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EIAR Non-Technical Summary

PRESENTED TO

Milford Quarries Limited
Proposed Quarry Development

DATE

March 2023

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1	INTRODUCTION AND BACKGROUND TO EIA	1
2	OVERVIEW OF THE PROPOSED DEVELOPMENT	2
2.1	Site Location	3
2.2	Construction Phase	4
2.3	Operational Phase	4
3	PLANNING CONTEXT	5
4	ENVIRONMENTAL IMPACTS	5
4.1	Population and Human Health	6
4.2	Biodiversity	7
4.3	Land and Soils	11
4.4	Hydrology and Hydrogeology	12
4.5	Air Quality and Climate	14
4.6	Noise and Vibration	15
4.7	Landscape and Visual Amenity	17
4.8	Archaeology and Cultural Heritage	17
4.9	Material Assets; Traffic, Waste and Utilities	18
4.9.1	<i>Traffic</i>	18
4.9.2	<i>Waste and Utilities</i>	20
4.10	Risk Management	22
4.11	Interactions	23
4.12	Mitigation and Monitoring Measures	23

LIST OF TABLES

Table 4-1: Recommended Noise Limits as per Planning Conditions	16
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LIST OF FIGURES

Figure 2-1 P1591-0_PP04_Proposed Site Layout Map	3
Figure 2-2 PP09 Indicative Extraction Phasing Plan	5

1 INTRODUCTION AND BACKGROUND TO EIA

This Environmental Impact Assessment Report (EIAR) has been commissioned by the Applicant, Milford Quarries Limited, in respect of a quarry development project at a site located in Bannagogle, Old Leighlin, Co. Carlow (the Proposed Development).

An Environmental Impact Assessment Report (EIAR) is an assessment and analysis of potential impacts on the receiving environment that may arise as a result of the Proposed Development. An EIAR is required to accompany a planning application for development of a class set out in Schedule 5, Part 1 of the Planning and Development Regulations which exceeds a limit, quantity or threshold set for that class of development.

Schedule 5, Part 2 of the Planning Regulations defines projects that are assessed on the basis of set mandatory thresholds for each of the project classes including:

2. Extractive Industry

b) Extraction of stone, gravel, sand or clay, where the area of extraction would be greater than 5 hectares.

14. Works of Demolition

Works of demolition carried out in order to facilitate a project listed in Part 1 or Part 2 of this Schedule where such works would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7.

15. Any project listed in this Part which does not exceed a quantity, area or other limit specified in this Part in respect of the relevant class of development but which would be likely to have significant effects on the environment, having regard to the criteria set out in Schedule 7.

The area of extraction for the Proposed Development is 2.44 hectares which is less than the 5-hectare threshold and thus a mandatory EIA is not required. The Proposed Development involves demolition of existing derelict buildings to allow for the lateral quarry extension. Based on the above an EIAR has been carried out to assess any likely significant effects on the environment.

In assessing the environmental impacts, this EIAR will evaluate the existing situation and assess any potential impacts of the Proposed Development. Where potential impacts are identified, mitigation measures will be proposed. In addition, the in-combination effects of any other known plans or projects will be identified and assessed.

This Non-Technical Summary (NTS) describes the Proposed Development, the Environmental Impact Assessment (EIA) process and summarises the key environmental impacts arising from each of the environmental assessments carried out by a panel of experts in accordance with best practice. The environmental assessments involved desktop studies, site visits, surveys, and site-specific investigations. The NTS also outlines the mitigation and

monitoring measures proposed along with a list of any residual impacts that may occur from the Proposed Development.

2 OVERVIEW OF THE PROPOSED DEVELOPMENT

Milford Quarries Limited intend to apply for planning permission for the demolition of existing disused buildings and the development of a dimension stone quarry with a projected lifetime of c.14 year (12 to 13 years operational with an additional 1-year permission to allow for the implementation of a restoration plan) at this site of c. 9.34 hectares at Bannagagole, Old Leighlin, Co. Carlow.

The Proposed Development will be carried out in four phases, commencing in 2023 and completing in 2037. It is proposed that Phase 1 will commence in 2023 and will be complete in 2026. Phase 2 will commence in 2026 and complete in 2029. Phase 3 will commence in 2029 and complete in 2033 and Phase 4 will commence 2023 and complete in 2037. Figure 2-1 PP09 Indicative Extraction Phasing Plan shows the location of the phases within the site.

The proposed quarry void (c. 2.44 ha) will be extracted to a depth of 2 no. benches of c. 10m from top of bedrock, with a final floor level of c. 56.5m above ordance datum (AOD) with a proposed rate of rock extraction of c.30,000 cubic metres (84,000 tonnes) per annum. A proposed working area of c. 1.2 hectares to the south of the extraction zone will provide for the crushing / processing of the unusable stone and storage of dimensional stone and will include machinery storage shed, staff welfare, wastewater holding tank, weighbridge, and parking area.

The Proposed Development will also include for earthen screening berms to a height of c. 3 m, a wheel wash facility; the installation of surface water attenuation and settlement ponds for the treatment of suspended solids in the floor of the quarry; soil storage area with an average storage depth of c. 4 m and all other site development works above and below ground including the restoration of the final quarry void (extractive area).

