The Great Grid Upgrade

Sea Link

Preliminary Environmental Information Report

Volume: 1

Part 4 Offshore Scheme

Chapter 11 Offshore Scheme Intra-Project Cumulative Effects

Version A

October 2023

nationalgrid

Page intentionally blank

Contents

Table of Images

Table of Tables

Sea Link
Document control

Document Properties	
Organisation	AECOM
Author	AECOM
Approved by	AECOM
Title	Preliminary Environmental Information Report Part 4, Chapter 11, Offshore Scheme Intra-Project Cumulative Effects
Data Classification	Public

Version History

Date	Version	Status	Description/Changes
24/10/2023	A	FINAL	First issue

4.11 Offshore Scheme Intra-Project Cumulative Effects

4.11.1 Introduction

4.11.1.1 This chapter of the Preliminary Environmental Information Report (PEIR) presents how the preliminary intra-project cumulative effects assessment has considered the potential significant cumulative effects that may arise from the Proposed Project (where a single receptor is affected by multiple aspects of a project, worsening the effect). A description of intra-project cumulative effects and the methodology is presented in **Volume 2, Appendix 1.5.A, Cumulative Effects Assessment Methodologies.**

4.11.1.2 The draft Order Limits, which illustrate the boundary of the Proposed Project, are illustrated on **Figure 1.1.1 Draft Order Limits** and the Offshore Scheme Boundary is illustrated on **Figure 1.1.4 Offshore Scheme Boundary**.

4.11.1.3 This chapter should be read in conjunction with:

- **Volume 1, Part 1, Chapter 4, Description of the Proposed Project**;
- **Volume 1, Part 1, Chapter 5, PEIR Approach and Methodology**;
- **Volume 1, Part 1, Chapter 6, Scoping Opinion and EIA Consultation**; and
- **Volume 1, Part 4, Chapter 1, Evolution of the Offshore Scheme**.

4.11.1.4 This chapter is supported by the following appendices:

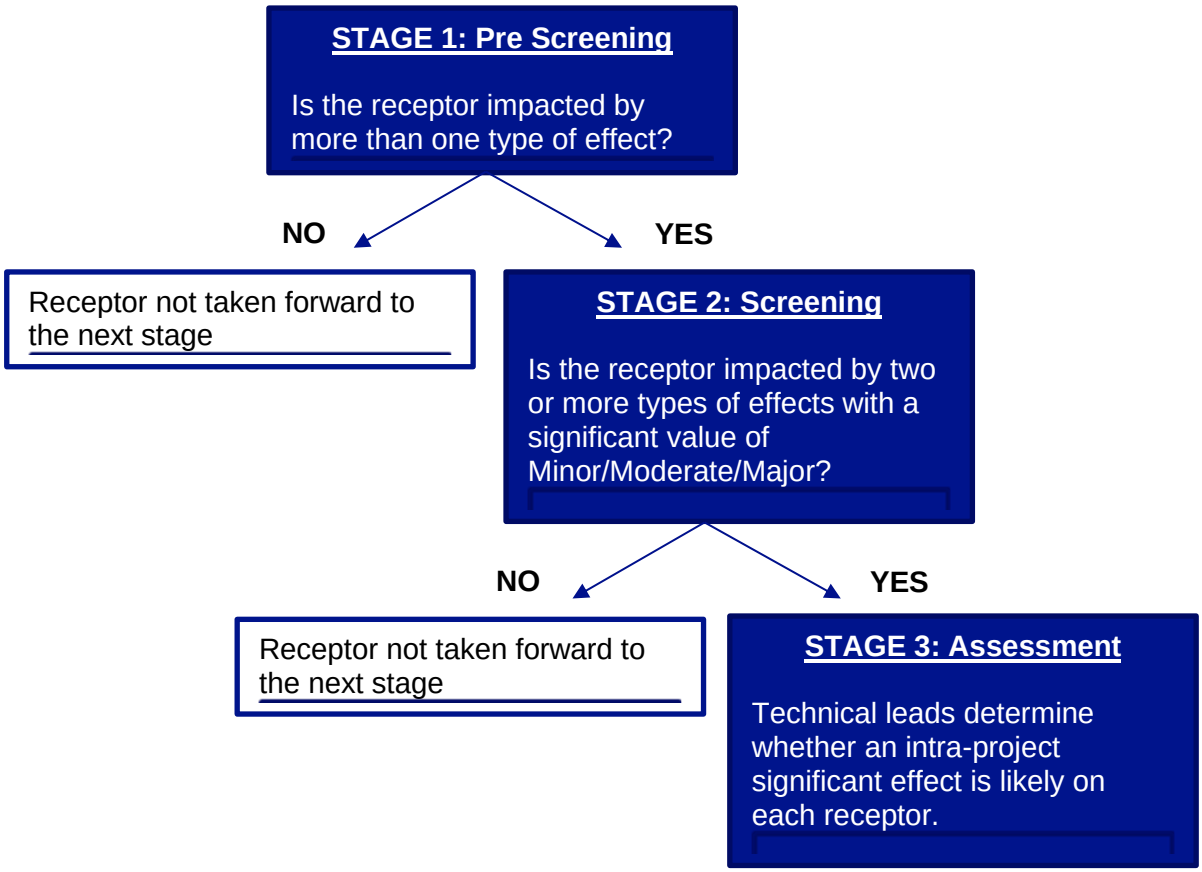
- **Volume 2, Appendix 1.4.A, Outline Code of Construction Practice**;
- **Volume 2, Appendix 1.4.F, Outline Schedule of Environmental Commitments and Mitigation Measures;** and
- **Volume 2, Appendix 1.5.A, Cumulative Effects Assessment Methodologies**.

