



## 16.0 MITIGATION & MONITORING

The chapters contained within this EIAR have been ordered in a grouped format by their relevant topic. This chapter summarises all mitigation measures proposed in order to provide a comprehensive overview of the full range of mitigation measures discussed within each chapter.

Paragraph 2(d) of Schedule 6 to the *Planning and Development Regulations 2001* (as amended), provides that the following information must be contained in an EIAR:

*"a description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of an analysis after completion of the development), explaining the extent to which significant adverse effects on the environment are avoided, prevented, reduced or offset during both the construction and operational phases of the development;"*

### 16.1 Examination of Alternatives

#### 16.1.1 Alternative Mitigation Measures

The mitigation measures outlined in this EIAR, where appropriate, have been developed by competent experts relevant to the aspect of the environment under consideration and represent best practice with a view to avoiding or otherwise minimising potential impacts on the environment.

There are no predicted residual impacts once mitigation measures have been successfully applied and as such alternative mitigation is not considered necessary.

### 16.2 Population & Human Health

No mitigation measures are deemed necessary other than those outlined elsewhere in this EIAR.

### 16.3 Biodiversity

#### 16.3.1 Avoidance, Mitigation & Enhancement Measures

The project has included in its design 'Mitigation by Avoidance' and environmental control measures as outlined below to address potential environmental impacts arising from the proposed quarry extension. Opportunities for ecological enhancement measures are also identified. All mitigation identified in other Chapters of the EIAR will be fully implemented, including those elements designed to control run-off and to prevent any pollution of soil, surface or ground-water.





### 16.3.2 Designated Conservation Sites

A Screening for AA was prepared to consider if there were any likely significant effects on any Natura 2000 site(s) arising from the proposed development. Chapter 8 (Water – Surface and Groundwater) of the EIAR showed that there was minimal risk of any damaging run-off occurring to any of the watercourses downstream of the site. However, it is acknowledged that in the absence of any mitigation there is an appreciable risk of run-off from the site to watercourses connected with the River Nanny Estuary & Shore SPA.

A precautionary approach has been applied and appropriate mitigation to minimise this potential risk to the SPA and its Conservation Objectives is presented in the NIS that accompanies this application. The mitigation and design elements (Mitigation by Avoidance) that contribute to the conclusion that there is no potential for residual adverse impacts upon any Natura 2000 sites arising from the development are detailed below and in the NIS itself. Chapter 16 of the NIS summarises overall mitigation commitments associated with the proposed development. Key commitments in relation to addressing the risk of run-off to watercourses hydrologically connected to the River Nanny Estuary & Shore SPA are contained in Chapter 8 of the EIAR. The mitigation measures to address the risk of damaging run-off to watercourses and/or contamination of the groundwater are described in detail in Chapter 8 of the EIAR.

### 16.3.3 Habitats and Flora

- New hedgerow will be established, including along one side of the new access track (see Chapter 11 of the EIAR). The hedgerows will be planted with native trees and hedgerow plants with a grassy verge that will be maintained according to the guidance in the All-Ireland Pollinator Plan ([www.polinators.ie](http://www.polinators.ie)). This will include delayed and reduced mowing and use of pesticides.
- The broadleaved trees that act as screening from residences south of the quarry will be retained.
- As part of future quarry development there will be planting of additional areas of low canopy broadleaved woodland along the margins of the site for screening purposes. Excavated soil from the site will be deposited along the newly created quarry perimeter and broadleaved woodland will be established. This will result in the establishment of significant areas of additional broadleaved planting along the western and northern margins of the quarry area. This additional planting will add to the ecological value of the site over time with native tree/shrub species such as birch (*Betula* sp.), pedunculate oak (*Quercus robur*), alder (*Alnus glutinosa*) and hawthorn (*Crataegus monogyna*) the main species to be established.

### 16.3.4 Mammals

- Construction operations (including extraction and restoration) will take place between 0800-1800 to minimise disturbances to roosting birds and mammals and birds active in the nocturnal/crepuscular period.
- The quarry will not be lit at night (with the exception of low-level switchable safety lighting). All non-essential lighting will be switched off during the hours of darkness.