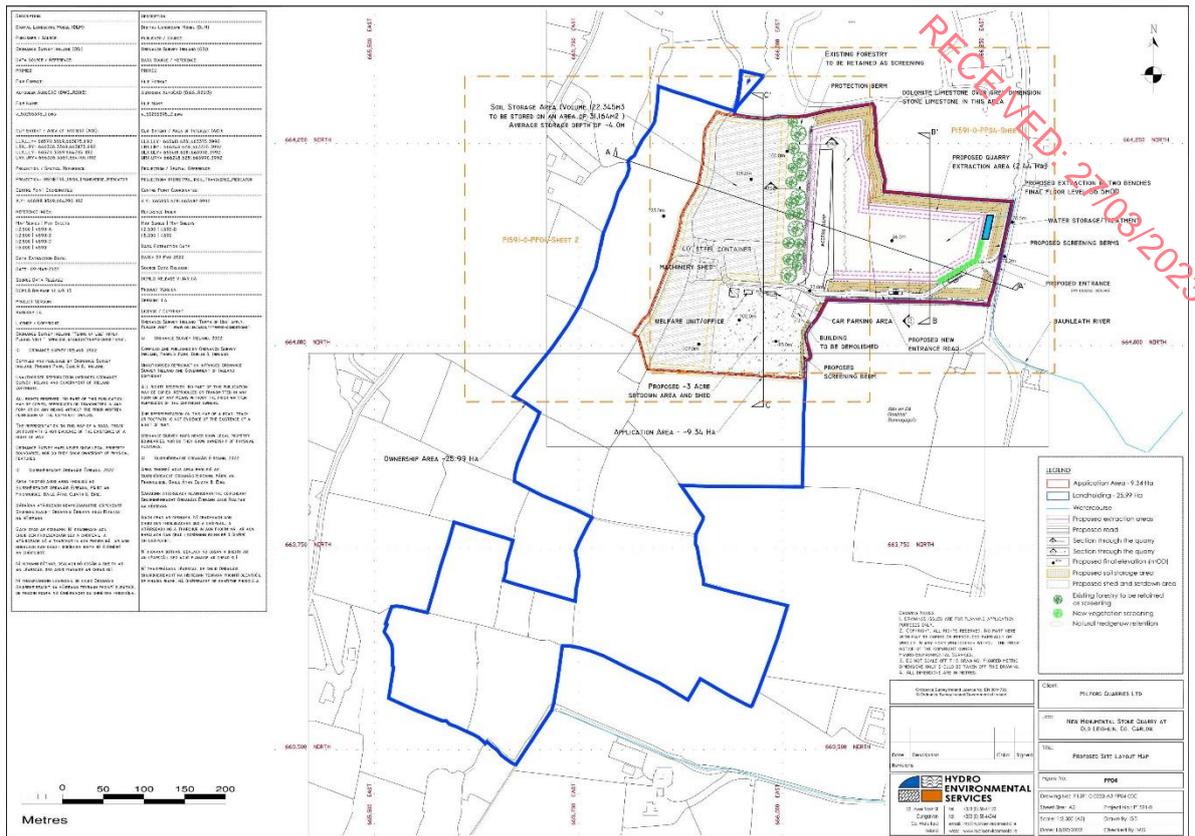


Figure 2-1 P1591-0_PP04_Proposed Site Layout Map

2.1 Site Location

The site at *Bannagagole, Old Leighlin Co. Carlow*, occupies a total area of 9.34 hectares (ha) and forms part of the Applicant’s wider landholding of 26ha. Regionally the Site is situated 17km south of Carlow Town and 22km northeast of Kilkenny.

On a more local scale, the site is located 1.5km south of the village of Old Leighlin, 5km southwest of Leighlinbridge and immediately south of the existing Old Leighlin Quarry. The M9 motorway is located to the east of the site with the closest access point being located 7km to the south at Junction 7. Junction 6 of the M9 motorway at Powerstown is located 10km to the northeast. The setting is rural with surrounding land uses of agriculture, forestry and a number of one-off residential dwellings. The Site lies immediately to the south of an existing limestone bedrock quarry at Bannagagole (Old Leighlin Quarry) which is operated by Kilkenny Limestone Quarries Ltd. Rock extraction, processing, and surplus rock storage is carried out at the existing quarry. The River Barrow is located 4km to the east of the site, while the Madlin River, a tributary of the Barrow runs in a west to east direction 1.5km north of the site.

Access to the Proposed Development will be facilitated by a heavy goods vehicle site entrance from the Local Road to the east of the proposed site via a proposed access haul road. As part of the Proposed Development, all staff and visitor parking will occur within a designated parking area to be delineated within reasonable proximity to the welfare unit office.

Heavy vehicles will access the site through the proposed site access and proceed to the weighbridge before proceeding to the quarry area via the access ramp. Once within the quarry extraction area, the heavy goods vehicles shall be loaded by relevant machinery, before egressing the access ramp, proceeding once again to the weighbridge via the internal access road and then egressing the site in a southbound direction on the L3036.

2.2 Construction Phase

The Construction Phase of the Proposed Development will last approximately 18 months. Construction activity is expected to take place between 07:00 and 18:00, Monday to Friday. No construction activity will be carried out on Monday to Friday evenings after 18:00, on Sundays or on Bank Holidays.

2.3 Operational Phase

During the operational phase, core work hours will be as follows; 07:00 to 18:00 Monday to Friday and 07:00 to 13:00 on Saturday.

There are three main elements to the proposed quarrying process.

1) Stripping of overburden

The extraction area will be stripped of c. 158,928 m³ of overburden to a depth c. 4 metres. A portion of this overburden will be utilised in the construction of berms surrounding the extraction area, while the remainder is intended to be held in a soil storage area to the west of the extraction zone (see Drawing P1591-0-1222-A3-PP04-00A, prepared by Hydro Environmental Services, in Figure 2-2). The proposed soil storage area will cover an area of c.3.56 ha and hold a volume of 150,000 m³ of material to an average depth of 4.2m.

2) Removal of unusable stone

On the basis of the geophysical surveys carried out at the site, the usable dimensional limestone is at a typical depth of c. 10 metres. A layer of unusable stone of approximately 6 metres in depth will require extraction prior to reaching the quality dimensional stone. It is intended to include a working area to the south of the extraction zone (c. 1.2 ha) to provide for the crushing / processing of the unusable stone. This working area will include parking, a staff canteen / welfare building, weighbridge and stockpile area. Crushed and processed unusable stone will be transported offsite.

3) Extraction of Dimensional Limestone

Once usable dimensional stone beds are exposed, these will be cut into blocks using a diamond tipped chain or diamond wire saws. When the large blocks of dimensional limestone are cut they are pushed off the beds using steel bags that are filled with high pressure water. This provides the space for hooks to be inserted and for the blocks to be lifted away by an excavator. It is expected that dimensional stone beds will be extracted in 4 distinct phases as outlined in Figure 2-1 and on drawing P1591-0-1209-A3-PP09-00A, prepared by Hydro Environmental Services, in Appendix A of this EIAR. During Phase 1, and initial bench will be extracted from the eastern extent of the extraction area in a westerly direction. Phase 2 will

involve extraction of stone from the southern extent of the extraction area in a southerly direction. It is expected that a second bench will be extracted in two phases (Phase 3 and Phase 4) in a similar manner.

Usable dimensional stone blocks extracted from the quarry will be immediately transported offsite for processing elsewhere.

