

18 CUMULATIVE IMPACTS

18.1 Introduction

18.1.1 This section of the Environmental Appraisal considers cumulative impacts that may arise during construction, operation and decommissioning of the Proposed Project. This is owing to interaction with other developments (that are not part of the existing baseline) in the area (inter-project effects), and interaction of impacts from individual environmental topic areas on a given receptor or resource associated with the Proposed Project (intra-project effects).

18.2 Legislation and Policy Content

18.2.1 The Anglesey and Gwynedd Joint Local Development Plan (Gwynedd Council, 2017) and the Eryri Local Development Plan (Snowdonia National Park Authority, 2019) are the main considerations for decision making regarding planning applications within respective jurisdictions.

18.2.2 In addition, as the Proposed Project includes works within the Dwyryd Estuary, consideration is also given to the proposed policies within the Welsh National Marine Plan which require that consideration is given to cumulative impacts.

18.3 Scope and Methodology

18.3.1 There are a number of approaches to the assessment of cumulative effects. These are described in detail in the 'Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions', prepared for the European Commission (DG X1) (Hyder, 1999)¹, which form the basis for the cumulative assessment undertaken as part of this Environmental Appraisal.

18.3.2 A search of the planning registers held by Gwynedd Council and Snowdonia National Park Authority was undertaken by RSK in January 2020 to identify development proposals within a defined Study Area comprising a 500m buffer applied to the Area of Search for Permanent and Temporary Works. Information was collated based on the following criteria:

- Developments currently in planning or consented within the last 5 years (excluding those planning applications which were refused or withdrawn);
- New build (or barn conversions) developments of a large scale (excluding minor residential or commercial alterations); and
- Where environmental assessment reporting is available to enable a potential cumulative assessment to be undertaken.

18.3.3 A list of potential projects for consideration was prepared and consisted of 26 applications in Gwynedd and 13 applications in Snowdonia National Park. The location of each of the applications was reviewed against the Study Area.

18.3.4 Based on the review, no cumulative projects were identified. Correspondence to confirm this position was received from Gwynedd Council and Snowdonia National Park Authority on 2nd September 2019.

¹ Hyder. (1999) Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions. May 1999. Prepared for the European Commission (DG X1).

18.4 Impact Interactions

- 18.4.1 Intra-relationships assessment requires assessment of the impacts of a proposed development on the same receptor. These occur where a number of separate impacts (e.g. noise and air quality) affect a single receptor (e.g. fauna). The assessment of potential intra-related effects therefore considers the scope for all such effects to interact spatially and temporally to create intra-related impacts on a receptor (also termed impact interactions).
- 18.4.2 The assessment of intra-related effects considers only those effects produced by the Proposed Project and not from other proposed developments.
- 18.4.3 This chapter incorporates the findings of the individual topic-specific chapters in order to identify and summarise any potential additional effects that may be greater than the individual effects acting in isolation on a given receptor. The additional effect (if any) of separately considered impacts acting together is considered qualitatively using professional judgement.
- 18.4.4 The assessment commenced with the identification of the relevant receptors and individual impacts on key receptors, as assessed by the individual topic areas (as described in the chapters 6 to 17 of this Environmental Appraisal).
- 18.4.5 The scope for these individual impacts to combine was then considered, incorporating qualitative assessments using professional judgement, to identify potential additional impacts that may be of greater effect than the individual impacts acting in isolation on a given receptor.
- 18.4.6 Given that the assessment widely identifies that decommissioning effects will be comparable to those experienced during construction of the Project, the assessment has been appropriately limited to identifying interactions in the construction and operational phases only.

18.5 Appraisal of Impact Interactions

- 18.5.1 An overview of where potential intra-related effects between topic areas may arise is provided as Table 18.1. An 'x' denotes that a potential inter-related effect could exist between topics. However, this does not signify that an intra-relationship effect will certainly arise. The following sections of this chapter summarise the potential for intra-related impacts during the construction and operational phases of the Proposed Project. A blank cell indicates either that no potential intra-relationship has been identified, or that such a relationship is highly unlikely to exist (and thus it is not referenced further in this chapter). Where intra-related effects have already been accounted for within the topic chapters this has been stated in the section below.

Table 18.1: Potential Intra-related Effects

Environmental Receptor/ Environmental Appraisal Chapter Impacts	6 Landscape and Visual	7 Terrestrial Ecology	8 Historic Environment	9 Water Resources	10 Geology, Soils and Contaminated Land	11 Agriculture and Land Use	12 Traffic and Transport	13 Socio-Economics and Tourism	14 Noise and Vibration	15 Marine Ecology	16 Marine Archaeology	17 Marine Physical Processes
<p>6 Landscape and Visual</p> <ul style="list-style-type: none"> • landscape elements • designated landscape areas & National Park • marine character areas and local seascape character areas • Registered Parks and Gardens • local communities • recreational receptors • motorists/road users/cyclists on the surrounding road network 							X	X	X			
<p>7 Terrestrial Ecology</p> <ul style="list-style-type: none"> • ecologically designated sites • ecological habitats • protected species 				X		X			X			
<p>8 Archaeology and Cultural Heritage</p> <ul style="list-style-type: none"> • known and potential heritage assets 	X								X			

