



16 Interactions and Cumulative Impacts

16.1 Introduction

This section of the rEIAR has been prepared by Tom Phillips + Associates and deals with the likely interactions that would have taken place at the time in which the quarry was active.

In addition to the requirement under the Planning and Development Regulations 2001 (as amended) to describe the likely significant effects of the proposed development on aspects of the environment, it is also required to consider the interaction of those effects. As such, these are assessed below.

This section addresses the intra-project significant effects (i.e. those occurring between the environmental topics within the project). Inter-project effects (i.e. those which were likely to occur as a result of the likely impacts of the proposed development interacting with the impacts of other projects in the locality) have also been considered and it has been established that there are no other known planned/permitted projects that would have interacted to a significant degree the operational phase of the quarry.

Further detail relevant to the interaction of impacts may be found in the earlier chapters of the rEIAR.

16.2 Inter-Relationships/Interactions

It is noted that all aspects of the environments are likely to interact to some extent and to various degrees of complexity. The likely significant interactions between factors arising from the proposed development are set out below.



Table 16.1: Matrix of Interactions Between Environmental Factors

	Archaeology, & Cultural Heritage	Population & Human Health	Biodiversity	Land, Soils & Geology	Hydrology	Air Quality	Climate	Noise & Vibration	Landscape & Visual	Traffic	Waste Mgmt
Archaeology & Cultural Heritage				x							
Population & Human Health					x	x	x	x	x	x	x
Biodiversity					x	x	x				
Land, Soils & Geology											x
Hydrology											x
Air Quality										x	
Climate											
Noise & Vibration										x	
Landscape & Visual											
Traffic											x
Waste Mgmt											



16.2.1 Interaction between Archaeology & Cultural Heritage and Land, Soils & Geology

The topsoil was removed in order to quarry the rock and was stored at identified locations throughout the quarry. In order to mitigate against such impacts, it is recommended that all ground disturbances, such as topsoil stripping, that are associated with the proposed development, be monitored by a suitably qualified archaeologist.

16.2.2 Interaction between Population & Human Health and Hydrology

The impact of the historic development on the hydrology and hydrogeology of the area and on the population and human health of the area is assessed in Chapters 5 and 8 of this EIAR.

In terms of the predicted impact on humans, potential health effects arise mainly through the potential for groundwater contamination and impacts on local wells. Hydrocarbons, in the form of fuels and oils, will be used on-site during aggregate extraction.

Over the history of the quarry there have been no incidents or concerns raised by the local public regarding private wells.

In addition, Chapter 8 also outlines the baseline monitoring which has demonstrated that the previous activities have not had impacts on surface or groundwater in the area.

16.2.3 Interactions between Population & Human Health and Air Quality

The interaction between Population & Human Health and Air Quality is discussed in Chapters 5 and 9.

Air dispersion modelling of operational activities at the site was undertaken to assess the impact of the development with reference to EU ambient air quality standards which are based on the protection of human health.

The results of the dispersion modelling assessment show that dust deposition levels and annual mean concentrations of PM_{2.5} from the historic quarrying operations are below the relevant limit values.

In relation to future air quality impacts from the development site, if the subject application is not approved, no activities on site will occur and therefore, there will be no effects on air quality. Should quarrying activities with the same historical practices recommence on site following grant of a relevant planning permission, impacts to air quality similar to those identified herein would likely occur.

16.2.4 Interactions between Population & Human Health and Climate

The interaction between Population & Human Health and climate are discussed in Chapters 5 and 10.

The historic quarrying activities resulted in some GHG emissions which impacted climate. Based on the quantified GHG emissions and, using the assessment criteria



from Section 10.2.3 and Table 10.5, the significance of the GHG emissions is considered moderate adverse

16.2.5 Interactions between Population & Human Health and Noise & Vibration

The interaction between Population & Human Health and Noise & Vibration are discussed in Chapters 5 and 11.

Historically within the site, operational phase activities included screening, loading material, excavating material, infilling material and the inward /outward transport of material on lorries. For the purpose of the assessment the historical plant and equipment for the quarry has been assessed based on assumed plant and machinery from quarries of similar size and purpose, and reference taken from BS 5228-1.

The noise impact assessment for the quarry has been developed based on the attended noise survey, the approximate extraction area and predicted noise sources. As the site has potential to create noise impact at daytime, a worst-case scenario has been developed for the daytime period predicting the noise impact at the nearest noise sensitive locations.

The impact of residual noise, considering the emissions, phasing, and intensity of site activities, alongside the mitigation measures implemented and the context of the existing ambient environment, is assessed to be not significant on a local scale. Furthermore, it is regarded as imperceptible in the broader environment, particularly given the absence of submissions, complaints, or enforcement actions related to noise or vibration

16.2.6 Interactions between Population & Human Health and Landscape & Visual Impact

The interaction between Population & Human Health and Landscape & Visual Impact are discussed in Chapters 5 and 15.

As outlined in chapter 15, the existing quarry is not readily visible from the surrounding area and this is likely to have been the case throughout its lifetime. Consequently, it has had only minor influence on the prevailing landscape character and the amenity of views within the surrounding area as evidenced by the represented viewpoints used as part of the visual impact assessment.

16.2.7 Interactions between Population & Human Health and Traffic

The interaction between Population & Human Health and Traffic is discussed in Chapters 5 and 13.

The development is expected to have generated a limited number of additional traffic movements on the local network. Based on the number of staff expected to work on site i.e. 3 no., a total of 6 no. staff trips are generated i.e. two LV trips per staff member.

Regarding HV movements, the historic site may have had an extraction output of 300-500,000 tonnes of material per annum. It is assumed for calculation purposes a figure of 400,000 tonnes per annum.