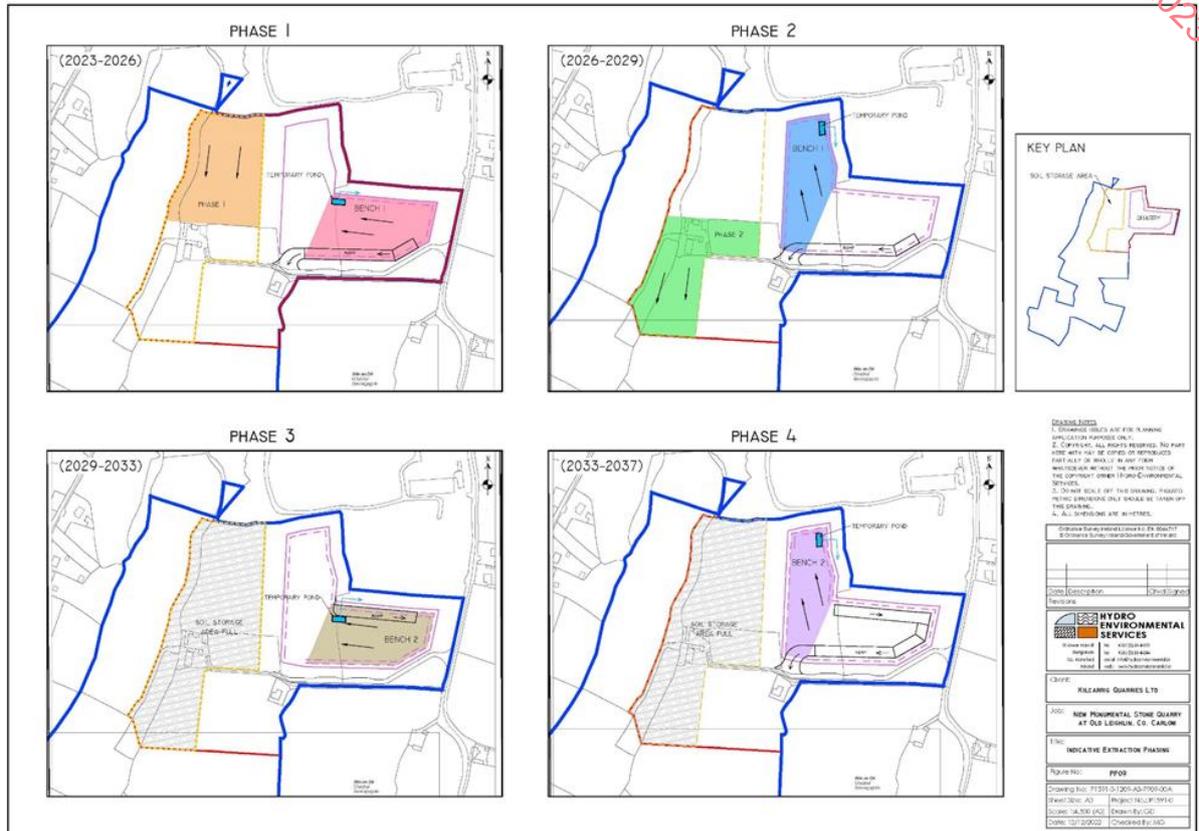


Figure 2-2 PP09 Indicative Extraction Phasing Plan

3 PLANNING CONTEXT

The planning and policy context gives an overview of the relevant legislation that supports the Proposed Development at a local, regional and national level, and sets out the strategic and statutory context governing the planning and development of the Proposed Development. Chapter 3 Planning and Policy describes how the Proposed Development complies with the stated and statutory requirements of Carlow County Council (CCC) with respect to planning and sustainable development. The relevant local planning policy with which the Proposed Development complies primarily comprises the Carlow County Development Plan 2022-2028.

4 ENVIRONMENTAL IMPACTS

The potential Environmental Impacts of the Proposed Development during all phases of the Proposed Development are addressed in this EIAR under the following headings as prescribed under the EIA Directive:

- Population and Human Health;
- Biodiversity;
- Land and Soils;
- Hydrology and Hydrogeology;
- Air Quality and Climate;
- Noise and Vibration;
- Landscape and Visual Amenity;
- Archaeology and Cultural Heritage; and
- Material Assets: Traffic, Waste and Utilities.

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Additionally, risk management and interactions between environmental factors have been examined, and a programme of mitigation and monitoring measures has been set out.

4.1 Population and Human Health

Human beings are an important element of the 'environment' to be considered. One of the principal concerns in any proposed development is that the local population experiences no reduction in the quality of life as a result of the proposed development on either a permanent or temporary basis.

The impacts of the Proposed Development on the Population and Human Health have been examined. The chapter specifically focuses on Population, Employment, Travel, and Human Health. Muine Bheag (Bagenalstown) is located approximately 5km southeast of the Proposed Development and has been selected as the study area for the purpose of population statistics.

Construction Phase

The construction phase related activities have the potential to positively impact the local population by the creation of new employment. Approximately 5 no. jobs will be created during the Construction Phase with a duration of approximately 18 months. There will be a slight increase in construction related traffic however given the temporary nature of the construction related traffic, the impact of the estimated construction traffic is expected to be minimal. There will be no significant impact on traffic flows during the construction phase and as such there will be no subsequent significant impact on population and human health.

Nuisance dust emissions from construction and demolition activities, including traffic have the potential to negatively impact air quality. Fine particles from these sources are recognised as a potential cause of pollution and can be damaging to the health of the surrounding population during the Construction Phase. Chapter 8 of this EIA has concluded that there will be no significant impacts on air quality as a result of the Proposed Development and as such there will be no significant air quality impact on human health.

The Proposed Development will involve the demolition activities. Chapter 9 of this EIA has identified that The adopted noise criteria will not be exceeded by the equipment listed in Chapter 9 at any of the NSLs during demolition works as such there will be no significant impacts on human health.

Operational Phase

The Operational Phase activities have the potential to positively impact the local population by the creation of new employment. Approximately 3 no. jobs will be created during the operational phase. The Proposed Development will result in an increase in traffic in the area which in turn will increase traffic-related noise. No traffic routes are predicted to experience increases of more than 25% in total traffic flows and as such the impact of noise from operational traffic will be unnoticeable and will not have a negative impact.

The Proposed Development is situated in an area where “*About 1 in 5 homes in this area is likely to have high radon levels*” which is classed as a high radon area. It is recommended that a radon detector be installed in internal spaces to monitor radon levels to ensure levels are below the acceptable level, or Reference Level, for workplaces in Ireland (300 becquerels per cubic metre (Bq/m³)).

The main potential impact on ambient air quality from soil and stones processing activities will be that associated with the deposition of dust generated by mechanical processing and transfer operations. Chapter 8 of this EIAR has concluded that there will be no significant impacts on air quality as a result of the Proposed Development and as such there will be no significant air quality impact on human health. A health risk encountered by people working in the quarrying industry is exposure to fine respirable dust which contains silica. Dust mitigation measures will be applied to prevent negative impacts occurring as a result of dust containing silica.

Truck movements have the potential to negatively impact the surrounding road network by causing congestion thus impacting the human health of road users. Based on an on-site assessment of the local road network, the local and regional roads and motorway which are proposed to form the haul routes to the site are appropriate to accommodate traffic associated with both the construction phase and operational phase of the Proposed Development. As such, there will be no significant negative impact on human health as a result of traffic.

It is considered that the Proposed Development will have an imperceptible, positive and medium-term residual effect on population and socioeconomic aspects securing future employment and contributing positively to economic activity for residents living in the area.

Overall, there will be no significant, negative impacts on Population and Human Health during Construction or Operational Phases.

4.2 Biodiversity

An assessment of the likely effects on biodiversity (flora and fauna) arising due to the Proposed Development of a dimension stone quarry at Bannagagole, Old Leighlin, Co. Carlow was undertaken by Enviroguide Consulting. The assessment involved several steps and was conducted by suitably qualified ecologists.

Firstly, baseline ecological surveys were undertaken to assess the nature conservation importance of the Proposed Development. Secondly, the direct, indirect, and cumulative ecological implications or impacts of the Proposed Development during its lifetime were assessed. Finally, where possible, mitigation measures to remove or reduce negative impacts during the Construction and Operational Phases of the Proposed Development were proposed.

For this Biodiversity Chapter, baseline ecological surveys involved a combination of both desk-based and field studies. A desk study was conducted to assess existing information relating to the Proposed Development's natural environment. A range of appropriate field surveys were undertaken, including habitat surveys, invasive species survey, mammal surveys, breeding bird scoping surveys, bat scoping surveys, and scoping for amphibian, reptile, and fish species as incorporated into the field surveys. All surveys were conducted following standard and/or best practice protocols.

Habitats within the Proposed Development were coded and categorised as per Fossitt (2000). The Proposed Development area is predominantly conifer plantation, containing Scot's pine (*Pinus sylvestris*) and some commercial species (WD4) and improved agricultural grassland (GA1), while treelines and hedgerows, (WL1 and WL2), constitute the main ecological value of the Proposed Development. Also present are grassy verges, dry meadows and improved agricultural grasslands (GS2 and GA1).

