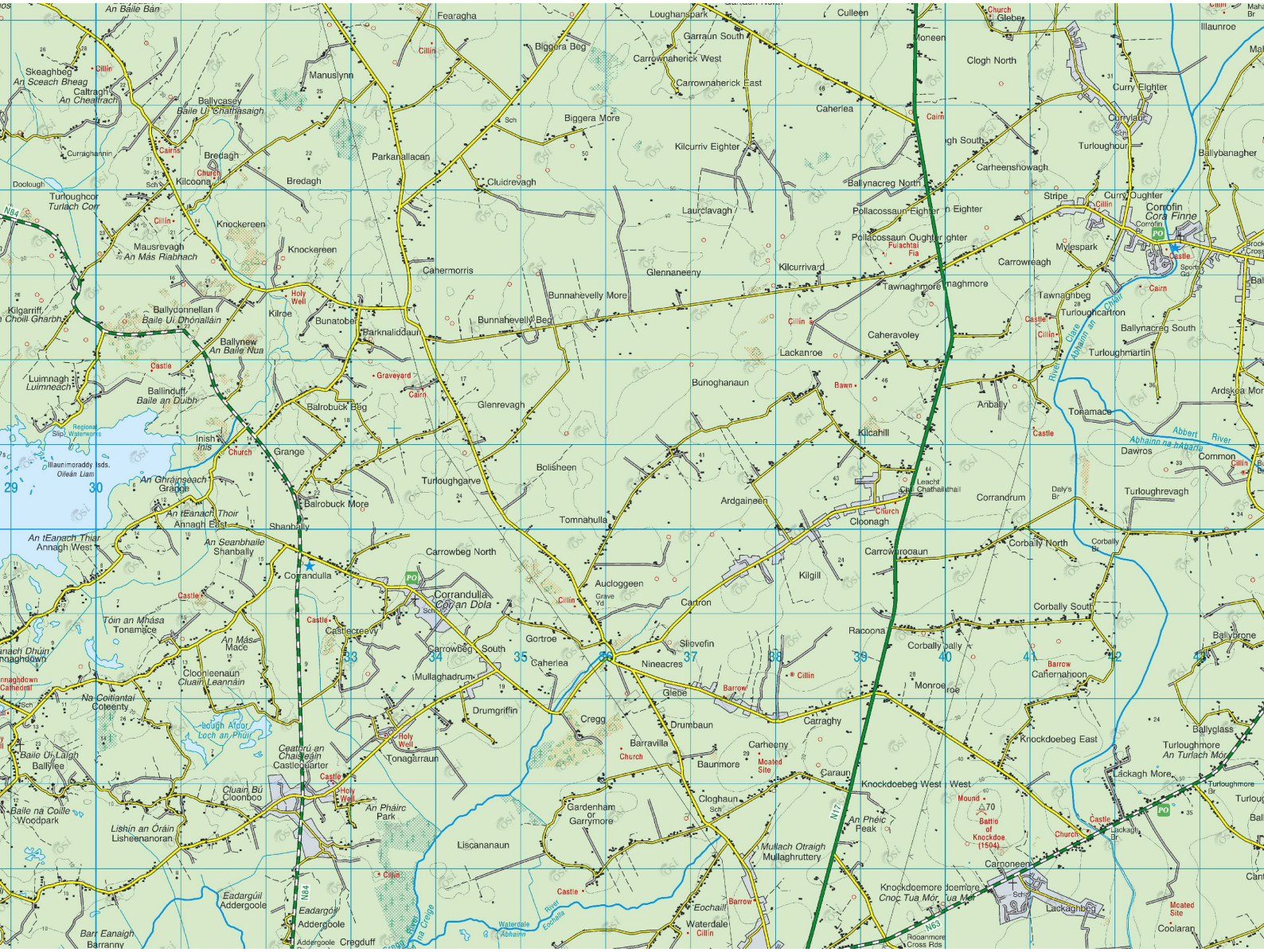
CHAPTER 16

INTERACTIONS



QUARRY CONSULTING

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Introduction

16.1 The potential effects of the proposed development and the measures proposed to mitigate these effects have been outlined in this Environmental Impact Assessment Report (EIAR). However, in any development with the potential for environmental effect there is also the potential for interaction between effects of the different environmental aspects. The result of these interactions may either exacerbate the magnitude of the effect or may in fact ameliorate it.

