



## 15.0 INTERACTIONS AND CUMULATIVE IMPACTS

### 15.1 Introduction

This section of the EIAR has been prepared by Tom Phillips + Associates and deals with likely interactions between effects predicted as a result of the proposed development.

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 particular 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 environmental topics within the project). Inter-project effects (i.e. those which are likely to occur as 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 are likely to interact to a significant degree with either the construction or operational phases of the development.

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

### 15.2 Inter-Relationships/ Interactions

It is noted that all aspects of the environment 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 in the matrix provided as Table 15.1 below.



Table 15.1: Matrix of Interactions Between Environmental Factors

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





### 15.2.1 Interaction between *Archaeology & Cultural Heritage* and *Land, Soils & Geology*

The topsoil will be removed which is required to quarry the rock and will be 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.

### 15.2.2 Interaction between *Population & Human Health* and *Hydrology*

The impact of the proposed 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 EIA.

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.

Due to the low permeability of the proposed rock for continued extraction and extension along with the localised groundwater catchment to the quarry, further significant effects on groundwater levels or quality are not anticipated and therefore significant effects on local well supplies is not anticipated. Furthermore, proven and effective measures to treat wastewater will break the pathway between the potential source and the receptor. The residual effects will be – Negative, indirect, imperceptible, medium term, likely effect on groundwater (Louth GWB) and surface water quality in the Slieveboy Stream.

Over the 30 year 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 a list of mitigation measures which ensure that fuels and chemicals will be appropriately handled and that run-off will be well managed to ensure that contamination will be avoided.

### 15.2.3 Interactions between *Population & Human Health* and *Air Quality and Climate*

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

There will be no change in the substances which may be present in the emissions from the quarry operation and associated activities on site.

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. As demonstrated by the modelling results, emissions of PM<sub>10</sub> and PM<sub>2.5</sub> as a result of the development are compliant with all National and EU ambient air quality limit values and, therefore, will not result in a significant impact on human health.

The mitigation measures which are employed at the existing facility will continue to be used in order to control emissions. In this regard, wet suppression techniques, regular road sweeping and covering fine materials leaving the site. In summary, there will be no adverse





impacts on ambient air quality in the vicinity of the facility, on local residences or on the local environment as a result of emissions from either the existing or the proposed activities at the site.

#### 15.2.4 Interactions between *Population & Human Health* and *Noise & Vibration*

The interaction between Population & Human Health and Noise & Vibration is discussed in Chapters 5 and 10.

A comprehensive assessment of the potential noise impacts associated with the proposed development has been completed. The proposed noise and vibration Emission Limit Values (ELVs) adopted for the development are in line with the emission limits stipulated in Conditions 9 and 10 of the grant of planning for the existing Bellewstown Quarry issued by An Bord Pleanála (ABP Ref. PL17.QD0013). The assessment has concluded that noise levels associated with the existing permitted quarrying activities in combination with the proposed new access road will be below the noise limit value at the nearest noise sensitive locations. The implementation of best practice noise mitigation measures will form part of site management practices to minimise the potential for noise impacts at the nearest noise sensitive locations.

There is potential for vibration impacts associated with blasting activities; continuing current practice, all blasts will be designed to ensure the vibration limit value is not exceeded at sensitive dwellings. The implementation of practical control measures will ensure that vibration impacts associated with blasting remain controlled to avoid significant impacts to the surrounding environment.

The operational impacts associated with the existing permitted quarry and the proposed new access road are considered not significant and to be below the noise and vibration ELVs.

The noise effect of out of hours operations of the proposed development is mitigated by the limited number of evening periods per year that it would occur. A designated noise liaison officer will be appointed to site. This person will be tasked with the proper communication of the time and expected duration of operations in advance of any evening/night-time works to all nearby residents.

Monitoring of noise and vibration emissions will be carried out in accordance with the relevant planning conditions for development to ensure compliance with operational noise and vibration Emission Limit Values.

