.01	No			
UK_41	3.2	71.6	0.32	Medium Sand	0.36	0.12	No	0.04	0.01	No			
UK_42	3.2	70.2	0.31	Medium Sand	0.37	0.12	No	0.04	0.01	No			
UK_43	3.3	69.6	0.28	Medium Sand	0.38	0.12	No	0.03	0.01	No			
UK_44	3.4	66.4	0.27	Medium Sand	0.41	0.13	No	0.03	0.01	No			
UK_45	3.6	61.2	0.27	Medium Sand	0.47	0.15	No	0.03	0.01	No			
UK_46	3.7	56.3	0.96	Coarse Sand	0.55	0.18	No	0.11	0.02	No			
UK_51	4.0	48.3	1.14	Very Coarse Sand	0.60	0.20	No	0.12	0.02	No			
UK_52	4.0	42.6	8.6	Medium Pebbles	0.58	0.08	No	0.37	0.01	No			
UK_53	4.1	26.7	0.33	Medium Sand	0.51	0.17	Yes	0.04	0.01	No			
UK_54	4.1	17.3	0.27	Medium Sand	0.51	0.18	Yes	0.03	0.01	No			
UK_55	4.2	18.3	0.23	Fine Sand	0.49	0.16	Yes	0.02	0.01	No			
UK_56	4.2	18.4	0.21	Fine Sand	0.50	0.16	Yes	0.02	0.01	No			
UK_57	4.2	16.3	0.11	Very Fine Sand	0.52	0.17	Yes	0.01	0.01	Yes	3 Hours	North East	1.02
UK_58	4.2	14.7	0.12	Very Fine Sand	0.53	0.17	Yes	0.01	0.01	Yes	3 Hours	North East	1.06
UK_59	4.2	9.8	0.14	Fine Sand	0.57	0.19	Yes	0.01	0.01	Yes	2 Hours	North East	0.70
UK_61	4.2	6.6	0.15	Fine Sand	0.63	0.22	Yes	0.01	0.01	Yes	2 Hours	North East	0.80

APPENDIX B



Notes
1. This plan is scaled at paper size A3. If received electronically it is the recipients responsibility to print to the correct scale. Only written dimensions should be used.

Legend

- Xlinks UK Offshore Cable Corridor
- Indicative Cable Centreline
- UK Exclusive Economic Zone (EEZ)

Wentworth Classification

- Coarse Sand
- Fine Sand
- Medium Sand
- No Grab
- Pebble
- V.Coarse Sand
- V.Fine Sands

Rev	Description	By	CB	Date
P01	First Draft	CE/WM	TM	19/01/24

Client: Xlinks 1 Limited

Project: Xlinks Morocco-UK Power Project

Title: Locations of Sediment Data

Status	Drawn By	PM/Checked By
DRAFT	CE/WM	TM

Drawing Number	Scale @ A3	Date Created
794-PLN-ESH-00087	1:1,000,000	Feb 2024

Figure Number: 8.8

Rev: P01

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