4.11.1.5 Intra-project cumulative effects (sometimes referred to as combined or interactive effects) occur where a single receptor is affected by more than one source of effect arising from different aspects on the Proposed Project. An example of an intra-project effect would be where a local community is affected by dust, noise, and traffic disruption during the construction of the Proposed Project, with the result being a greater level of nuisance than each individual effect alone.

4.11.1.6 It is proposed to undertake the assessment of intra-project cumulative effects using a three-stage approach. The first stage consists of a pre-screening exercise to determine whether a receptor is exposed to more than one type of effect. Those receptors identified as experiencing more than one type of effect will be taken through to the second stage. The second stage will consist of a screening exercise to identify the significance each type of effect has on each receptor. Those receptors exposed to two or more types of effect, with a significance of effect greater than negligible, will be taken forward to the third stage. The third stage is the main intra-project assessment, which

will consider if the combination of effects is likely to lead to overall effects of greater significance. Image 4.11.1 presents this three-stage approach.

Image 4.11.1 Methodological approach to identifying intra-project cumulative effects



4.11.2 Assessment

Stage 1 - Offshore Pre-Screening Assessment

4.11.2.1 The assessment considers residual effects only i.e., effects after the application of all mitigation including Control and Management Measures (**Volume 2, Appendix 1.4.A Outline Code of Construction Practice**), Embedded Mitigation and any additional mitigation listed within each topic chapter. Residual effects are presented in section 9 of each of the technical chapters in **Volume 1, Part 4, Chapters 2 to 10**.

4.11.2.2 Where this stage identifies that there was only one type of effect for a particular receptor, or only one topic had identified effects on that receptor, it is considered that there is no potential for an intra-project effect to occur and the receptor is not taken forward to screening stage 2.