16.2 Table 17-1 outlines the different environmental aspects which have potential to interact as a result of the proposed development.

16.3 Interactions have been clearly identified in the early stages of the EIA and where the potential exists for interaction between environmental impacts, the EIA specialists have taken the interactions into account when making their assessment. Potential interactions (both positive and negative) have been considered for the construction, operation and restoration phases of each of the different environmental aspects.

Legislative and Policy Context

Relevant Legislation

16.4 Article 3 of the EIA Directive prescribes that:

> *The environmental impact assessment shall identify, describe and assess in an appropriate manner in light of each individual case, the direct and indirect significant effects of a project on the following factors:*
>
> *a) Population and human health;*
>
> *b) Biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC;*
>
> *c) Land, soil, water, air and climate;*
>
> *d) Material assets, cultural heritage and the landscape;*
>
> *e) The interaction between the factors referred to in points a) to d).*

16.5 Annex IV of the EIA Directive (2011/92/EU as amended by 2014/52/EU) requires than an EIAR provides "a description of the likely significant effects of the project on the environment resulting from….(e) the cumulation of effects with other existing and/or approved projects, taking into account any existing environmental problems relating to areas of particular environmental importance likely to be affected or the use of natural resources".

Relevant Policy & Guidelines

16.6 The Environmental Protection Agency's (EPA) Guidelines on the Information to be contained in Environmental Impact Assessment Reports (EPA 2022) advises that "the interactions between effects on different environmental factors should be addressed as relevant through the EIAR". It advises that a matrix should be included in the assessment to "show where interactions between effects on different factors have been addressed".

Interactive Effects

16.7 Table 16. 1 presents a matrix of interactions likely to occur from the proposed development. The level of interactions between the various media varies greatly.

Table 16-1: Potential Impact Interaction and Key Interrelationships Matrix	Population and Human Health	Biodiversity	Land, Soils and Geology	Hydrology	Climate	Air Quality	Noise and Vibration	Visual and Landscape	Traffic	Heritage	Material Assets
Population and Human Health	-	-	-	-	-	✓	✓	✓	✓	-	-
Biodiversity	-	-	-	✓	-	✓	✓	-	-	-	-
Land, Soils and Geology	-	-	-	✓	-	✓	-	-	-	✓	✓
Hydrology	✓	✓	✓	-	-	-	-	-	-	-	-
Climate	-	-	-	✓	-	✓	-	-	-	-	-
Air Quality	✓	✓	✓	-	✓	-	-	-	-	-	-
Noise and Vibration	✓	✓	-	-	-	-	-	-	-	-	-
Visual and Landscape	✓	-	-	-	-	-	-	-	-	-	-
Traffic	✓	-	-	-	-	-	-	-	-	-	-
Heritage	-	-	✓	-	-	-	-	-	-	-	-
Material Assets	-	-	✓	-	-	-	-	-	-	-	-

Corresponding Topic Heading	5	6	7	8	9	10	11	12	13	14	15
Interaction	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
No Interaction	-	-	-	-	-	-	-	-	-	-	-

Key

- **✓: Indicates an interaction.**
- **-: Indicates no interaction.**

Overview of Key Interactions

16.8 The following section provides a summary of the potential interrelationships of each of the respective environmental factors during the construction, operation and restoration phases of the proposed development. Each respective chapter of the EIAR provides a thorough assessment of the interactions.

