Scottish & Southern Electricity Networks
TRANSMISSION

CONTENTS

14. CUMULATIVE EFFECTS (EFFECT INTERACTIONS)

14.1 Introduction

14.1.1 As described in **Volume 2, Chapter 5: EIA Process and Methodology**, in accordance with the EIA Regulations, the assessment has considered two types of cumulative effects:

- In-combination effects – with other existing or future Cumulative Developments that have the potential to result in significant effects in-combination with the Proposed Development. This type of cumulative effect has been considered in the individual topic technical **Chapters 7 to 13, Volume 2** of this EIA Report, and therefore are not discussed further within this Chapter.
- Effect interactions – the combined or synergistic effects caused by the combination of a number of effects from the Proposed Development alone on a particular receptor, taking into consideration effects during construction (including the enabling works, site clearance, demolitions and earthworks), and operational phases, which may collectively cause a more significant effect than individually. A theoretical example is the cumulative disturbance from dust, noise, vibration, artificial light, human presence and visual intrusion on sensitive fauna (e.g. certain bat species) adjacent to a construction site. An assessment of potential effect interaction cumulative effects is provided in this Chapter.

14.2 Assessment Methodology

14.2.1 The approach to the assessment of effect interactions considers the changes in baseline conditions at common sensitive receptors (i.e. those receptors that have been assessed by more than one technical topic) due to the Proposed Development.

14.2.2 There are three key steps in the effect interactions methodology:

Step A: Screening of Sensitive Receptors

14.2.3 A screening of sensitive receptors (as identified in each of the technical chapter (**Volume 2, Chapters 7 to 13**) is undertaken to determine whether any have the potential to be exposed to more than one type of residual effect (within an individual technical topic assessment and / or across multiple technical topic assessments) during either the construction or operation phases of the Proposed Development. These sensitive receptors are termed 'Common Receptors' and are taken forward to Step B of the assessment.

Step B: Determine Common Receptor's Residual Effects

14.2.4 Of the Common Receptors identified in Step A, those that have two or more non-Negligible residual effects are identified and taken forward to Step C of the assessment.

Step C: Assessment of Cumulative Effects

14.2.5 An assessment of the overall significance of the effect interactions on Common Receptors identified at Step B is undertaken. The assessment is based on information provided within the topic assessments, as well as professional judgement. The assessment considers the nature of the residual effects acting on the identified Common Receptors and determines whether or not these residual effects, acting in-combination, significantly magnify the overall residual effects on specific receptors. Receptors are assessed at a spatial scale consistent with that of the chapters.

Significance Criteria

14.2.6 Each of the specialist environmental assessments reported in **Volume 2, Chapters 7 to 13** has identified effects which may occur as a result of the Proposed Development, ranging from **Negligible** or **Minor** (**Not Significant**) to **Moderate** and **Major** (**Significant**), unless otherwise stated in the technical chapters[1]. The significance

[1] Some technical chapters use different terminology to assign significance, for example, the Cultural Heritage assessment uses 'Slight' not 'Minor' and 'Neutral' not 'Negligible', however the same effect interaction principles apply.

classifications for effect interactions are detailed in **Table 14-1**. **Moderate** and above are considered to be **Significant**.

Table 14-1 Effect Interactions Significance Criteria

Significance Category	Definition of Effect
Major	Adverse or Beneficial effects that are a **Significant** magnification of potentially wide-ranging effects on receptors / resources that are already predicted to occur.
Moderate	Adverse or Beneficial effects that are a **Significant** magnification of localised effects on receptors / resources that are already predicted to occur.
Minor	Adverse or Beneficial effects that would only lead to a localised (**Not Significant**) magnification of effects on a receptor / resource.
Negligible	No effects or effects that are beneath the level of perception, within normal bounds of variation or within the margin of forecasting error.

14.3 Scoping of Environmental Topics for the Cumulative Effects Assessment

14.3.1 The topics in **Table 14-2** are not considered to give rise to likely effect interactions as a result of the Proposed Development and have therefore not been considered further within this assessment.