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<p>9 Water Resources</p> <ul style="list-style-type: none"> • surface water bodies • groundwater bodies 					X	X						
<p>10 Geology, Soils and Contaminated Land</p> <ul style="list-style-type: none"> • human health (workers and local residents) • controlled waters • sensitive land uses (including sensitive habitats) • resource receptors (mineral resources, peat deposits) • property receptors 		X		X		X						
<p>11 Agriculture and Land Use</p> <ul style="list-style-type: none"> • agricultural land classification • agri-environmental schemes • agricultural operations • soils (including peat) 				X	X							

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12 Traffic and Transport <ul style="list-style-type: none"> • road users and pedestrians • users of cycle routes and PRow • sensitive groups and locations • properties with direct frontage 	X				X			X	X			
13 Socio-Economics and Tourism <ul style="list-style-type: none"> • recreational receptors including users of PRow, cycle tracks, open access land • community receptors • tourism receptors • local and regional labour markets 	X						X		X			
14 Noise and Vibration <ul style="list-style-type: none"> • occupants of residential buildings • occupants of non-residential buildings 	X				X		X	X				

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15 Marine Ecology <ul style="list-style-type: none"> • mudflats and sandflats • Saltmarsh/Salt meadow 												
16 Marine Archaeology <ul style="list-style-type: none"> • known and potential archaeology resource 												
17 Marine Physical Processes <ul style="list-style-type: none"> • Dwyryd estuary channel 												

Landscape and Visual

- 18.5.2 As detailed in Chapter 6 (Landscape and Visual), visual receptors include people living in the area (communities), people visiting and/ or taking part in recreational activities within the area (recreational receptors), and people travelling through the area (road and rail receptors). The three different elements of the Proposed Project² have been considered separately to allow judgments to be made based on their varied effects. Chapter 6 discusses the intra-project effects from these three elements as, in reality, landscape and visual effects would be experienced from the Proposed Project as a whole.
- 18.5.3 Potential interactions with landscape and visual receptors are as follows:
- Noise – visual receptors experiencing visual effects during construction may also be affected by changes in levels of noise during construction; and
 - Traffic – motorists/road users experiencing visual effects during construction may also be affected by changes in levels of traffic during construction.
 - Socio-economics – recreational receptors experiencing visual effects during construction may also be affected by changes in access to PRow/recreation areas during construction.
- 18.5.4 The above potential interactions are considered as part of the socio-economic amenity assessment in Chapter 13.

Ecology

- 18.5.5 As detailed in Chapter 7 (Ecology), ecological receptors include ecologically designated sites, ecological habitats (including valley mire habitat) and protected species. The ecological assessment within Chapter 7 has considered potential interactions on ecological receptors from noise, accidental pollution, lighting and dust. Mitigation measures will ensure that significant effects from interactions do not arise.

Archaeology and Cultural Heritage

- 18.5.6 As detailed in Chapter 8 (Archaeology and Cultural Heritage), archaeological receptors include known (and unknown) buried archaeological remains, and designated (including Listed Buildings) and non-designated heritage assets. Chapter 8 (Archaeology and Cultural Heritage) also addresses potential visual impacts upon the setting of designated historic assets. Changes in vegetation cover, the introduction of new built form or movement within a landscape, machinery noise or lighting may affect the appreciation of heritage assets and have been considered within Chapter 8.

Water Resources

- 18.5.7 As detailed in Chapter 9 (Water Resources), water resource receptors include surface water bodies and groundwater bodies. Given that surface water and groundwater resources and geology and soils are integrally linked, Chapter 9 (Water Resources) and Chapter 10 (Ground Conditions) cross reference each other and consider interactions. Chapter 10 (Ground Conditions) includes an appraisal of controlled waters (ground water and surface water) in terms of potential contamination from the presence or mobilisation of existing contaminants, or from accidental release of contaminants during the Proposed Project. Mitigation measures (see Section 18.5.8 below) will ensure that significant effects from interactions will not arise.

² Infrastructure Western Side of the Dwyryd Estuary; Infrastructure Eastern Side of the Dwyryd Estuary; and Removal of Existing Infrastructure (VIP Subsection).

Ground Conditions

- 18.5.8 As detailed in Chapter 10 (Ground Conditions) geology, soils and contaminated land receptors include controlled waters, human health, ecological receptors, resource receptors and property receptors. Given that surface water, groundwater, geology and soils are integrally linked, Chapter 10 (Ground Conditions) and Chapter 9 (Water Resources) cross reference each other and consider interactions. Mitigation measures will ensure that significant effects from interactions will not arise. In terms of potential contaminant release, Appendix 2A (Outline CEMP) makes reference to best practice waste management and pollution prevention measures and site-specific environmental management measures that will be implemented to ensure that adverse effects on human health and local communities are minimised. An Outline Waste Management Plan has been prepared (see appendix to the CEMP presented in Appendix 2A) to set out the procedures for the management of waste.