#### 15.2.5 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 11.

11 viewpoints were selected for assessment representing a range of viewing angles, distances and contexts. The Visual Impact Assessment of these viewpoints established that visibility of the proposal relates mostly to the proposed new entrance to the existing quarry, and the associated quarry infrastructure within approx. 50m of that entrance, as well the proposed 1.7km long access road proposed for the eastern section of the site, which also entails two





new access/exit points onto local roads almost 1 km apart. The assessment resulted in an 'Imperceptible/neutral' or 'Slight-imperceptible/positive' residual visual impact significance/quality of effect in 9 out of the 11 locations. Where a 'positive' quality of effect was deemed in such instances, it is because the scale, discernment and placement of the proposed native planting associated with the proposal is, residually, likely to enhance the setting.

As a result, overall, the range of potential residual visible impacts that are likely to be generated as a result of the proposed development is notably low, especially in light of the site's largely hilltop location. Indeed, this is a distinctively low range of likely visual impacts for most proposed developments; even more so for a rock quarry with a proposed approx. 1.7km-long road.

#### 15.2.6 Interactions between *Population & Human Health and Traffic*

The interaction between Population & Human Health and Traffic is discussed in Chapters 5 and 12.

An important difference from the past/current operation at the quarry is that the proposed development seeks to provide additional roads infrastructure connecting the site access on L56172 Mullagh Road to L1615 at a proposed new junction approximately 1km south of Regional Road R150. The primary objective of the proposed new road infrastructure is to reduce impact on the receiving local road network. In addition to the construction of a proposed new link road, a suite of infrastructure improvement works required to accommodate existing and future HGV traffic flows (these works have been agreed in principle with Meath County Council and Kilsaran will contribute financially to them or they will carry out the road improvement and bridge works on behalf of Meath County Council subject to agreement and subject to the appropriate licences, whichever Meath County Council decides).

The forecast daily traffic generation of the site under the current proposal is approximately equal to the generation rate that prevailed in 2008 when no significant road widening or local improvements had been envisaged by Meath County Council as necessary to accommodate site traffic.

Regional Road R150 junction with L1615 is lightly trafficked and from observation alone can be seen to operate well within capacity. Given the forecast peak hour generation of 9 No. HGV trips, the proposed development will not give rise to capacity concerns at this junction.

The other junctions on the haul route are the new crossroad junction of the development access with the Mullagh Road L56172 and the new junction of the access road with L1615 near Laburnum Farms. The geometry of these junctions accords with current best practice, sightlines are satisfactory and the volume of traffic throughput at these junctions will not be significant and it follows that the forecast volumes of operational traffic generation are not such as to be of concern with respect to junction capacity.

The Road Safety Authority record of collision statistics for the period 2005 to 2016 shows that the receiving road network and the haul route has a good safety record. No collisions involving HGVs have been recorded in the Road Safety Authority records.

Under the 'do-something' scenario most of the receiving road network will benefit from a reduction in HGV traffic. The forecast increase in traffic will be manifest along the proposed





new 1.7 km site access road and over the 1 km northern section of L1615 and on Regional Road R150. The forecast increase in HGV traffic on L1615 is approximately 80 HGV trips per day (160 movements). The current HGV traffic flow recorded on L1615 is 37 No. HGV movements.

The impact of the proposed development traffic on the R150 is of the order of an increase of between 24-36% in the HGV content of flows between Annagor/Beaumont and Duleek. Development traffic using the R150 will travel toward Duleek, turning left onto Regional Road R152 to travel south. The R152 currently accommodates approximately half of the existing HGV traffic arising from the quarry so the relative increase experienced by the proposed development equates to approximately 66 No. HGV trips per day.

#### 15.2.7 Interactions between *Population & Human Health and Waste*

The Interactions between Population & Human Health and Waste are discussed in Chapters 5 and 14.