Potential impacts arising from the Construction and/or Operational Phase of the Proposed Development, in the absence of mitigation, can be summarised as follows:

Construction Phase:

- The Proposed Development itself is not designated. The closest designated site to the Proposed Development is the *River Barrow and River Nore SAC*, which maintains a hydrological link to the Proposed Development via the Baunleath stream which flows from the Proposed Development and discharges into the Madlin River (roughly 1km north of the Proposed Development). Construction Phase activities present the potential to release suspended solids to surface waters which could affect the water quality of downstream receptors including the Baunleath stream, the Madlin River and the *River Barrow and River Nore SAC* and their associated aquatic ecosystems.
- The Proposed Development will see a change in land use from an area dominated by hedgerows, treelines, forestry, and grassland to a quarry site. Hence, the Construction Phase of the Proposed Development will give rise to the loss of the majority of the vegetative habitat within the Proposed Development, including WL1 and WL2 habitats. However, hedgerow and treeline habitats along the western boundary, part of the northern boundary, and the south-eastern boundary are proposed to be retained.
- Negative impacts to terrestrial mammals will occur, largely as a result of habitat clearance and Construction Phase disturbance.
- The meadow, hedgerow, and treeline habitats present have been deemed suitable for supporting a notable bird assemblage, therefore should vegetation be cleared or cut back during the breeding bird season (March 1st to August 31st); there is the potential for nesting birds to be harmed and nests to be destroyed.
- There will be a loss of potentially high suitability foraging and commuting habitat for bats that reside within the vicinity of the Proposed Development through the loss of treelines, hedgerows, and grasslands. Felling of trees and demolition of the buildings may place any roosting, breeding or hibernating bats present at risk of injury or death.
- The grassland and hedgerow habitats on Site provide potential habitat for common lizard (*Zootoca vivipara*), smooth newt (*Lissotriton vulgaris*), and common frog (*Rana temporaria*). The clearance of grassland/hedgerow and associated understory could cause injury or death to herptiles should they be present during the clearance.

- Regarding flora and invasive species, no species of flora included in Annex II of the EU Habitats Directive, or the Flora Protection Order 2022, are recorded within the Proposed Development, hence no likely impacts are envisaged.
- One species of invasive flora listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011, as amended) was recorded at the Proposed Development. Sycamore (*Acer pseudoplatanus*) was observed within the WL2 – Treeline habitat along the local road to the east of the Proposed Development (L3036). Sycamore is a naturalised invasive species but with ecological benefits, being one of the best functional ecological replacements for ash (*Fraxinus excelsior*) (in anticipation of ash die-back greatly reducing the ash population), hence removal of sycamore is a low priority/undesirable.
- Water quality impacts have the potential to occur within the drainage network on Site and hence all downstream water bodies arising from surface water run-off containing silt, sediment and/or pollutants as a result of the Construction Phase. Therefore, there is the potential for sediments/pollutants to hence enter the *River Barrow and River Nore* SAC site via via the Baunleath stream.

Operational Phase

- The Operational Phase of the Proposed Development involves the extraction of ~80,000 tonnes (30,000m³) of material annually from the Proposed Development over a period of 12 to 13 years. The potential effects on groundwater and surface water during the Operational Phase are hence greater during the Operational Phase in comparison to the Construction Phase. Surface waters may be contaminated with any leaked hydrocarbons on the quarry floor. This will reduce the quality of surface water runoff from the Proposed Development and will have an adverse impact on local downstream receiving watercourses (Baunleath stream, Madlin River, and River Barrow) and their associated aquatic ecosystems. The *River Barrow and River Nore* SAC is hydrologically connected to the Proposed Development via the Baunleath stream. Therefore, the Proposed Development has the potential to adversely impact the qualifying interests of the *River Barrow and River Nore* SAC.
- Disturbance or displacement of species as a result of quarrying activity, increased human presence and/or light, air, dust, and noise pollution. Noise, dust, and lighting disturbance associated with the Operational Phase has the potential to impact to terrestrial and small transient mammals, bird species, and bat species.

Potential impacts of the Proposed Development were predicted to range from slight to significant at a local to county scale and can be readily addressed with the mitigation measures proposed.

A range of mitigation measures are outlined in the Biodiversity Chapter to ensure that there will be no significant impact on habitats and local fauna at the Proposed Development. These include measures regarding:

- Construction Phase surface water management.
- Timing of vegetation clearance.
- Habitat protection.
- Invasive species management/prevention.

- Terrestrial mammal protection (provision of artificial badger setts etc).
- Further survey prior to the commencement of the Construction Phase.
- Waste Management.
- Reduction of noise related impacts.
- Reduction of dust related impacts.

To address impacts on water quality within the land drainage system, downstream water bodies and European sites arising from surface water discharges, a range of mitigation measures to protect surface water quality are provided. These surface water mitigation measures include, drainage controls, the provision of silt fences, regular monitoring of drains, designated vehicle refuelling and maintenance areas, provision of settlement lagoons on the quarry floor, and are further detailed in the Biodiversity Chapter.

Regarding disturbance to habitats, hedgerow and treeline habitats along the western boundary, part of the northern boundary, and the south-eastern boundary are proposed to be retained.

Waste management practices, provision of log piles, and protection measures are also outlined in the biodiversity chapter for the protection of terrestrial mammals and badgers (sett removal, artificial sett provision etc.) should they be present.

To protect bird species and ensure compliance with the Wildlife Act 2000 as amended, the removal of areas of vegetation will not take place within the nesting bird season (March 1st to August 31st inclusive), and this shall be extended to include December, January, and February due to conifer plantations being the preferred habitats for the winter nesting common crossbill (*Loxia curvirostra*). Where any removal of vegetation within this period is deemed unavoidable, a qualified ecologist will be instructed to survey the vegetation prior to any removal taking place, furthermore, this should include nocturnal surveys for owl species which may nest within the plantation woodland .

Several bat protection measures are outlined in relation to the demolition of the derelict buildings on site (further survey required), tree felling practices and timing, and bat friendly lighting plans.

Mitigation measures are outlined in relation to any clearance of habitat likely to support reptiles or amphibians.

To address impacts on the surrounding environment due to dust emissions and noise disturbance, several noise and dust suppressing measures which treat the source of the impact (e.g., construction traffic, excavations etc).

Provided all mitigation measures are implemented in full and remain effective throughout the lifetime of the Development, no significant residual negative impacts on the local ecology or on any designated nature conservation sites are expected from the Proposed Development.

Section 16.16.3 of the Carlow County Development Plan 2022-2028 requires a planning application for a quarry to include the implementation of a restoration plan following the cessation of the proposed extraction activities. The restoration plan proposed as part of the Proposed Development includes allowing the quarry void to naturally fill with water with some

of the void backfilled with spoil from the surrounding berms. The proposed soil storage areas will be allowed to revert to scrubland. Meanwhile, the proposed set down area and shed will be cleared and restored to scrubland. The remainder of the Site will be planted with trees. Therefore, negative impacts will occur on local ecology during the operation of the quarry but are likely to be reversible once the quarry is appropriately managed and the restoration plan implemented following cessation of quarrying activities.

4.3 Land and Soils

This chapter assesses the likely significant effects that the Proposed Development may have on land, soils and geology and sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects that are identified.

The site consists of agricultural pastures, areas of coniferous forestry and mature hedgerows which delineate local field boundaries. There is a derelict house and 5 no. derelict farm outbuildings located within the site. The existing topography of the site slopes to the east, with natural ground elevations ranging from 130mOD in the west to ~75mOD in the east.

Based on geological investigations at the site, the topsoil is underlain by glacial tills comprising of brown gravelly silty Clay with gravels and cobbles (i.e. Boulder Clay). Subsoil thickness ranges from 4.1m to 15.7m with an average depth to rock of 9.2m. Depth to bedrock is greatest in the south and west of the site, with shallower bedrock encountered towards the northeast.

The Boulder Clay deposits at the site are underlain by limestone bedrock. Geological site investigations have revealed that bedrock at the site is comprised of dark blue laminated and fossiliferous limestone which has been heavy dolomitised in places. A fault has been identified in the west of the site, close to the bottom of a steep hill and separates limestone in the east from mudstones and shales to the west. The dolomitisation of the limestone is concentrated in the vicinity of this fault.