Agriculture and Land Use

- 18.5.9 As detailed in Chapter 11 (Agriculture and Land Use), land use receptors include peat soils. Given the interactions of this receptor with ecology and hydrology, Chapter 11 cross refers to these topic chapters. Appropriate mitigation has been identified to minimise impacts on peat including the preparation of an Outline Peat Management Plan (see Appendix to the CEMP presented in Appendix 2A). Impacts on peat have been minimised where possible through site layout and mitigation in accordance with the Peat Management Hierarchy.
- 18.5.10 As reported in Chapter 11 (Agriculture and Land Use), economic effects on individual landowners and farmers are scoped out of the agricultural assessment and therefore no interactions with the socio-economic assessment are identified.

Traffic and Transport

- 18.5.11 As detailed in Chapter 12 (Traffic and Transport), traffic and transport receptors include road users, residential properties, users of cycle routes and public rights of way (PRoW) etc. using particular highways links. Chapter 12 considers the potential for intra-projects effects upon shared receptors, such as effects on severance and fear and intimidation arising on the same receptor.
- 18.5.12 In addition, potential interactions on traffic and transport receptors include consideration of:
- Landscape and visual – traffic receptors experiencing traffic effects during construction may also experience visual effects during construction; and
 - Noise – traffic receptors experiencing traffic effects during construction may also be affected by changes in levels of noise during construction.
- 18.5.13 The above potential interactions are considered as part of the of socio-economic amenity assessment in Chapter 13.

Socio-economics

- 18.5.14 As detailed in Chapter 13 (Socio-economics), socio-economic receptors include tourism receptors, recreation receptors including users of PRoW, cycle paths, long distance footpaths and open access areas, community receptors and local and regional labour markets.
- 18.5.15 Potential effects on community amenity resulting from a combination of visual, traffic, noise and vibration effects been considered as part of the socio-economic amenity assessment (Chapter 13). These assessments in themselves consider interactions.
- 18.5.16 In addition, the socio-economic assessment has also considered access in terms of potential effects on PRoW and recreation areas. Severance effects identified in Chapter 12 (Traffic

and Transport) have been considered in the appraisal of effects on access during construction.

- 18.5.17 Chapter 13 (Socio-economics) has concluded that effects on community amenity and access (which incorporate interactions) will be minimal.

Noise and Vibration

- 18.5.18 As detailed in Chapter 14 (Construction Noise and Vibration), noise receptors include occupants of residential and non-residential buildings including such as schools, offices, health care facilities and places of worship.

- 18.5.19 Potential interactions with noise and vibration are as follows:

- Landscape and visual – noise receptors experiencing noise effects during construction may also experience visual effects during construction;
- Traffic – noise receptors experiencing noise effects during construction may also be affected by changes in levels of traffic during construction; and
- Socio-economics – noise receptors experiencing noise effects during construction may also be affected by changes in access to PRow/recreation areas during construction.

- 18.5.20 A number of the above potential interactions (noise, landscape and traffic) are considered as part of the of socio-economic amenity assessment.

Marine Ecology

- 16.1.1 As detailed in Chapter 16 (Marine Ecology), marine ecological receptors include mudflats and sandflats and Atlantic salt meadows / saltmarsh. Given the Proposed Marine Works are geographically separated from the terrestrial elements of the wider project and all predicted effects are confined to the marine environment, no intra-project effects on marine ecology are anticipated.

Marine Archaeology

- 18.5.21 As detailed in Chapter 17 (Marine Archaeology), marine archaeological receptors include known archaeological remains (debris field of amphibious vehicle wreck) and unknown archaeological remains. Given the Proposed Marine Works are geographically separated from the terrestrial elements of the wider project and all predicted effects are confined to the marine environment, no intra-project effects on the marine archaeological environment are anticipated.

Marine Physical Processes

- 18.5.22 As detailed in Chapter 18 (Marine Physical Processes), marine physical process receptors include the Dwyryd estuary channel. Given the Proposed Marine Works are geographically separated from the terrestrial elements of the wider project and all predicted effects are confined to the marine environment, no intra-project effects on the marine physical environment are anticipated.

18.6 Mitigation

Construction

- 18.6.1 In order to minimise the significance of construction phase interactions, mitigation commitments (both embedded and additional mitigation) as detailed in Chapters 6 to 17 of this Environmental Appraisal will be implemented.

- 18.6.2 In addition, there will be a community relations team in place to ensure that residents and the local community remain informed of works during the construction programme.

- 18.6.3 A dedicated website has already been established. This will be promoted locally and contain regular updates on proposed activity as works progress. It will also contain information on

work that is ongoing so that the public understand what they can see on site at a given time. In addition, National Grid have already established a dedicated email, freephone help line and freepost service for local people to find out more information and will use social media including Twitter and Facebook to share updates where appropriate.

- 18.6.4 National Grid will make information about the project available to user groups and representative local groups and bodies who register an interest in the project. This will include the use of social media and the project website and could include meetings at significant project milestones.

Operation

- 18.6.5 In respect of operational phase interactions, mitigation incorporated into the design of the Proposed Project (e.g. landscaping) will assist in reducing the significance of these effects. No intra-project effects have been identified for the operational phase of the Proposed Project.