The potential impacts on human beings are in relation to incorrect management of waste during construction and / or operation, which could result in littering and presence of vermin – with associated potential for negative impacts on human health and residential amenity. A carefully planned approach to waste management and adherence to the project specific C&D WMP (Appendices 14.1), and the mitigation measures in Chapter 14.6, will ensure appropriate management of waste and avoid any negative impacts on the local population. The effects should be long-term, imperceptible and neutral.

#### 15.2.8 Interactions between *Biodiversity and Hydrology*

A comprehensive Assessment of Biodiversity and Hydrology is provided in Chapters 6 and 8 of this EIAR, respectively. (Potential impacts on nearby *Natura 2000* sites is also assessed in a separate Report attached at Appendix 6.1 entitled *Natura Impact Statement of Bellewstown Quarry, Co. Meath*.)

Any projects with deep excavation, settlement ponds and a sump have some limited potential to entrap and drown terrestrial mammals. There is no evidence from the operational quarry that any such issues have arisen. Water collected in the sump is pumped for on-site treatment. Local mammals quickly habituate to the presence of standing water which may in fact provide foraging and drinking opportunities to certain species.

Birds associated with aquatic habitats in the wider area could be negatively affected by a proposed development through hydrological or water quality impacts such as increased siltation, nutrient release, contaminated run-off and/or wind-blown sand arising from the development works. This requires connectivity between the works area and the surrounding aquatic habitats. There is no evidence from field or desktop data that any such impacts have arisen in the past in association with the operation of the quarry at this location.

The construction activities have the potential to impact upon aquatic habitats at and downstream of the site. These aquatic habitats, and fauna associated with them, could be affected negatively through increased siltation, contaminated run-off, fuel spills or subtler effect on hydrogeology. It is noted however that there is no evidence that the current





quarrying operations have resulted in any negative downstream impact and the current water treatment regimen on site appears to be functioning well.

However, in the absence of environmental controls, run-off and siltation to watercourses could potentially lead to adverse impacts upon such aquatic species. The implementation of the site restoration plan associated with the development will, in the long-term, create new habitats for other taxa to use and take refuge in as the vegetation matures.

Post-closure the development will ultimately result in a quarry lake area with landscaped marginal planting. This quarry pond has the potential to be of at least moderate local biodiversity value attracting species such as Swallow, House Martin and Sand Martin over time. It also has the potential to attract waterbirds, particularly in the winter months.

#### **15.2.9 Interactions between *Biodiversity* and *Air Quality***

There is potential for interrelated impacts between biodiversity and air quality arising from the proposed development. Chapters 6 and 9 address the biodiversity and air quality impacts, respectively. As outlined in Chapter 9, dust monitoring and dust minimisation efforts will be utilised to suppress and minimise dust. There are a number of mitigation measures in place on site to prevent significant dust emissions from on-site activities and minimise emissions. It is considered that the continued implementation of the mitigation measures outlined in Chapter 9 to minimise dust and ensure good air quality standards will neutralise the potential for significant effects on biodiversity in the area.

#### **15.2.10 Interactions between *Land, Soils & Geology* and *Hydrology***

The interaction between land, soils and geology, and hydrology is detailed in Chapters 7 and 8.

Run-off containing suspended solids could cause damage to surface water systems and receiving watercourses. Run-off from the quarry will to be managed using the methods described as part of the proposed development and in accordance with existing operations on-site.

There will be a small requirement to strip and store overburden from the north-western section of the continuation area as the quarry face extends into the lands to the north / northwest. Overburden removal will be an intermittent operation but will be completed in the early stages of the continuation, which will progress in advance of the rock extraction during periods of suitable weather. Overburden will be retained and used during restoration activities such as vegetating the upper benches of the quarry. All construction drainage/runoff water will be contained and treated to a high standard as per the ongoing quarry inflow water, therefore the residual effects are considered to be -imperceptible, indirect, reversible, unlikely, temporary effect on surface water quality.