Population and Human Health

16.9 The key interactions affecting human receptors involve air quality, noise, landscape, and traffic, discussed in detail in Chapters 10 (Air Quality), 11 (Noise), 12 (Landscape), and 13 (Traffic). A summary of the interactions is provided below:

- **Air Quality**: Dust emissions during the operational phase have the potential to affect nearby residents. After assessing potential adverse effects, it is concluded that there will be no significant adverse air quality effects on human receptors. Mitigation measures such as screening berms, retention of hedgerows, the placement of plant equipment within the quarry void, and using water sprays to control dust during dry conditions are in place. No increase in significance due to interaction.
- **Noise**: Noise emissions from extraction activities, machinery operation, and transport may disturb human receptors. Mitigation measures, including screening berms, regular maintenance of plant equipment, and positioning plant equipment within the quarry void, will help maintain noise levels within acceptable limits, ensuring no significant adverse effects on human receptors. No increase in significance due to interaction.
- **Landscape**: The development has the potential to alter visual perspectives from nearby dwellings and recreational spots. A series of viewpoints were analysed, and it was concluded that the quarry's visibility will be limited from most viewpoints, with only minor changes to the ridge profile visible from select locations. No increase in significance due to interaction.
- **Traffic**: Traffic due to the development could impact junction delays and road congestion. However, the traffic assessment concluded that junctions and routes will remain within capacity throughout the operational period. With adequate sightlines at the development access point, no road safety issues are anticipated. No increase in significance due to interaction.

Biodiversity

16.10 Interactions between biodiversity and air quality, noise, and water are detailed in Chapter 8 (Water), Chapter 10 (Air Quality), and Chapter 11 (Noise). A summary is below:

- **Water**: With no direct drainage to nearby rivers, significant effects on water bodies are unlikely. Additionally, downstream effects on designated ecological sites are deemed low-risk due to distance and minimal contamination potential. No increase in significance due to interaction.
- **Air Quality**: Dust emissions could potentially affect nearby vegetation by impeding photosynthesis and respiration. The assessment found no significant air quality effects on local flora, given mitigation measures like screening berms, quarry void location, and water spray use during dry weather. No increase in significance due to interaction.
- **Noise**: Due to the site's distance from designated ecological sites, noise from construction and operational phases is not expected to cause significant impacts. Noise limits will be maintained to minimise effects. No increase in significance due to interaction.

16.11 Interactions between land, soils, geology, and other environmental aspects such as water, air quality, and cultural heritage are addressed in Chapters 8 (Water), 10 (Air Quality), 14 (Cultural Heritage), and 15 (Material Assets). A summary of the potential interactions follows:

- **Water**: Contaminants from vehicles or machinery could enter groundwater or surface water through soil. However, no significant water effects are anticipated, as there is no direct surface water pathway, and contamination potential remains low. No increase in significance due to interaction.
- **Air Quality**: Dust emissions during material extraction could affect soil quality. Dust control measures will mitigate emissions, ensuring no significant increase in adverse effects due to interaction.
- **Cultural Heritage**: Subsurface archaeological artifacts could be at risk during soil removal. To address this, a qualified archaeologist will monitor topsoil stripping. No increase in significance due to interaction.
- **Material Assets**: Extraction of limestone is a resource loss for the local construction industry. However, restoration plans are in place for the site's post-operational phase, minimising the visual impact of resource depletion. No increase in significance due to interaction.