4.11.2.3 The pre-screening assessments are summerised in Table 4.11.1 and in detail in Table 4.11.2 to Table 4.11.10.

Table 4.11.1. Stage 1 – Pre- screening (shared receptors)

Receptor	Physical Environment	Benthic Ecology	Fish and Shellfish	Marine Mammals	Ornithology	Marine Archaeology	Shipping and Navigation	Commercial Fisheries	Other Sea Users
Water column	■								
Water quality	■								
Seabed morphology	■								
Suffolk and Kent coastline	■								
Coraline Crag Ridges	■								
Sizewell B and C power plant water intake	■								
Seabed Bathymetry	■								
Benthic Habitats		■							
Benthic Species		■							
Fish and Shellfish			■						
Marine Mammals				■					
Seabirds and waterbirds.					■				
Sub-seabed heritage receptors						■			
Buried intertidal heritage receptors						■			
Seabed heritage receptors						■			
Historic seascape						■			
Passing vessels (all categories)							■		
Vessel frequently using established routes							■		
Fishing vessels							■		

Receptor	Physical Environment	Benthic Ecology	Fish and Shellfish	Marine Mammals	Ornithology	Marine Archaeology	Shipping and Navigation	Commercial Fisheries	Other Sea Users
Anchoring vessels							■		
Deep draught vessels							■		
Vessels navigating with magnetic compass							■		
Mobile fishing gear								■	
Static fishing gear								■	
Recreational boating									■
Recreational fishing									■
Oil and Gas									■
Carbon Capture									■
Offshore Wind									■
Minerals and aggregates									■
Dredging and disposal									■
Military practice areas									■
Pipelines and cables									■
Aquaculture									■

Table 4.11.2. Physical processes receptors – Summary of preliminary environmental information

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
Physical Processes					
Water Column & Water Quality	Chapter 4.2 Physical Processes	***Construction, Operation and Decommissioning:*** Temporarily increased suspended sediment concentrations (SSC) during cable pre-installation and installation activities as well as the landfall exit pit excavation. Localised scouring resulting in sediment resuspension in the water column from cable protection affecting currents. ***Construction and Decommissioning:*** Offshore and nearshore alteration of water quality through disturbance of potentially contaminated sediment.	**Not Significant**	The preliminary assessment of effects indicates that there are no likely significant effects from project activities on the physical environment associated with the Offshore Scheme. High confidence that the predicted intra project residual cumulative effect on physical environmental receptors is not significant. Impacts on these receptors are assessed fully in **Volume 1, Part 4, Chapter 3, Physical Environment** and not shared and assessed separately within other topic chapters.	**No**
Seabed Morphology	Chapter 4.2 Physical Processes	***Construction and Decommissioning:*** Changes to nearshore seabed morphology (the shape of the sea floor), caused by trenchless	**Not Significant**		**No**

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
		installation techniques at landfall. Changes in seabed morphology from the placement/removal of rock protection and pre-installation techniques.			
Suffolk and Kent coastline morphology, including Sandwich Bay to Hacklinge Marshes SSSI and The Haven SSSI	Chapter 4.2 Physical Processes	***Construction and Decommissioning:*** Changes to coastal morphology (shape of the coast) due to installation of the cable including trenchless techniques at landfall.	**Not Significant**		**No**
Coraline Crag Ridges	Chapter 4.2 Physical Processes	***Construction and decommissioning****:* Suspension and eventual sedimentation smothering benthic habitats during cable installation and decommissioning. ***Operation:*** Climate change that occurs over the operational lifetime of the project may result in increased storminess and sea level rise that may cause erosion or damage to this geologically resistant feature.	**Not Significant**		**No**

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
Sizewell B and C power plant water intake	Chapter 4.2 Physical Processes	***Construction, Operation and Decommissioning:*** Changes to the water intake patterns and water quality in the vicinity of the Sizewell offshore intake sites caused by the Construction, Operation & Decommissioning activities.	**Not Significant**		**No**
Seabed Bathymetry	Chapter 4.2 Physical Processes	***Operation****:* Interaction between the cable and cable protection with currents creating turbulence which creates seabed scour.	**Not Significant**		**No**

Table 4.11.3. Benthic ecology receptors – Summary of preliminary environmental information