- A pre-construction mammal survey will be carried out by a suitably qualified ecologist immediately before the commencement of vegetation clearance. This will identify any change in the usage of the site, particularly regarding the presence of any protected breeding or resting sites, in the period between the submission of the planning application and the commencement of associated site works.
  - This will include a contemporary assessment of the structures scheduled for demolition in the period immediately prior to these works – to confirm that no roosting bats are present. In the unlikely event that bats are present, demolition will not continue until such time as a derogation licence has been obtained and under the supervision of a suitably qualified bat specialist.
- Although no bat roosts are likely to be lost as a result of the proposed works, in order to enhance bat roosting opportunities locally as a result of the proposed works a minimum of 10 artificial bat roosts (bat-boxes) will be installed at suitable locations around the margins of the land-holding. As recommended in Kelleher *et al.* (2006) 'woodcrete' bat boxes will be used as they are durable and long-lasting and do not require maintenance. A mixture of bat-box types will be used to cater for seasonal and species requirements. The following products (or similar) will be installed in consultation with a suitably qualified ecologist:
  - 4 x Schwegler 1FS Colony Bat Box 95
  - 4 x Schwegler 2F Universal Bat Box
  - 2 x Schwegler 2FN Bat Box 55
- Selection of locations for bat boxes will be decided with cognisance of the following:
  - Bat boxes will be installed at a minimum height of 4 meters above ground level, and in locations which are inaccessible to unaided climbing (to minimise risk of vandalism).
  - Boxes will be clustered with a minimum of two boxes on each chosen erection site.
  - Locations will be chosen which are not particularly vulnerable to artificial light or noise pollution.
  - Boxes will be installed so that they have southern or westerly aspects and preferably in locations where they will receive some direct sunlight.

Bat boxes will be monitored approximately 12 months following installation, Data on any confirmed roosts will be provided to the National Biodiversity Data Centre (NBDC).

#### 16.3.5 Birds

- Subject to other environmental concerns (e.g. run-off), the removal of grassland, scrub and field boundary vegetation will be undertaken outside of the bird breeding season (March 1<sup>st</sup> to August 31<sup>st</sup> inclusive). This will minimise the potential of disturbance of nesting birds.
- The southern quarry faces are to be retained (post-restoration) to provide attractive habitat for species such as Peregrine Falcon in perpetuity.





- 10 bird boxes will be erected around the margins of the land-holding, particularly in the broadleaved woodland south of the extractive area.
  - These boxes will be selected and erected under the supervision of a qualified ecologist and monitored and maintained annually.

#### **16.3.6 General Environmental Measures**

- Topsoil will be stored in appropriate areas within the site and will be kept separate from other site material (e.g. stone/sub-soil). The revegetating topsoil stockpiles will be included in the annual monitoring.
- All edible and putrescible wastes will be stored and disposed of in an appropriate manner.
- Industry standard Environmental control measures relating to soil management and water management, will be implemented to minimise the risk of impact surface water and groundwater in the area. For example, the use of bunded storage of fuels and regular inspection and maintenance of vehicles on-site will minimise the risk of any spillages of fuel and other hydrocarbons. All vehicles on-site will be equipped with spill-kits and all site personnel will be trained in their correct use.
- The water treatment settlement pond will be inspected and maintained to ensure that it does not silt-up and is functioning as intended.
- Measures to suppress wind-blown broadcast of dust will be implemented as necessary including use of sprinklers/water bowsers when required.

#### **16.3.7 Monitoring**

- Walkovers of the site will be carried out by an Ecologist to monitor the development process in Years 1 & 5 of operation of the extended quarry to ensure that the measures outlined above are effective and being implemented correctly. Survey reports will be prepared and submitted for the attention of Meath County Council.
  - The presence of any invasive species will be mapped, and the Ecologist will provide advice on appropriate biosecurity and eradication measures.
  - A site wildlife log will be maintained by the site manager, with any records or sightings of protected species noted. In particular, there will be vigilance for the potential occurrence of Peregrine Falcon at the quarry site. Should the presence of roosting, or nesting Peregrine be recorded on-site, advice will be sought from a suitably qualified ecologist. In the event of breeding Peregrine Falcon being present at the quarry the environmental manager will inform local NPWS of the presence of a nesting pair and the breeding activity will be monitored by an ecologist through to the conclusion of the nesting period.
  - The bat-boxes will also be inspected in Year 5 of operation.