Table 14-2 Topics scoped out of the Effect Interactions Cumulative Effects Assessment

Topic Scoped Out	Justification
Forestry (construction and operational phase)	The assessment within Volume 2, Chapter 7: Forestry considers all effects on Forestry receptors. As a result of this, there is no potential for effect interactions and it has been scoped out of the effect interactions assessment.
Landscape and Visual (operational phase)	The assessment within Volume 2, Chapter 8: Landscape and Visual considers residual effects on receptors at the operational phase. Whilst some of these are considered **Significant**, no other Chapter reports more than Negligible effects on the same receptors, and therefore the effects considered at operation stage in this Chapter will not be cumulative.
Ecology, Nature Conservation and Ornithology (construction and operational phase)	The assessment within Volume 2, Chapter 9: Ecology, Nature Conservation and Ornithology considers all effects on ecological receptors. As a result of this, there is no potential for an effect interaction and it has been scoped out of the effect interactions assessment.
Cultural Heritage (construction and operational phase)	The assessment within Volume 2, Chapter 10: Cultural Heritage considers effects on Cultural Heritage receptors only. As no other Chapter considers effects on these receptors, it has been scoped out of the effect interactions assessment.
Traffic and Transport (construction and operational phase)	All residual effects outlined in Volume 2, Chapter 11: Traffic and Transport are considered to be Negligible after mitigation measures have been applied. Therefore, it has been scoped out of the effect interactions assessment.
Hydrology, Hydrogeology, Geology and Soils (construction and operational phase)	All effects in relation to hydrology, hydrogeology, geology and soils receptors are assessed within Volume 2: Chapter 12: Hydrology, Hydrogeology, Geology and Soils. As this, and no other Chapter, considers effects on these receptors, it has been scoped out of the effect interactions assessment.
Noise and Vibration (operational phase)	All residual effects during operation outlined in Volume 2, Chapter 13: Noise and Vibration are considered to be Negligible after mitigation measures have been applied. Therefore, it has been scoped out of the effect interactions assessment.

14.4 Step A: Screening of Sensitive Receptors

14.4.1 Common Receptors identified for inclusion in this assessment, alongside their relevant corresponding topics, are in **Table 14-3**.

Table 14-3 Common Receptors

Common Receptors	Environmental Topics
Existing residents in surrounding area	Landscape and Visual (Visual Amenity) Noise and Vibration (Noise)

14.4.2 Based on the methodology detailed above, **Table 14-5** presents the potential for interactions of individual effects during the construction works.

14.4.3 The likely residual environmental effects, as identified within **Volume 2, Chapters 7 to 13** of this EIA Report are listed for each topic in relation to receptor groups that have the potential to be affected by the Proposed Development, have been presented across the top row. The tables present a colour coded assessment (see **Table 14-4**) of the residual effects for each receptor, or receptor group, and where this has highlighted the potential for effect interactions, consideration has been given as to whether there is potential for any resultant effect interaction cumulative effects, which is stated in the bottom row of each table.

Table 14-4 Coding for Residual Effects

Major Adverse	---	Major Beneficial	+++
Moderate Adverse	--	Moderate Beneficial	++
Minor Adverse	-	Minor Beneficial	+

14.5 Step B: Common Receptor's Residual Effects

14.5.1 A summary of residual effects from each Chapter, on the common receptor, is shown in **Table 14-5**.

Table 14-5 Construction – Residual Effects on Common Receptors

Common Receptors	Likely Residual Effect
Topics / Impacts	Existing residents in surrounding area
Visual Amenity	---
Construction Noise	-
Potential for effect interaction cumulative effect?	Yes

14.6 Step C: Assessment of Cumulative Effects

14.6.1 Step B identified one potential interaction in the construction phase.

14.6.2 As shown in **Table 14-5**, when considering the residual environmental effects for each technical topic, it has been assessed that effect interactions have the potential to occur for residents in the surrounding area, in relation to visual amenity and noise impacts related to construction activities.

Construction

14.6.3 Residents surrounding the Site will experience an interaction of effects due to the combination of noise impacts and visual amenity. However, as the construction noise interaction would be temporary, intermittent and short-term, the predicted effect interaction with the significant residual effects on visual amenity would be **Minor Adverse** (**Not Significant**) on receptors surrounding the Site.

14.7 Summary

14.7.1 The assessment of Cumulative Effects (Effect Interactions) identified only one potential receptor likely to see a measurable effect interaction from the Proposed Development. This being residential receptors in the vicinity of the Site. The assessment of effect interaction has concluded no significant effects, with residual effects being limited to **Minor Adverse (Not Significant)** on residential receptors in both the construction and operation phases.