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
Benthic Ecology					
Benthic Ecology (Habitats and Species)	Chapter 4.3 Benthic Ecology	***Construction and Decommissioning****:* Direct loss of subtidal benthic habitats and species due to placement of hard substrates on the seabed for cable protection. Temporary disturbance to subtidal benthic habitats and species from cable installation activities. Temporary increase in SSC and sediment deposition leading to increased turbidity and smothering effects and possible contaminant mobilisation during cable installation. Introduction of invasive non-native species. Underwater sound. ***Operation****:* Potential effects on benthic ecology due to subsea cable EMF emissions altering foraging behaviour. Potential effects on benthic ecology due to subsea cable thermal emissions altering foraging behaviour.	**Not Significant**	The preliminary assessment of effects indicates that there are no likely significant effects from project activities on benthic ecology associated with the Offshore Scheme. High confidence that the predicted intra project residual cumulative effect on benthic ecology receptors is not significant. Impacts on this receptor are assessed fully in **Volume 1, Part 4, Chapter 4, Benthic Ecology** and not shared and assessed separately within other topic chapters.	**No**

Table 4.11.4. Fish and shellfish – Summary of preliminary environmental information

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
Fish and Shellfish					
Fish and Shellfish	Chapter 4 Fish and Shellfish	***Construction:*** Temporary disturbance from cable installation activities. Permanent habitat loss for fish and shellfish due to the placement of hard substrate cable protection such as rock placement and concrete mattresses. Temporary increase in SSC. Underwater sound. ***Operation****:* Potential effects on fish and shellfish due to subsea cable EMF emissions altering foraging behaviour. Potential effects on fish and shellfish due to subsea cable thermal emissions altering foraging behaviour.	**Not Significant**	The preliminary assessment of effects indicates that there are no likely significant effects from project activities on fish and shellfish associated with the Offshore Scheme. High confidence that the predicted intra project residual cumulative effect on fish and shellfish receptors is not significant. Impacts on this receptor are assessed fully in **Volume 1, Part 4, Chapter 4, Fish and Shellfish** and not shared assessed separately within other topic chapters.	**No**

Table 4.11.5. Marine mammals receptors – Summary of preliminary environmental information

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
Mammals					
All Marine Mammals	Chapter 5 Marine Mammals	***Construction, Maintenance, and Decommissioning****:* Underwater noise disturbance from pre installation and cable/ cable protection activities. Indirect effects through impacts to prey species. Airborne sounds and visual disturbance. Vessel collision risk. ***Operation****:* EMF emissions disturbance.	**Not Significant**	The preliminary assessment of effects indicates that there are no likely significant effects from project activities on marine mammals associated with the Offshore Scheme. High confidence that the predicted intra project residual cumulative effect on marine mammal receptors is not significant. Impacts on this receptor are assessed fully in **Volume 1, Part 4, Chapter 5, Marine mammals** and not assessed separately within other topic chapters.	**No**

Table 4.11.6. Ornithology receptors – Summary of preliminary environmental information

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
Ornithology Receptors					
All Species	Chapter 6 Ornithology	***All phases:*** Disturbance and displacement of birds. Alteration of water quality due to increased SSC and disturbance of contaminated sediment. Direct loss and disturbance of seabed habitat (including, associated prey) used by foraging seabirds and waterbirds.	**Not Significant**	The preliminary assessment of effects indicates that only significant effects to red throated diver through direct disturbance and displacement of birds is identified for the Proposed Project. No other pathways are identified as significantly affecting this species. The preliminary assessment of effects indicates that significant effects to other species is not likely. High confidence that the predicted intra project residual cumulative effect on ornithological receptors is not significant. Impacts on this receptor are assessed fully in **Volume 1, Part 4, Chapter 6, Ornithology** and not shared and assessed separately within other topic chapters.	**No**

Table 4.11.7. Marine archaeology – Summary of preliminary environmental information