## 16.4 Soils and Geology

### 16.4.1 Mitigation Measures

The following is an outline of the mitigation measures proposed.

#### Soil and Subsoil Removal and Management of Stockpiles

Topsoil and shallow subsoils will be used during the restoration of the site and for current berms where possible.

Suitable areas will be allocated for both temporary and permanent stockpiling of excavated shallow overburden material pending removal for re-use on site. Such areas will be located away from the identified sensitive receptors and settlement ponds onsite. Any temporary stockpiles will also comply with setback conditions outlined in the requirements of Inland Fisheries Ireland (2016) 'Guidelines on protection of fisheries during construction works in and adjacent to waters.

- Bedrock crushing activities will only take place within the quarry extraction void.
- Where applicable, any contaminated soil or suspected contaminated soil will be isolated from clean soil pending testing to confirm its classification and disposed of to a licenced facility if required.. Contaminated material stockpiles, if required, will be bunded to ensure any liquid run-off is retained prior to licenced removal from site.
- The planned after-care plan for the site will be carried out in an organised manner and following a specific site restoration plan for the quarry.

#### Fuel and Chemical Handling

- To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents, and other liquids used during construction (i.e., quarry excavation activities) will be stored within bunded areas. These storage areas shall be rendered impervious. Appropriate signage will be in place. The amount of fuels/ chemicals stored will be kept to a minimum. All chemical containers will be labelled and copies of SDS sheets shall be maintained for ease of access and reference.
- In the event of a spillage, drainage from bunded areas shall be inspected and diverted for collection and safe disposal if required. The integrity and water tightness of all bunding structures shall be tested and demonstrated. All fuel oil areas will have an appropriate spill apron.
- Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be bunded to a volume of 110% of the capacity of the largest tank/ container within the bunded area(s). Refuelling and maintenance will take place on designated hardstanding (impervious) areas. Potential run-off from these areas will be passed through an oil interceptor where required. Waste oils shall be contained within a bunded area and removed by an appropriately licenced contractor. The proposed new fuel tanks will be fully bunded and roofed (see Drawing KC10 for more information)





With respect to portable equipment containing fuel oil, drip trays or approved equipment shall be used. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in the works area and made available at all times. Guidelines such as 'Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors', (CIRIA 532, 2001) will be complied with.

Training programmes (in the safe handling of hazardous fuels) will be put in place for all relevant personnel which will also be trained in the implementation of site procedures.

### Slope Stability

To minimise the potential impact of slope instability, the embankments i.e. benching profiles to proposed phased mAOD will be constructed in accordance with the British Standards 'BS6031, Code of Practice for Earthworks' which further includes information with regard to safety issues.

With regard to Health & Safety measures, as earthworks and excavations progress, the quarry management will provide adequate slope protection in a diligent and expeditious manner on completion of each stage of excavation, following the approved methodology.

Impacts and mitigation measures associated with groundwater and surface waters are discussed in Chapter 8.

## **16.5 Water (Hydrology / Hydrogeology)**

### **16.5.1 Mitigation Measures**

#### Downstream Surface Water Quality Effects in the Lunderstown Stream and River Nanny from Suspended Sediments during Overburden Stripping /Removal

- All surface water arising during the soil stripping works in the continuation area will be captured and directed to the quarry sump for treatment;
- Prior to the commencement of overburden stripping works silt fencing will be placed down-slope of the excavation area; These will be embedded into the local soils to ensure all site water is captured and filtered;
- Surface water will be collected at low points across the soil stripping works area;
- Discharge into the existing quarry sump will occur following settlement treatment in local temporary settlement ponds if required, and any water discharge from these ponds to the quarry floor will be routed through silt bags which will filter any remaining sediment from the pumped water. The entire soil stripping and landscaping works area will be enclosed by a perimeter of double silt fencing;
- Daily monitoring of the overburden stripping/landscaping earthworks will be completed by a suitably qualified person. All necessary preventative measures will be implemented



to ensure no entrained sediment, or deleterious matter will enter the downstream receiving waters;

