



Chapter 3: Methodology



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3 Methodology

3.1 Introduction

This chapter lays out the approach and methodology that has been applied throughout the EIA process.

3.2 Overview of Approach and Methodology

One of the main purposes of the EIA process is to influence and improve design through iteration. Environmental impacts have been considered throughout the project, from the site selection and cable corridor selection through the initial design stages of the project (Chapter 2: Project Description). Where possible, environmental considerations have been incorporated within the design.

An environmental specialist has been involved throughout the process and, where necessary, appropriate topic experts have been brought in to inform the design process. The project design therefore has avoided and minimised impacts wherever possible and, as such, there are embedded 'primary mitigation measures' to avoid or reduce negative effects. These have been incorporated within the assessment of effects.

In addition, tertiary mitigation in the form of standard construction practices, such as those outlined in Pollution Prevention Guidance notes, are assumed to be applied in the assessment process and are captured within the Schedule of Mitigation.

This chapter sets out the process undertaken in order to provide a methodological and robust assessment of environmental impacts that is used across all chapters of the Environment Impact Assessment Report (EIAR) and meets legislative requirements.

3.3 Scoping

A scoping report was submitted to Aberdeenshire Council and Marine Scotland in April 2016. Responses to this were received in May 2016 and July 2016. The responses refined the topics to be scoped in and out. Table 3.1, is amended from the original summary table of scoping options, as presented in the scoping report (NorthConnect, 2016). Items scoped out (grey) have not been assessed through the EIA process, and those in purple and blue have been subjected to a full assessment as laid out in Section 3.4. The remainder in pink have been scoped in for transparency purposes only and, although they will be discussed in the EIAR, they may not be subject to a full assessment as laid out in Section 3.4, as it is not required due to the insignificance of the effects.

The majority of the chapters have been split into onshore and marine topics, for ease of locating relevant onshore/marine topics. However, for certain chapters it was more appropriate to retain the onshore and marine assessments within the same chapter (e.g. Archaeology and Cultural Heritage; Ornithology; and Resource Usage and Waste). Certain chapters were modified for the EIAR following the scoping and the scoping report opinions. Traffic & Access, and Landscape, Seascape, & Visual were scoped out. The Shipping chapter proposed became integrated into a Navigation and Shipping chapter, and recreational vessel usage is also included in the Local community and Economics chapter. A new Commercial Fisheries Chapter was also created. Ecological issues were divided broadly into Terrestrial ecology and Marine ecology, with further sub-divisions occurring on the marine aspects with Benthic Ecology, Fish & Shellfish and Marine Mammals having separate chapters.

Table 3.1 Summary of Topic Scoping

Topic	Onshore Cable Laying	Horizontal Directional Drilling	Offshore Cable Laying	Temporary Construction Requirements	Operations & Maintenance	Decommissioning
Seabed Quality	Grey	Purple	Purple	Grey	Light Grey	Grey
Land Quality	Light Grey	Red	Grey	Grey	Light Grey	Grey
Air Quality	Purple	Light Grey	Grey	Purple	Light Grey	Grey
Water Quality (onshore)	Red	Red	Grey	Red	Red	Grey
Water Quality (offshore)	Grey	Red	Red	Grey	Grey	Grey
Archaeology and Cultural Heritage	Purple	Light Grey	Red	Light Grey	Light Grey	Grey
Terrestrial Ecology	Purple	Purple	Grey	Purple	Grey	Grey
Benthic Ecology	Grey	Blue	Blue	Grey	Red	Purple
Fish & Shellfish	Grey	Blue	Blue	Grey	Red	Purple
Marine mammals	Grey	Blue	Blue	Grey	Red	Grey
Ornithology	Purple	Blue	Purple	Purple	Red	Grey
Electric & Magnetic Fields	Grey	Grey	Grey	Grey	Purple	Grey
Navigation & Shipping	Grey	Light Grey	Purple	Grey	Purple	Purple