The Proposed Development will firstly involve stripping soils and subsoils from the proposed extraction area. These materials will be used to form berms surrounding the extraction area with any excess material stored in a designated storage area. Bedrock extraction will involve the extraction of ~30,000m³ of material annually from the site. The proposed quarry void will extend to a final floor level of 56.5mOD. The development will also include a working area where unusable stone will be crushed and processed and where dimension stone will be stored. All activities on site will be completed in accordance with an Environmental Management Plan. The Proposed Development will have a permanent effect on geology due to bedrock excavation however, this is seen as an acceptable and unavoidable consequence of the Proposed Development. The presence of Old Leighlin Quarry immediately to the north, indicates the economic suitability of the area for the development of a bedrock quarry.

Storage and handling of hydrocarbons/chemicals will be carried out using best practice methods and will mitigate against soil and bedrock contamination throughout all phases of the Proposed Development. Measures to prevent soil and subsoil erosion during excavation will also be undertaken to prevent water quality impacts.

The Proposed Development will result in the loss of ~2ha of agricultural land and ~4.5ha of coniferous forestry plantations and will result in local topographic changes. These impacts will

be localised to within the Proposed Development footprint and there will be no effects on the surrounding lands.

Upon completion of the proposed bedrock extraction a restoration plan will be implemented which will involve allowing the quarry to fill with water while some of the void will be backfilled with spoil from the surrounding berms. The remainder of the site will be cleared and allowed to revert to scrubland or planted with trees.

The site is located immediately to the south of an existing limestone bedrock quarry (Old Leighlin Quarry) which is designated as a County Geological Site. No potential effects will occur on this site as all impacts associated with the Proposed Development will be contained within the proposed site boundary.

An assessment of potential cumulative effects associated with the Proposed Development and other developments on land, soils and geology has been completed. The Land, Soils and Geology Assessment confirms there will be no significant cumulative effects on land, soil and geology as a result of the Proposed Development.

4.4 Hydrology and Hydrogeology

This chapter assesses the likely significant effects that the Proposed Development may have on hydrology and hydrogeology and sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects that are identified.

The site consists of agricultural pastures, areas of coniferous forestry and mature hedgerows which delineate local field boundaries. The existing topography of the site slopes to the east, with natural ground elevations ranging from 130mOD in the west to ~75mOD in the east. No significant surface water features were recorded during site walkover surveys with the site draining towards the east via several small drains located along local hedgerows.

Regionally, the Proposed Development site is located in the River Barrow surface water catchment. The Proposed Development site drains to the east towards the Baunleath stream. The Baunleath stream discharges into the Old Leighlin stream approximately 2km northeast of the site. This watercourse in turn discharges into the River Barrow to the south of Leighlinbridge.

The Proposed Development site is underlain by a Regionally Important Aquifer – Karstified (diffuse) of the Bagenalstown Lower Groundwater Body which is considered to be a major aquifer comprising water bearing units of pure and dolomitised limestone. However, geological site investigations have revealed an absence of karst features in the limestone bedrock at the site. Groundwater monitoring at the site has revealed that the elevation of the local groundwater table reflects surface topography and slopes to the east.

The Proposed Development will involve bedrock extraction over a total area of 2.49ha and will involve the extraction of ~30,000m³ of material annually from the site. The proposed quarry void will extend to a final floor level of 56.5mOD. The Proposed Development will include a water management system which will collect rainwater and groundwater in the quarry void and will transfer this water to settlement ponds and an eventual discharge point into a local roadside drain which discharges into the Baunleath stream. The Proposed Development will

also include a working area where unusable stone will be crushed and processed and where dimension stone will be stored. All activities on site will be completed in accordance with an Environmental Management Plan.

Due to the nature of the Proposed Development groundwater will be a key sensitive receptor. The primary risk to groundwater would result from alterations to local groundwater levels due to dewatering of the quarry void. However, no significant karst features are present at the site and groundwater inflows will be minimal and as a result the Proposed Development will not have a significant effect on local groundwater levels. Other potential effects on groundwater would be from oil spillage and leakages from machinery. These are common potential impacts to all construction sites (such as road works, industrial sites and quarries). These potential contamination sources are to be carefully managed at the site during the construction and operational phases of the Proposed Development and measures are proposed within the EIAR to deal with these potential groundwater quality effects.

Downstream surface waters also have the potential to be impacted by the Proposed Development. These potential effects generally arise from sediment input from runoff and other pollutants such as hydrocarbons and increased discharge volumes from the site. Discharge from the site will be managed via a discharge licence and mitigation measures including surface water drainage measures, pollution control and other preventative measures have been incorporated into the project design and are detailed in the EIAR. These measures will significantly reduce sediment runoff arising from site activities and will limit runoff to greenfield runoff rates. The key surface water control measure is that there will be no direct discharge into local watercourses, with all water being treated and attenuated prior to release into the local roadside drain. Preventative measures also include fuel and concrete management which will be incorporated into the Environmental Management Plan.

No significant effects to surface water (quality and flows) and groundwater (quality and quantity, and any local groundwater wells) will occur as a result of the Proposed Development provided the proposed mitigation measures are implemented. This EIAR presents proven and effective mitigation measures to protect surface and groundwaters. The water management system will be designed to limit discharge to greenfield runoff rates by providing attenuation. This will ensure that the Proposed Development does not alter downstream surface water flows and will not contribute to downstream flooding.

A hydrological assessment of potential impacts on local designated sites was undertaken. The River Barrow and River Nore SAC is considered to be hydrologically connected to the Proposed Development site via the Baunleath stream. Following implementation of the appropriate mitigation measures as outlined in the EIAR no significant impacts on this designated site will occur as a result of the Proposed Development.

A Water Framework Directive (WFD) Compliance Assessment has been completed for all waterbodies (surface water and groundwater bodies) with the potential to be impacted by the Proposed Development. With the implementation of the mitigation measures detailed in this EIAR there will be no change in the WFD status of the underlying groundwater body or downstream surface waterbodies as a result of the Proposed Development. The Proposed Development has been found to be fully compliant with the WFD and will not prevent any waterbody from achieving its WFD objectives.

An assessment of potential cumulative effects associated with the Proposed Development and other developments on the hydrological and hydrogeological environment has been completed. With the implementation of the mitigation measures detailed in this EIAR, the cumulative assessment found that there will be no significant effects on the hydrological and hydrogeological environments. The assessment found that the cumulative effect with the adjacent Old Leighlin Quarry will not be significant as both sites will operate under strict conditions set out in their respective Environmental Management Plans designed for the protection of surface and groundwaters.

4.5 Air Quality and Climate

This chapter examines the potential for the Proposed Development to impact upon air quality and climate within the vicinity of the proposed site. This chapter also describes and assesses the impact of the Proposed Development on local climate and on global climate in a wider context.

The primary sources of dust identified include soil excavation works, bulk material transportation, loading and unloading, stockpiling materials, cutting and filling, and vehicular movements (heavy good vehicles and on-site machinery).

According to Institute of Air Quality Management (IAQM) guidance (2016) continuous or stark concerns about dust are most likely to be experienced within 100m of the dust source. It is noted that distances refer to 'dust generating activities' rather than the site boundary and this may refer to extraction and processing areas.

A Disamenity Dust Assessment has been carried out in order to determine the overall impact of the Proposed Development on nearby sensitive receptors. In line with IAQM Guidance (2016), this chapter provides a series of assessment matrices which have been used to estimate the Dust Impact Risk, the Pathway Effectiveness and the Likely Magnitude of Disamenity Effects at each receptor within 400m of the Proposed Development. The latter is used to determine whether there is a possibility of significant effects on the surrounding area. Sensitive receptors in the vicinity of the development are described as one-off rural housing and farm buildings of low density.