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
Marine Archaeology					
Seabed heritage receptors (known and potential maritime and aviation features)	Chapter 7 Marine Archaeology	***Construction:*** Indirect changes to hydrodynamic and sedimentary regimes. Disturbance from vessel activity. Disturbance from placement of cable protection. ***Operation:*** Indirect changes to hydrodynamic and sedimentary regimes. ***Maintenance:*** Indirect changes to hydrodynamic and sedimentary regimes. Disturbance from vessel activity. ***Decommissioning:*** Indirect changes to hydrodynamic and sedimentary regimes. Disturbance from vessel activity.	**Not Significant**	The preliminary assessment of effects indicates that there are no likely significant effects from project activities on seabed heritage receptors associated with the Offshore Scheme. High confidence that the predicted intra project residual cumulative effect on seabed heritage receptors is not significant. Impacts on this receptor are assessed fully in **Volume 1, Part 4, Chapter 7, Marine Archaeology** and not shared and assessed separately within other topic chapters.	**No**
Buried intertidal heritage	Chapter 7	***Construction:***	**Not Significant**		**No**

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
receptors (known and potential palaeogeography, historic terrestrial, marine and aviation features)	Marine Archaeology	Disturbance from trenchless installation activities at landfall (including entry/ exit points offshore).			
Historic seascape	Chapter 7 Marine Archaeology	***Construction. Operation and Decommissioning:*** Project works that temporarily or permanently change the character of the historic seascape.	**Not Significant**		**No**

Table 4.11.8. Shipping and navigation – Summary of preliminary environmental information

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
Shipping and Navigation					
Passing Vessels (all categories)	Chapter 8 Shipping and Navigation	***Construction:*** Vessel on vessel collisions leading to loss of life and major damage to equipment. Obstruction of navigation routes. Gear snagging on project infrastructure. ***Operation and Maintenance***: Vessel drags anchor across exposed cable causing vessel and cable damage. Reduction in Under-Keel Clearance for vessels. ***Decommissioning:*** Vessel on vessel collisions leading to loss of life and major damage to equipment. Obstruction of navigation routes. Gear snagging.	**Not significant**	The preliminary assessment of effects indicates that there are no likely significant effects from project activities on shipping and Navigation receptors associated with the Offshore Scheme. High confidence that the predicted intra project residual cumulative effect on passing vessels is not significant. Impacts on this receptor are assessed fully in **Volume 1, Part 4, Chapter 8, Shipping and Navigation** and not shared and assessed separately within other topic chapters.	**No**

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
Vessels navigating with magnetic compass	Chapter 8 Shipping and Navigation	***Operation:*** EMF Interference with marine navigational equipment. Obstruction of navigation routes. ***Maintenance:*** EMF Interference with marine navigational equipment. Obstruction of navigation routes.	**Not significant**	The preliminary assessment of effects indicates that there are no likely significant effects from project activities on shipping and Navigation receptors associated with the Offshore Scheme. High confidence that the predicted intra project residual cumulative effect on passing vessels (navigating with magnetic compass) is not significant. This is due to impacts on this receptor being assessed fully in **Volume 1, Part 4, Chapter 8, Shipping and Navigation** and not shared and assessed separately within other topic chapters.	**No**

Table 4.11.9. Commercial fisheries – Summary of preliminary environmental information

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
Commercial Fisheries					
Mobile gear fisheries	Chapter 9 Commercial Fisheries	***All phases*:** Obstruction of navigation routes to commercial fishing grounds. Loss and alteration of fishing grounds. Displacement of commercial fishing activities. Loss or damage to fishing gear. Indirect effects on commercial fisheries as a result of impacts on the ecology of commercial species.	**Not significant**	The preliminary assessment of effects indicates that there are no likely significant effects from project activities on mobile fishing gear associated with the Offshore Scheme. High confidence that the predicted intra project residual cumulative effect on mobile gear fisheries will not be significant. Impacts on this receptor are assessed fully in **Volume 1, Part 4, Chapter 9, Commercial Fisheries** and not shared and assessed separately within other topic chapters.	**No**
Static gear fisheries	Chapter 9 Commercial Fisheries	***All phases:*** Obstruction of navigation routes to commercial fishing grounds. Loss and alteration of fishing grounds. Displacement of commercial fishing activities. Loss or damage to fishing gear.	**Not significant**	The preliminary assessment of effects indicates that there are no likely significant effects from project activities on static fishing gear associated with the Offshore Scheme. High confidence that the predicted intra project	**No**