It is noted that a typical payload departing site would have been 25 tonnes. This equates to an average of 58 no. HVs arriving and 58 no. HVs departing the site each day (including ad hoc HV trips).

16.2.8 Interactions between Biodiversity and Hydrology

A comprehensive Assessment of Biodiversity and Hydrology is provided in Chapters 6 and 8 of this EIAR, respectively.

The majority of the Substitute Consent site is located within the River Barrow surface water catchment and Hydrometric Area 14 of the Southeastern River Basin District. Part of the southwest of the Substitute Consent site is located within the River Nore surface water catchment and Hydrometric Area 15 of the Southeastern River Basin District. EPA mapping indicates a stream (identified as Raheendoran Stream) flowing through the site before ultimately discharging into the River Barrow. However, walkover surveys and drainage mapping indicate that the course of this stream has been altered by the historic quarrying activities and no watercourses cross the existing quarry void. Water gathers in the floor of the existing quarry and drains out from an existing pond in the north of the quarry. From here the stream/quarry discharge flows to the southeast along the existing quarry access road. The drain is culverted under the access road and flows to the east where it joins the Mortarstown Stream to the east. This stream flows east and discharges into the Fushoge River just upstream of its confluence with the River Barrow.

There is no existing discharge from the quarry within the River Nore catchment. However, there is an unnamed stream c. 1.3km west of the site which connects to the Dinin River that ultimately discharges into the River Nore. It is possible that runoff from some areas in the west of the site may currently flow to the west towards the Dinin River.

It is considered that with the implementation of the mitigation measures outlined in the Biodiversity chapter that the development and operation of the quarry did not result in any likely, significant effects on groundwater and/or surface water. As a result, there were no significant potential to affect the conditions within the designated sites hydrologically linked to the Site: River Barrow & River Nore SCA and Cloghrystick Wood pNHA. A NIS accompanies this planning application and with the application of the proposed environmental controls, mitigation and monitoring, it is objectively concluded that no significant effects arising from the development and operation of the quarry did occur in relation to the Natura 2000 sites (i.e. River Barrow & River Nore SCA or indeed any other Natura 2000 site in the wider hinterland).

16.2.9 Interactions between Land, Soils & Geology, Hydrology and Waste Management

During site walkover surveys and site investigations, no evidence of soil contamination was recorded at the Development Site. Whilst previous quarrying operations were completed at the Development Site, there is no evidence of contaminated tailings. The spoil heaps comprise of shale and have begun to revegetate. All quarrying operations at the Development Site were completed in accordance with tried and tested, best practice measures to prevent soil/subsoil and bedrock contamination. Similar mitigation measures have been implemented at numerous bedrock quarries and sand and gravel pits across the country.

According to the EPA online mapping database (www.epa.ie), there are no licenced waste facilities or dump sites within the Proposed Development Site or in the surrounding lands. The



closest mapped waste facility is located in the townland of Cappanboe (Site Code: W0158), located ~7.5km to the north-northeast of the Development Site.

Furthermore, there are no Industrial Emissions (IE) licences/Integrated Pollution Control (IPC) Licence facilities in the immediate area of the Development Site. The closest mapped IEL licence is located ~1km southeast of the Development Site. This IEL site is operated by Clogrennane Lime Limited (Carlow) (P0400-03).

16.2.10 Interactions between Air Quality and Traffic

The interaction between Air Quality and Traffic are discussed in Chapters 9 and 13.

As outlined in chapter 9, the development did not result in a greater than 1000 AADT change or greater than 200 HGV AADT change. Thus, a detailed assessment of operational phase traffic emissions has been scoped out and there is no potential for significant impacts to air quality from operational phase traffic emissions

16.2.11 Interactions between Noise & Vibration and Traffic & Transportation

The interaction between noise and vibration and traffic arises through the generation of construction and operational traffic. Overall predictions are that there has been no significant noise impact generated during either the construction (site preparation) or operational phase of Development, in the context of existing traffic flows. Details of these interactions are discussed in the Noise Chapter.

16.2.12 Interactions between Material Assets and Land, Soils, Geology, & Hydrogeology

There were soil, stones, clay excavated to facilitate construction of the development and as part of normal quarrying practices. It is currently envisaged that excavated material was sold as product and where excavated material is not of product standard it was able to be retained and reused onsite for landscaping and fill. If any of the remaining material is deemed unsuitable for reuse it would need to be removed off site. This material would be taken for appropriate off-site reuse, recovery, recycling and/or disposal.

Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that did not impact negatively on workers, or the water and soil environments, both on and off site. Where material has to be taken off site, it was taken for reuse or recover, where practical, with disposal a last resort.

Adherence to the mitigation measures in Chapter 7 (Land, Soils, and Geology), Chapter 8 (Hydrology & Hydrogeology) and the requirements of the TWMP did ensure the associated effect is long-term, imperceptible and neutral.

16.2.13 Interactions between Material Assets (Waste) and Population & Human Health

The potential impacts on human beings in relation to the generation of waste during the construction and operational phases are that the incorrect management of waste could result in a nuisance to the public, attract vermin and cause a visual impact. There is no evidence on site of the poor waste management practices and there are no records of any complaints in this regard.



16.3 Cumulative Impacts

A review of the Carlow County Council planning system database was carried out and, no significant permitted or planned projects have been identified.

The majority of permitted developments in the area during the lifetime of the quarry were residential or agricultural in nature.

Given the nature of the development proposed, no significant impacts are envisaged arising from cumulative impacts with other projects.

16.4 'Do Nothing' Scenario

If the development did not proceed, there will be no cumulative impacts arising.

16.5 Mitigation and Monitoring

It is not proposed that any mitigation or monitoring was undertaken specifically in relation to cumulative impacts.