The Disamenity Dust Assessment has concluded that there will be an overall Negligible impact on sensitive receptors as a result of the Proposed Development. All identified sensitive receptors are located more than 100m from the site boundary, aside from receptor location SR15. As SR15 is not located downwind of prevailing conditions, appropriate mitigation measures are likely to eradicate the risk of potential impacts. Furthermore, the trees and hedgerows which are currently present on the site boundary will further act as a natural buffer for dust deposition for all sensitive receptors. It can therefore be concluded that dust emissions associated with the Proposed Development will not have a significant impact on the local sensitive receptors. Nevertheless, appropriate mitigation measures will be incorporated as this will substantially reduce any likelihood of fugitive emissions causing an impact on sensitive receptors in the vicinity of the Proposed Development.

Construction vehicles and machinery during this phase will temporarily and intermittently generate exhaust fumes and consequently potential emissions of volatile organic compounds,

nitrogen oxides, sulphur oxides, and particulate matter (dust). Dust emissions associated with vehicular movements are largely due to the resuspension of particulate materials from ground disturbance. According to the IAQM (2014), experience from the assessment of exhaust emissions from on-site machinery and site traffic suggests that they are unlikely to cause a significant effect on local air quality, and in the vast majority of cases they will not need to be quantitatively assessed. Air pollutants may increase marginally due to construction-related traffic and machinery from the Proposed Development. However, any such increase is not considered significant and will be well within relevant ambient air quality standards. According to TII (2011), the significance of impacts due to vehicle emissions during the Construction Phase will be dependent on the number of additional vehicle movements, the proportion of HGVs and the proximity of sensitive receptors to site access routes. If construction traffic would lead to a significant change (> 10%) in Annual Average Daily Traffic (AADT) flows near to sensitive receptors, then concentrations of nitrogen dioxide, PM10 and PM2.5 should be predicted in line with the methodology as outlined within TII guidance. Construction traffic is not expected to result in a significant change (> 10%) in AADT flows near to sensitive receptors. According to Chapter 12 Traffic, based on figures provided by the design team, it is estimated that on average 5 no. construction workers will be based on site each day. This would likely equate to a daily average of 2 no. contractor staff vehicle trips (assuming a vehicle occupancy of 3 no. contractors per vehicle) or a peak of 5 no. contractor staff vehicle trips. In regard to construction related deliveries, it is estimated a daily average of 5 no. heavy goods vehicles trips (e.g. excavated materials off-site, import materials, delivery heavy good vehicles) and 2 no. LV trips (delivery vans) will occur during construction. Given the temporary nature of the construction related traffic, the impact of the estimated construction traffic is expected to be minimal. Therefore, a detailed air quality assessment is not required.

Operational traffic will use local roads to access the facility with potential increases of traffic flow on some roads and subsequent associated emissions of Volatile Organic Compounds (VOCs), nitrogen oxides, sulphur dioxides and increased particulate matter concentrations. Predicted levels of operational traffic as a result of the Proposed Development do not meet the indicative criteria for requiring an air quality assessment; it is therefore considered unlikely for significant air quality impacts to occur as a result of increased traffic flow.

There is the potential for combustion emissions from onsite machinery and traffic derived pollutants of Carbon Dioxide (CO₂) and Nitrous Oxide (N₂O) to be emitted during the Construction and Operational Phase of the development. It is noted that the quantity and scale of machinery to be used in the Proposed Development is limited, and associated GHG contributions are likely to be marginal in terms of overall national GHG emission estimates and Ireland's obligations under the Kyoto Protocol, and therefore unlikely to have an adverse effect on climate.

4.6 Noise and Vibration

The likely noise and vibration impacts associated with the Proposed Development have been evaluated, and changes that are likely to impact the surrounding environs have been considered.

The noise-generating activities associated with the current site are as follows:

- Extraction by hydraulic excavators and transfer to wash/screening plant;
- Semi-mobile washing, sawing, crushing, and screening plant;
- Traffic movements on internal haul roads;
- Trucks entering and exiting the quarry.

In relation to quarry developments and ancillary activities, it is generally recommended that noise from quarrying activities shall not exceed the following noise Emission Limit Values (ELV) at the nearest noise-sensitive receptor, as outlined in Table 4-1:

Table 4-1: Recommended Noise Limits as per Planning Conditions

Parameter	Emission Standard	Basis of Standard
Noise - Day (08.00 to 20.00 hours)	<55 dB(A) _{L_{Aeq} 1 Hour}	EPA Guideline Document for Extractive Industries (2006)
Noise - Night (20.00 to 08.00 hours)	<45 dB(A) _{L_{Aeq} 1 Hour}	

The nearest noise sensitive locations (NSL) have been identified as residential dwellings and are located approximately 70m - 400m from the Proposed Development's site boundary. Noise prediction calculations have been completed for noise from the use of onsite plant up to 395m from the source for the proposed operational activities, and up to 755m from the source for the proposed demolition activities (as NSLs are further from the proposed demolition activities). According to the inverse square law, for each doubling of distance from a point source, the sound pressure level decreases by approximately 6 dB.

The predicted noise levels from onsite activities up to 755m from the proposed demolition activities have been included, this is based on the proximity of the NSLs to the proposed demolition works. The adopted noise criteria will not be exceeded by the equipment during demolition works.

The predicted noise levels from onsite activities up to 395m from the proposed operational activities have been included. There is potential for the adopted criteria to be slightly exceeded during operational works by the handheld circular saw and the articulated lorry with the flatbed trailer at the nearest NSLs, however, there are hedgerows on the intervening lands between the operation works and the residential dwellings. It is important to recognise that the sound intensity from a point source will obey the inverse square law if there are no reflections or reverberation. If there are barriers between the source and the point of measurement, you are likely to get less than what the inverse square law predicts. Therefore, when taking account of local terrain, predicted noise levels at the closest residential NSLs are expected to be lower than what is outlined in Chapter 9. Furthermore, the handheld circular saw and the articulated lorry with the flatbed trailer will be used intermittently. Nevertheless, mitigation measures will be implemented to reduce any potential impacts.

All machinery and equipment used at the Proposed Development will be used and maintained in accordance with the manufacturer's instructions to ensure vibrations or wearing of parts do not cause any unnecessary noise impact. All staff will be trained in the correct use of such equipment.

No traffic routes are predicted to experience increases of more than 25% in total traffic flows during the operational phase and therefore no detailed assessment is required as per the Design Manual for Roads and Bridges (DMRB) Guidelines.

4.7 Landscape and Visual Amenity

The purpose of the landscape assessment is to evaluate the existing landscape character of the Site and surroundings, to assess the landscape and visual impact of the Proposed Development and to identify landscape designations and planning policies that may concern the subject site and its environs.

It's considered that the Proposed Development will not have any landscape or visual impact in any Protected View, Scenic Route or Protected Structure identified in the *Carlow County Development Plan 2022-2028*.

In terms of the landscape impact assessment, it is concluded that the Proposed Development will have a minor to moderate, neutral to negative and short-term impact on the landscape character of the site during the Construction Phase due to the removal of existing vegetation. Once the quarrying is complete the Applicant will seed the land and return it to agricultural use/scrubland, in accordance with the proposed Restoration Plan. The Proposed Development and mitigation measures will result in a neutral landscape impact in the long term.