Topic	Onshore Cable Laying	Horizontal Directional Drilling	Offshore Cable Laying	Temporary Construction Requirements	Operations & Maintenance	Decommissioning
Commercial Fisheries	No Effect/Not Applicable – Scoped Out	Negligible Effect – Scoped Out	Potential Effect – Scoped In	No Effect/Not Applicable – Scoped Out	Negligible Effect – Scoped Out	Potential Effect – Scoped In
Local community & Economics	Potential Effect – Scoped In	Potential Effect – Scoped In	Potential Effect – Scoped In	Potential Effect – Scoped In	Potential Effect – Scoped In	Negligible Effect – Scoped Out
Noise & Vibration (in air)	Potential Effect – Scoped In	Potential Effect – Scoped In	No Effect/Not Applicable – Scoped Out	Potential Effect – Scoped In	Negligible Effect – Scoped Out	No Effect/Not Applicable – Scoped Out
Noise & Vibration (in water)	No Effect/Not Applicable – Scoped Out	No Effect/Not Applicable – Scoped Out	Potential Effect – Scoped In	No Effect/Not Applicable – Scoped Out	Potential Effect – Scoped In	Negligible Effect – Scoped Out
Resource usage and waste	Negligible Effect – Scoped In for transparency	Negligible Effect – Scoped In for transparency	Potential Effect – Scoped In	Negligible Effect – Scoped In for transparency	Negligible Effect – Scoped Out	Negligible Effect – Scoped In for transparency
Landscape, Seascape & Visual	Negligible Effect – Scoped Out	Negligible Effect – Scoped Out	No Effect/Not Applicable – Scoped Out	Negligible Effect – Scoped Out	Negligible Effect – Scoped Out	No Effect/Not Applicable – Scoped Out
Traffic & Access	No Effect/Not Applicable – Scoped Out	Negligible Effect – Scoped Out	No Effect/Not Applicable – Scoped Out	Negligible Effect – Scoped Out	No Effect/Not Applicable – Scoped Out	No Effect/Not Applicable – Scoped Out

Key

No Effect/Not Applicable – Scoped Out	
Negligible Effect – Scoped Out	
Negligible Effect – Scoped In for transparency	
Potential Effect – Scoped In	
Potential Significant Effect – Scoped In	

3.4 Assessment Methodology

3.4.1 Assessment criteria

The assessment criteria being applied to this EIA are detailed within this section. For each of the environmental topics being assessed, the appropriate professional guidelines for EIA have been applied and followed as considered necessary, along with any other relevant guidance documents and best practice techniques. As a result, where the standard assessment criteria and terminology set out below are not followed for a specific environmental topic, this will be identified within the relevant environmental chapter of the EIAR, along with specific information on the preferred assessment criteria that have been applied.

The environmental assessment is conducted in two stages. The first stage characterises the nature of the impacts (positive or negative) and the second determines the level of significance of the effects. An effect results from the consequences of a change (or impact) acting on a resource / receptor. The precise nature of the effect will depend on the interaction between the degree of impact (e.g. extent, duration, magnitude, permanence etc.) and the sensitivity, value or number of the resources / receptor in each case.

3.4.2 Impacts and Effects

The EIA Regulations (Scottish Ministers, 2017a) (Scottish Ministers, 2017b) makes reference to both environmental 'impact' and 'effect'. The Regulations do not provide a definition of this terminology, but rather, they are used interchangeably. For consistency throughout this EIAR, a difference is defined, and the following terminology will be adopted for the purposes of impact assessments:

- **'Impact'**: the way in which an environmental resource / receptor is changed by the project proposals. The phrase **'potential impact'** will be used to describe any impacts which may arise as a result of the project and the **'magnitude of impact'** will be determined for each resource / receptor as part of the process (further detail below).
- **'Effect'**: the consequence of the change to (or impact upon) an environmental resource / receptor.