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
		Indirect effects on commercial fisheries as a result of impacts on the ecology of commercial species.		residual cumulative effect on static gear fisheries will not be significant. Impacts on this receptor are assessed fully in **Volume 1, Part 4, Chapter 9, Commercial Fisheries** and not shared assessed separately within other topic chapters.	

Table 4.11.10. Other sea users – Summary of preliminary environmental information

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
Other Sea Users					
Recreational boating and fishing	Chapter 10 Other Sea Users	***Construction:*** Physical presence of vessels and collision risk and interacting with stationary or slow-moving traffic. Cable installation activities causing displacement. ***Operation, Maintenance and Decommissioning:*** Physical presence of vessels and collision risk and interacting with stationary or slow-moving traffic.	**Not Significant**	The preliminary assessment of effects indicates that there are no likely significant effects from project activities on other sea user receptors associated with the Offshore Scheme. High Confidence that residual, intra project effects on other sea users will not be significant. Impacts on this receptor are assessed fully in **Volume 1, Part 4, Chapter 10, Other Sea Users** and not shared and assessed separately within other topic chapters.	**No**
Offshore Infrastructure	Chapter 10 Other Sea Users	***Construction:*** Physical presence of vessels and collision risk and interacting with stationary or slow-moving traffic. Cable installation activities causing displacement. ***Operation and Maintenance:*** Physical presence of vessels and collision risk and interacting with stationary or slow-moving traffic.	**Not Significant**		**No**

Receptor	Relevant topic	Effects	Preliminary effect	Potential for Intra-Project cumulative effects	Taken through to stage 2
		Occupancy of the seabed. ***Decommissioning:*** Physical presence of vessels and collision risk and interacting with stationary or slow-moving traffic.			

Stage 2- Screening Assessment

Introduction

4.11.2.4 Where a potential for an intra-project effect has been identified at stage 1 (pre-screening), the receptors are taken through to stage 2 (screening).

Stage 2-screening assessment

4.11.2.5 Stage 1 (pre-screening) identified that no shared receptors were present across the Offshore Scheme topic chapters. Therefore, all marine receptors have been wholly assessed within each topic chapter, and therefore no receptors were taken through to stage 2.

Stage 3 - Preliminary Intra-Project Effects Assessment

4.11.2.6 No shared receptors were present across the Offshore Scheme topic chapters. Therefore, all marine receptors have been wholly assessed with in topic chapter and no intra-cumulative effects are anticipated for marine receptors during the Proposed Project.

4.11.3 Summary

4.11.3.1 Consideration has been given to the potential for various types of effects to affect the same receptor, a type of effect that is referred to as an ‘intra-project effect’ for the purposes of this assessment.

4.11.3.2 The preliminary assessment of intra-cumulative effects resulting from the Offshore Scheme has been assessed in accordance with the methodology set out in **Volume 2, Appendix 1.5.A, Cumulative Effects Assessment Methodologies**.

4.11.3.3 Shared receptors (receptors that are identified in more than one chapter) have been considered and a preliminary assessment of intra-project effects has been undertaken.

4.11.3.4 Where a receptor has been identified as only experiencing one effect or where only one topic has identified effects on that receptor, there is no potential for intra-cumulative effects. Stage 1 identified that that no shared receptors were present across the Offshore Scheme topic chapters.

4.11.3.5 A high confidence that residual intra project effects will **not be significant** has been applied to all marine receptors for the Offshore Scheme of the Proposed Project.

Page intentionally blank

National Grid plc
National Grid House,
Warwick Technology Park,
Gallows Hill, Warwick.
CV34 6DA United Kingdom

Registered in England and Wales
No. 4031152
nationalgrid.com