Five viewpoints were assessed as part of the visual impact assessment, chosen by sensitivity of the view's through site visits and Viewsheds analysis. The visual impacts of the Proposed Development, in the worst cases have a minor or minor to moderate impact that will change to an imperceptible impact in the long-term, with the implementation of the Restoration Plan.

Significant landscape and visual effects have been avoided and reduced by a number of measures. The quarry area will be surrounded by berms of varying heights. The heights have been chosen to restrict views of machinery moving within the site and of quarry excavations. Planting on the berms could further reduce potential views, as will the excavation below existing ground levels. The Restoration Plan will have a positive effect in terms of returning the site back to scrubland. The maintenance of the existing hedgerows along the periphery of the site, in addition to the new plantations, in the long term, is essential to the maintenance of the minor visual impacts so that the quarry area can be maintained as a "hole in the ground" that is surrounded by a mixture of vegetation that can't be looked into in the medium term.

4.8 Archaeology and Cultural Heritage

An assessment of the baseline Archaeological, Architectural and Cultural Heritage conditions of the surrounding environment for the Proposed Development was completed, in order to determine any significant impacts that may arise as a result of the development and highlight any potential effects this may have on these resources.

The assessment involved a desktop study which considered all available archaeological, architectural, historical and cartographic sources. This information was used in order to assess

any potential impact on the receiving environment and to identify measures to ensure the conservation of any monuments or features.

There are no records of any recorded monuments within the Site boundary of the Proposed Development. There were 25 no. recorded Monuments and Places within a 2 km radius of the Site of the Proposed Development. None of the above recorded Monuments and Places will be affected by the Proposed Development.

The Historic six-inch Ordnance Survey Map and historic twenty-five-inch Ordnance Survey Map show similar field layout and indicate that the Site of the Proposed Development and the surrounding lands were historical used predominantly for agricultural purposes.

There are a total of seven Architectural Conservation Areas (ACAs) within the Greater Carlow Graiguecullen Urban Area. The Proposed Development does not lie within any of the above designated areas.

The Excavations Database was consulted and found five excavations recorded within 2 km of the Proposed Development. No recorded excavations will be affected by the development plans.

There are no protected structures within the Site boundary. There are two Protected Structures located in the vicinity of the Proposed Development. There are no perceived negative impacts for either Protected Structure as a result of the proposed Development.

It is possible that excavation works associated with the Proposed Development may have an adverse impact on small or isolated previously unrecorded archaeological features or deposits that have the potential to survive beneath the current ground level. It is therefore recommended that if any archaeological remains are discovered during this project, all works will cease and an expert archaeologist will be brought to Site and all future works will be carried out under the supervision of the archaeologist.

4.9 Material Assets; Traffic, Waste and Utilities

4.9.1 Traffic

Transport Insights has been commissioned by Enviroguide Consulting on behalf of Milford Quarries Limited to prepare an Environmental Impact Assessment Report (EIAR) Traffic and Transport Chapter in support of a Proposed Development at Leighlinbridge, Co. Carlow.

4.9.1.1 Traffic Characteristics of the Proposed Development

Site Access

The Proposed Development will utilise an existing established (agricultural) site access for access/egress to from the site. The proposed site access road will connect the site access junction to the main body of the site, and will also provide access to a weighbridge located at it's eastern end.

The existing site access gate shall be set back ca. 19.7 metres from the L3036 road carriageway, so that it provides adequate space for a HV to egress the public carriageway before turning and to also ensure that the public carriageway is not blocked. Stop signage

and stop lining shall be provided at the interface between the site access and the public road. The site access junction has been designed to ensure it interfaces perpendicularly with the adjoining carriageway of the public road to ensure adequate visibility and safe access and egress arrangements for vehicles.

Site Layout

As part of the Proposed Development, all staff and visitor parking will occur within a designated parking area to be delineated within reasonable proximity to the welfare unit office.

Heavy vehicles will access the site through the proposed site access and proceed to the weighbridge before proceeding to the quarry area via the access ramp. Once within the quarry extraction area, the HVs shall be loaded by relevant machinery, before egressing the access ramp, proceeding once again to the weighbridge via the internal access road and then egressing the site in a southbound direction on the L3036.

4.9.1.2 Construction Phase Traffic Impact

No significant traffic related construction phase impacts are anticipated.

The construction phase shall include the construction of earthen screening berms to a height of c. 3 m, a wheelwash facility, installation of surface water attenuation and settlement ponds for the treatment of suspended solids in the floor of the quarry, soil storage area with an average storage depth of c. 4 m and other site development works.

Construction traffic activity is expected to take place between 07:00hrs and 18:00hrs, Monday to Friday, and between 08:00hrs and 13:00hrs on Saturdays. Construction related traffic will access/ egress the site from the access point at the eastern boundary of the site. Construction traffic shall use the same haul routes (separate access and egress routes) utilised for the operational phase.

During site clearance, the site shall be cleared to allow for parking of all staff and construction vehicles within the boundary of the Proposed Development site in order to ensure that no construction related parking takes place on the adjoining local road network.

4.9.1.3 Operational Phase Traffic Impact

The figures set out in the Traffic Chapter of this EIAR show that within the Do-Something scenario, traffic volumes on the L3036 in the development's assumed year of opening (2024) are expected to increase by 8.7%. This will decrease to 7.6% to the Year of Opening +15 (2039). It should be noted that the percentage AADT increases outlined above demonstrate the percentage impact of the Proposed Development at a point to south of the site access junction, as 100% of operational site traffic is to access to/ from the L3036 to the south.

Section 2.1 of TII's Traffic and Transport Assessment Guidelines (May 2014) sets out thresholds for production of a Traffic and Transport Assessment, with thresholds for developments provided in Table 2.1. It is noted from Table 2.1 that where "traffic to and from the development exceeds 10% of the traffic flow on the adjoining road", more detailed analysis of a Proposed Development's traffic impacts may be required. The Proposed Development will result in a 7.6% increase on the L3036 in year 2039, below the 10% threshold. It is also noted that the figure of 7.6% is based off the low existing volume of vehicle flows that the L3036 currently experiences.

4.9.1.4 Mitigation Measures

As part of the operational phase, several mitigation measures are proposed, which are as follows;

- In order to minimise the potential impact on the local road network surfaces, road cleaning is proposed to be implemented on site during the earliest construction phase (e.g. earth extraction) to mitigate against material such as dust, earth, debris etc. from entering the local road network, as required.
- Furthermore, the site shall be cleared to allow the parking of all construction vehicles including staff vehicles within the bounds of the subject site.
- Haul routes outlined within the Traffic Chapter will be strictly adhered to by construction vehicles so as not to have an undue impact on the town of Old Leighlin. Construction vehicles are proposed to access and egress the site from the south, avoiding the town. These haul routes shall be strictly controlled by the client or the appointed main constructor during the duration of the construction phase with all construction vehicle operators employed being issued maps of sanctioned haul routes to and from the site and under strict instructions to follow these routes.

4.9.1.5 Residual Impacts

The predicated residual impact of the Proposed Development in terms of traffic and transportation is that there will be a marginal increase in light good vehicles and heavy good vehicles on the adjoining road network due to the operation of the Proposed Development.

4.9.2 Waste and Utilities

This chapter provides an assessment of the potential impacts of the Proposed Development on Material Assets or physical resources in the environment of human origin including built services and infrastructure comprising:

- Electricity Supply;
- Gas Supply;
- Information and Communications Technology;
- Surface Water Drainage Infrastructure;
- Water Supply and Demand;
- Wastewater Management; and
- Waste Management.