Taking into consideration the 'sensitivity of a resource / receptor' and the 'magnitude of impact', the overall effect is determined, along with its significance.

The assessment identifies the origins of environmental impacts, positive (beneficial) and negative (adverse), from the project and predicts their effects on resources or receptors. A resource is any environmental component affected by an impact (e.g. items of environmental capital such as habitats, aquifers, landscape, views and community facilities). A receptor is any environmental or other defined feature (e.g. human beings) that is sensitive to or has the potential to be affected by an impact.

Assessment of whether the effect of the proposed project on any particular resource or receptor was made by suitably qualified and experienced practitioners. Where possible, quantitative analysis was undertaken to support the impact assessments. Where the subject does not lend itself to quantitative analysis, qualitative analysis based on the relevant literature and similar studies is undertaken to provide a robust assessment. This will be determined for each environmental topic depending on the nature of the receptor. The initial assessment of effects takes into account primary and tertiary mitigation (see Section 3.4.6).

Each potential impact will be assessed in terms of their sensitivity or value (e.g. nature conservation value, landscape value or amenity value), followed by an assessment of the magnitude of the impact, and determination of whether or not significant effects result. For any significant effects identified, appropriate secondary mitigation measures will be identified. Taking into consideration the secondary mitigation proposed, the residual effect will then be determined for each significant effect.

3.4.3 Sensitivity/Value of Resource/Receptors

Using a set of criteria and terminology defined within each technical chapter, a sensitivity value will be assigned to a particular environmental resource or receptor. This is often categorised in accordance with EIA guidance documents for each environmental topic.

The categories used to describe value / sensitivity will be defined within the 'Assessment Methodology' section of the individual chapters.

3.4.4 Magnitude of Impact

Once a sensitivity or value has been assigned to each environmental resource or receptor, the magnitude of the impact will be identified. The magnitude of impact terminology and criteria applied are defined within each environmental chapter.

Impacts are identified as either permanent (e.g. lasting the length of the period the development is in place for, such as loss of habitat due to the construction of a new access road) or temporary (e.g. restricted to the construction period only, such as noise emissions from construction plant). A permanent impact is considered to be irreversible and from which recovery is not possible within a reasonable timescale, or for which there is no reasonable chance of action being taken to reverse. A temporary impact is reversible and from which spontaneous recovery is possible, or for which effective mitigation is both possible and an enforceable commitment has been made (CIEEM, 2016).

Temporary impacts can be further sub-divided if necessary in accordance with the following guideline, although definitions of this terminology is highly dependent on other factors depending upon the environmental topic being assessed (e.g. lifecycle of flora and fauna species):

- Short-term – less than 1 year in duration;
- Medium-term – between one to three years in duration; and
- Long-term – more than three years in duration.

As well as direct impacts (resulting from the project itself), impacts can also be indirect or cumulative. There can also be impact interactions when other projects are taken into consideration. Where this terminology is used within any assessment, the definitions for these are outlined below (as taken from 'Guidelines for the assessment of indirect and cumulative impacts as well as impact interactions' (European Commission, 1999):

- Indirect - impacts on the environment, which are not a direct result of the project, often produced away from or as a result of a complex pathway. Sometimes referred to as second or third level impacts, or secondary impacts;
- Cumulative - impacts that result from incremental changes caused by other past, present or reasonably foreseeable future actions together with the project; and
- Impact interactions - the interactions between impacts whether between the impacts of just one project or between the impacts of other projects in the areas.

3.4.5 Determination of Significant Effects

Taking both the sensitivity / value of the resource / receptor and the magnitude of impact into consideration, a determination of whether or not there are significant effects is made. Table 3.2 shows how the two elements can be combined to give an overall significance category. Topic specific tables are provided in each chapter.