Road construction activities will include cutting and filling which will require earthworks resulting in removal of vegetation cover and excavation of soil and mineral subsoil. These activities can result in the release of suspended solids to surface watercourses and could result in an increase in the suspended sediment load, resulting in increased turbidity which in turn





could affect the water quality and fish stocks of downstream water bodies. Potential effects are significant if not mitigated against.

A suite of mitigation measures will be employed during the construction phases to ensure that no significant effects arise.

No significant effects on the surface water or groundwater environment as a result of the proposed development will occur. Monitoring of quarry discharge (volumes & quality), on-site groundwater levels and off-site groundwater levels (i.e. W6) will continue to ensure no significant effects are occurring.

#### **15.2.11 Interactions between *Land, Soils & Geology, Hydrology and Waste Management***

The interactions between land, soils and geology, hydrology and waste are outlined in Chapters 7, 8 and 14, respectively.

During the construction phase, excavated soil, stone and made ground (c. 798 m<sup>3</sup>) will be generated from the excavations required to facilitate construction of new foundations, underground services, and the installation of the proposed road. It is estimated that none of excavated material will need to be removed off-site. Where material has deemed unsuitable to be reused onsite it will be taken off-site, it will be taken for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 14.6 and the requirements of the C&D WMP (Appendix 14.1), will ensure the effect is **long-term, imperceptible** and **neutral**.

#### **15.2.12 Interactions between *Air Quality and Climate and Traffic***

The interactions between air quality and climate, and traffic are outlined in Chapters 9 and 12.

There is the potential for a number of emissions to the atmosphere during the operational phase of the development. In particular, the traffic-related air emissions may generate quantities of air pollutants such as NO<sub>2</sub>, PM<sub>10</sub> and PM<sub>2.5</sub>.

The traffic generated as part of the proposed development was reviewed against the DMRB screening criteria as outlined in Section 9.2.3. It was determined that none of the roads impacted by the development met the screening criteria and therefore impacts from road traffic emissions on local air quality are considered long-term, neutral and imperceptible.

#### **15.2.13 Interactions between *Noise & Vibration and Traffic***

The interactions between noise and vibration and traffic are outlined in Chapters 10 and 12.

Please refer to Chapter 12 for full details in relation the traffic assessments prepared for the development. Based on traffic flow values presented therein for the Existing Development and Proposed Development scenarios, the changes in traffic noise levels have been calculated for the opening year 2021, and the design year 2031 and are shown in Table 10.16. Traffic noise levels are predicted in accordance with guidance set out in Calculation of Road Traffic





Noise (CRTN). The resulting changes in traffic noise level are less than +2dB. The resulting impact is negative, not significant and long-term.

There will be no significant vibration from the construction site, i.e. from the removal of topsoil, therefore no mitigation measures are required.

#### 15.2.14 Interactions between *Traffic* and *Waste Management*

The interaction between Traffic and Waste Management are discussed in Chapters 12 and 14.

Local traffic and transportation will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the proposed Development. The increase in vehicle movements as a result of waste generated during the construction phase will be *temporary* in duration. There will be a slight increase in vehicle movements in the area as a result of waste collections during the operational phase but these movement will be imperceptible in the context of the overall traffic and transportation increase. Traffic-related impacts during the construction and operational phases are addressed in Chapter 12 (Traffic). Provided the mitigation measures detailed in Chapter 12 and Chapter 14.6 are adhered to, the predicted effects are short to long-term, imperceptible and neutral.

#### 15.3 Cumulative Impact

Following a review of the Meath County Council planning system database, no significant permitted or planned projects have been identified.

The construction phase of the proposed development involves the removal of topsoil from the area to be quarried, the alterations to the entrance point to the quarry site and the development of the new dedicated private access road and the impacts of these works are assessed cumulatively. The public roadworks proposals (improvements to the L1615 and repair and strengthening of Beaumont Bridge) have been assessed cumulatively throughout this EIAR.

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

#### 15.4 'Do Nothing' Scenario

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

#### 15.5 Mitigation And Monitoring Measures

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



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