Natural resources (water, land, biodiversity, air) are addressed in their respective chapters.

There will be dust generation during earthworks associated with the Construction Phase at the site. However, it is considered that there will be no significant impact on the local population associated with dust arising from the extraction and processing at the site given the distances to nearby residential properties and the screening provided by the existing forestry and trees. There will be dust generation during the normal quarrying operations at the Proposed Development site. The potential for the local population to be exposed to dust can arise from the quarrying activities. However, given the distances to nearby residential properties, it is considered that there will be no significant impact on the local population associated with dust arising from the extraction and processing at the site. It is likely that the local terrain and natural

features between the source and the receptors will variously act as barriers, reduce airborne concentrations due to impaction, lengthen pathways, affect air flow, and increase or inhibit dispersion and dilution.

The proposed changes to the site will alter the character of its immediate setting. The Operational phase of the Proposed Development will cause some negative landscape impact in the short to medium-term within the site. These impacts will be less significant since four phases are predicted. The visual assessment, as detailed in Chapter 10 of the EIA, shows that the Proposed Development and mitigation measures proposed, will result in a neutral landscape impact in the long term. There are no protected views within this area that could be affected by the operation of the Proposed Development.

In terms of the effects of noise and vibrations, no significant impacts are predicted; good construction practice, which incorporates the implementation of the identified mitigation measures, will be employed at the Proposed Development site. Due to the implementation of good construction practices deployed for the Proposed Development and for these offsite permitted developments, it is not anticipated that significant cumulative noise and vibration impacts will occur.

There is the potential for the generation of suspended sediment in surface water runoff during the construction phase. Earthworks, the removal of vegetation and the stripping of soil/subsoil and the stockpiling of such material (berms surrounding the proposed extraction area, with all excess soil to be stored in the proposed soil storage area) which will be a potential source of sediment laden water. All excess surface water within the site will be directed to temporary settlement pond within the quarry void. The pre-mitigation impact of suspended solids entrainment in downstream surface waters will be a negative, significant, indirect, temporary, likely impact. During the operational phase runoff from the proposed extraction area will be directed to temporary settlement ponds on the quarry floor. En-route to the ponds, surface water will likely increase in turbidity due to the collection of sediment particles. Surface waters may also be contaminated with any leaked hydrocarbons on the quarry floor. This will reduce the quality of surface water runoff from the site and will have an adverse impact on local downstream receiving watercourses (Baunleath stream, Madlin River and River Barrow) and their associated aquatic ecosystems. The pre-mitigation impact on surface water quality is considered to be a negative, moderate, direct, medium-term, likely impact. As part of the Proposed Development it is proposed to intermittently discharge surface water to a roadside drain located immediately to the east of the Proposed Development. This drain discharges into the Baunleath Stream which in turn discharges into the Madlin River further downstream. Accidental release of hydrocarbons or oils into the local surface water environment will have a negative impact on downstream surface water quality and associated aquatic habitats and ecosystems. The pre-mitigation potential impact on surface and groundwater quality will be a negative, slight, indirect, unlikely, long-term impact on surface and groundwater quality.

There is no mains water connection required for the Proposed Development during either the Construction or Operational Phase, therefore there will be no impact on any water mains infrastructure as a result of this development. The drinking water supply for the site will be provided by bottled water. The electricity requirement is small in scale and it is not considered that there will be any impact on electrical infrastructure or supply in the area. The project does not rely on gas supply for processing activities onsite, therefore no impacts are anticipated to the existing gas supply in the area.

The Proposed Development will involve demolishing and removing the existing buildings onsite. All wastes generated during the Construction Phase onsite will be sent for recycling, recovery, or disposal to a suitably licensed or permitted waste facility. During the Operational Phase, a small quantity of non-hazardous waste will be generated by the proposed site operations. Any food waste, will be stored in wheelie bins on site and it will be collected by an appropriately authorised waste collector. All wastes generated on site will be sent for recycling, recovery, or disposal to a suitably licensed or permitted waste facility. As the quantity of waste that will be generated is small in scale, it is not considered that there will be any impact on waste management facilities in the area.

The cumulative effects of Proposed Development on Material Assets have been assessed taking other planned, existing, and permitted developments in the surrounding area into account.

When considered in conjunction with other permitted, planned and existing development in the vicinity of the site, it is predicted that the cumulative effects the Proposed Development on surface water, foul water disposal, potable water supply, natural gas supply, electrical supply, telecoms, and municipal waste will be negligible.

4.10 Risk Management

Risk is one of the most important elements to be considered as part of a development. It is critical that any project is screened against potential risks which it might encounter and/or impose on the nearby environment during its construction and operational phase. This chapter of the EIAR sets out the assessment of the vulnerability of the Proposed Development to risks of major accidents and/or disasters.

In order to understand the potential consequences and predicted impacts of any major accident or disaster due to the Proposed Development and the vulnerability of the project, a desk study was undertaken. The assessment reviewed:

- The vulnerability of the project to major accidents or disasters.
- The potential for the project to cause risks to human health, cultural heritage and the environment, as a result of that identified vulnerability.

A methodology has been used including the following assessment:

- Identifying and screening the hazards;
- Phase 2: Screening the hazards;
- Identifying the impact;
- Assessing the likelihood of the major accident or disaster occurring; and
- Assessing any risks that remain.

The design has considered the potential for flooding, road accidents, invasive species or fire within the design methodology. From this, it is considered that the vulnerability of the Proposed Development to major accidents and/or disasters is not significant.

4.11 Interactions

Interrelationships between various environmental aspects must be considered when assessing the impact of the Proposed Development, as well as individual significant impacts. The significant impacts of the Proposed Development and the proposed mitigation measures have been detailed in the relevant chapters of this report. However, as with all developments that poses potential environmental impacts, there also exists potential for interactions/interrelationships between the impacts of different environmental aspects. The results may exacerbate or ameliorate the magnitude of impacts. This chapter of the EIAR addresses the interactions between the various environmental factors of the Proposed Development.

When considering interactions, the assessor has been vigilant in assessing pathways – direct and indirect – that can magnify effects through the interaction. In practice many impacts have slight or subtle interactions with other disciplines. However, the EIAR concludes that most inter-relationships are neutral in impact when the mitigation measures proposed are incorporated into the operation of the Proposed Development in line with the proposed EPA licence for the site.

4.12 Mitigation and Monitoring Measures

This EIAR has assessed the impacts and resulting effects likely to occur as a result of the Proposed Development on the various aspects of the receiving environment.

The Proposed Development will be operated in a manner that will ensure that the potential impacts on the receiving environment are avoided where possible. In cases where impacts or potential impacts have been identified, mitigation measures have been proposed to reduce the significance of particular impacts. These mitigation recommendations are contained within each chapter exploring specific environmental aspects.

The mitigation and monitoring chapter of the EIAR collates and summarises the mitigation commitments made in Chapter 4 to Chapter 13.



Head Office

3D, Core C, Block 71, The Plaza, Park West, Dublin 12, D12F9TN, Ireland.

Tel: +353 1 565 4730

Email: info@enviroguide.ie

South West Regional Office

19 Henry Street, Kenmare, County Kerry, V93 CVH0, Ireland.

Tel: +353 646 641932

Email: info@enviroguide.ie

South East Regional Office

M10 Wexford Enterprise Centre, Strandfield Business Park, Rosslare Rd, Strandfield, Kerlogue, Co. Wexford, Y35 W5RD, Ireland.

Tel: +353 1 565 4730

Email: info@enviroguide.ie