Table 3.1 Categorising Significance of Effects

Magnitude of Impact	Sensitivity/Value of Receptor			
	High	Medium	Low	Negligible
Major/Large/High	Major	Moderate	Minor	Negligible
Moderate/Medium	Moderate	Moderate	Minor	Negligible
Minor/Small/Low	Minor	Minor	Negligible	Negligible
Negligible	Negligible	Negligible	Negligible	Negligible

Key

	Significant Effect
	Non-Significant Effect

The categories provide a threshold to determine whether or not significant effects may result from the proposals. The categorisation is shown in Table 3.3. Effects can be either beneficial or adverse.

Table 3.3. Categorisation and Definition of Effects

Category	Definition
Negligible	No detectable change to the environment resulting in no significant effect.
Minor	A detectable, but non-material change to the environment resulting in no significant effect.
Moderate	A material, but non-fundamental change to the environment, resulting in a possible significant effect.
Major	A fundamental change to the environment, resulting in a significant effect.

For the purposes of this EIAR, a significant effect is identified as moderate in level or higher (Table 3.2 and 3.3) and is considered to be a 'likely significant effect' in terms of EIA (significant). Mitigation is identified where practicable to avoid, minimise or reduce significant adverse effects. Effects determined as minor or lower are considered to have no likely significant effect (non-significant). Where the impact can be reduced by the application of best practice irrespective of its significance this is identified. This will assist to reduce all effects, whether they are significant in EIA terms or not.

3.4.6 Approach to Mitigation

The Institute of Environmental Monitoring and Assessment (IEMA) define three categories of mitigation in their EIA guidance for Shaping Quality Development (IEMA, 2016). These categories will be used throughout this EIAR and are outlined below:

- **Primary (Inherent) Mitigation:** Modifications to the location or design of the development made during the pre-application phase that are an inherent part of the project, and do not require additional action to be taken.
 - E.g. Identifying a key habitat or archaeological feature that should remain unaffected by the development's layout and operation;
- **Secondary (Foreseeable) Mitigation:** Actions that will require further activity in order to achieve the anticipated outcome. These may be imposed as part of the planning consent, or through inclusion in the EIAR.
 - E.g. Adoption of a Marine Mammal Protection Plan to limit the effects of disturbance through piling noise; and
- **Tertiary (Inexorable) Mitigation:** Actions that would occur with or without input from the EIA feeding into the design process. These include actions that will be undertaken to meet other existing legislative requirements, or actions that are considered to be standard practices used to manage commonly occurring environmental effects.
 - E.g. Considerate contractors' practices that manage activities which have potential nuisance effects.

As per the above IEMA categories (IEMA, 2016), all the primary and tertiary mitigation embedded in the design and construction is set out in the Project Description (Chapter 2), with topic specific elements discussed in the individual topic chapters. The primary and tertiary mitigation measures will be used when assessing the significance of effects, since both these forms of mitigation are certain to be delivered. Thus, any effects that might arise without the primary and tertiary mitigation do not need to be identified as potential effects, as there is no potential for them to arise.

Secondary mitigation measures will be proposed where practicable for any potential significant adverse effects that are identified. Mitigation measures will then be developed, as required, taking into account current guidance, precedents from similar projects, effectiveness and feasibility of solutions, and incremental costs.

It may only be possible to reduce the severity of potential adverse effects through secondary mitigation, as some cannot be eliminated entirely. Residual effects are those that remain after mitigation has taken place. Residual effects will be assessed in the same way detailed in Section 3.4.5.

To ensure that mitigation requirements are fully understood, and that each mitigation commitment is captured and transcribed into contract documentation, a Schedule of Mitigation has been drafted (Chapter 25). Construction Environmental Management Plans will be utilised to manage the mitigation through the construction process aligned to the process laid out by The Highland Council (Highland Council, 2010). An Environmental Management System (EMS) will be utilised to manage the operational impacts.

3.5 References

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IEMA. (2016). Delivering Quality Development. 20.

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