Water

16.12 Interactions involving water, population, biodiversity, and land are covered in Chapters 5 (Population and Human Health), 6 (Biodiversity), and 7 (Land, Soil, and Geology):

- **Population**: Potential contaminants from site activities could enter surface or groundwater and impact water quality. However, as there is no direct drainage from the site to nearby water bodies, no significant effects are anticipated. No increase in significance due to interaction.
- **Biodiversity**: Given the site's lack of direct drainage to river systems and the distance to ecological sites, significant water effects on local biodiversity are not expected. All quarry drainage is captured in the floor sump, routed through settlement/silt controls and the vegetated wetland, and discharged under the existing Section 4 licence with ongoing monitoring. With these controls, residual water effects (e.g., suspended solids/hydrocarbons) are predicted to be imperceptible to slight and within licensed limits, with no measurable change to baseflow or quality in the Clare–Corrib Groundwater Body or the Creg_010 surface-water catchment. Although the site lies in karst and a potential hydrogeological pathway to Lough Corrib SAC/SPA exists, the AA Screening report submitted with the planning application has screened this pathway and concludes no likely significant effects, alone or in-combination (including with the nearby wind farm proposal). Accordingly, no increase in the significance of biodiversity effects arises from water–related interactions.
- **Land, Soils, and Geology**: Potential contamination could reach water bodies through soil. However, site conditions prevent surface water flow toward watercourses, limiting any potential effects. No increase in significance due to interaction.

Climate

16.13 Climate-related interactions, including air quality and water, are discussed in Chapters 8 (Water) and 10 (Air Quality):

- **Water**: Climate change may increase flood risk. The site's quarry extension is not expected to increase flood risk on- or off-site. No increase in significance due to interaction.

- **Air Quality**: Greenhouse gas emissions from site traffic and equipment, along with a temporary reduction in carbon capture due to vegetation removal, may impact air quality. These emissions are not expected to significantly contribute to global GHG levels. No increase in significance due to interaction.

Air Quality

16.14 Air quality interactions primarily affecting human and ecological receptors are detailed in Chapter 6 (Biodiversity) and Chapter 10 (Air Quality):

- **Population**: Dust emissions from quarry operations could affect residents. Mitigation measures, including berms, hedgerow retention, and water sprays, will limit dust impact, resulting in no significant adverse effects. No increase in significance due to interaction.
- **Biodiversity**: Dust could hinder vegetation processes such as photosynthesis. However, mitigations ensure no significant adverse effects on nearby ecological receptors. No increase in significance due to interaction.

Noise and Vibration

16.15 Noise and vibration interactions concerning human and ecological receptors are detailed in Chapter 10 (Noise and Vibration):

- **Population**: Noise from tree removal, extraction, and material transport may disturb residents. Mitigation, including berms, equipment maintenance, and equipment placement within the void, will help maintain noise limits, ensuring no significant impact. No increase in significance due to interaction.
- **Biodiversity**: Noise emissions will not significantly affect ecological sites, given the site's distance from these areas and the implementation of noise control measures. No increase in significance due to interaction.

Material Assets

16.16 Material assets' interactions with land, soil, and geology are discussed in Chapters 7 (Land, Soil, and Geology) and Chapter 15 (Material Assets):

- **Land, Soil, and Geology**: The limestone extraction, recognised as a key regional resource, supports construction needs in the area. Once depleted, the resource cannot be renewed, though site restoration efforts are planned to minimise its visual impact. No increase in significance due to interaction.

Landscape and Visual

16.17 Landscape interactions with population and human amenity are discussed in Chapter 12 (Landscape):

- **Population**: As set out in Chapter 12, visibility of the extension is limited and largely confined to northern viewpoints. The proposal does not materially change the local skyline or ridge profile and sits within the context of the established quarry. Residual landscape and visual effects are slight (not significant). With mitigation planting maturing over time, there is no increase in the significance of effects on population or residential amenity arising from landscape–visual interactions.

16.18 Traffic interactions affecting population and human health are covered in Chapter 13 (Traffic):

- **Population**: As set out in Chapter 13, project traffic is accommodated within available junction and link capacity. With compliant sightlines and standard management measures in place, no road-safety or congestion effects of significance are anticipated. Residual traffic effects on population and human amenity are imperceptible (not significant); no increase in significance arises from interactions with other topics.

REFERENCES

Environmental Protection Agency (May 2022) Guidelines on the Information to be Contained in Environmental Impact Assessment Reports