- Overburden stripping and landscaping works will be scheduled for periods of low rainfall (summer months) to reduce run-off and potential siltation;
- Landscaped areas and perimeter berming will be planted with trees and grasses as soon as possible after formation to reduce the potential of surface water erosion; and,
- Good construction practices such wheel washers and dust suppression on site roads, and regular plant maintenance will ensure minimal risk. The Construction Industry Research and Information Association (CIRIA) provide guidance on the control and management of water pollution from construction sites ('Control of Water Pollution from Construction Sites, guidance for consultants and contractors', CIRIA, 2001), which provides information on these issues. This will ensure that surface water arising during the course of overburden stripping and landscaping activities will contain minimum sediment.

Earthworks (Cut and fill and Stock Piling) Resulting in Suspended Solids Entrainment in Surface Waters During the New Access Road Construction

- Construction of the proposed access road will only be done over a dry period to avoid water logged soils, heavy rainfall and runoff;
- Firstly, the route corridor area will be clearly marked out with fencing or flagging tape to avoid unnecessary disturbance of vegetation;
- Double silt fencing will be placed down-gradient of the route corridor prior to excavation / filling work commencing. Silt fences are effective at removing larger particle sized solids. This will act to prevent entry to water courses of sand and gravel sized sediment released from excavation;
- Silt fencing will be embedded into the local soils to ensure all site water is captured and filtered;
- Additional silt fencing, sand bag or straw bales (pinned down firmly with stakes) will be placed across any natural surface depressions / channels that slope towards a local watercourse;
- As the excavation / infilling work progresses, an up-gradient interceptor drain (clean runoff) and down-gradient collector drain (works area runoff with possible entrained





sediment) will be placed along the route corridor in advance of the excavation works area;

- Check dams / silts traps will be placed every 20 – 30m in the down-gradient collector drain to slow down runoff and remove any suspended sediments;
- Temporary check dams / silt fencing arrangements will also be placed in any natural drainage features intercepted by the route that do not having flowing water (i.e. dry gullies and other preferential flowpaths);
- If high levels of silt or other contaminants are noted in any local watercourse, all construction works will be stopped. No works will recommence until the issue is resolved and the cause of the elevated source is remedied;
- Excavation work will not be undertaken during periods of high rainfall. This will minimise the risk of entrainment of suspended sediment in surface water runoff and transport via this pathway to surface watercourses;
- All disturbed ground will be re-seeded at the soonest, practicable opportunity to prevent erosion; and,
- All temporary surface water control / protection measures such as silt fencing will be kept in place until disturbed ground has vegetated and stabilised. Regular daily checks will be undertaken.

#### Pre-emptive Site Drainage Management:

The works programme for the initial construction stage of the development will also take account of weather forecasts, and predicted rainfall in particular.

Large excavations and movements of soil/subsoil or vegetation stripping will be suspended or scaled back if heavy rain is forecast. The extent to which works will be scaled back or suspended will relate directly to the amount of rainfall forecast.

Works should be suspended if forecasting suggests any of the following is likely to occur:

- >10 mm/hr (i.e. high intensity local rainfall events);
- >25 mm in a 24 hour period (heavy frontal rainfall lasting most of the day); or,
- >half monthly average rainfall in any 7 days.

Prior to works being suspended the following control measures should be completed:

- Secure all open excavations;
- Provide temporary or emergency drainage to prevent back-up of surface runoff; and,
- Avoid working during heavy rainfall and for up to 24 hours after heavy events to ensure drainage systems are not overloaded.

#### Increased Groundwater Vulnerability & Potential for Contamination

The main mitigation with respect increased groundwater vulnerability during the extraction phase will be employment of best practice measures with respect to oil usage and refuelling (refer to Section 3 below). Post extraction phase a landscape and restoration plan will be implemented.





This will involve previously stripped overburden being placed on the upper quarry benches to establish grassland which will provide a level of protection to groundwater. The lower quarry will be allowed to flood with emphasis on habitat creation and biodiversity.

Surface water Quality Effects to the Lunderstown Stream and the River Nanny Resulting from Quarry Discharge and Surface Water Runoff

No additional mitigation is proposed. The total discharge from the quarry site and proposed continuation area will be maintained below the existing discharge limit of 462m<sup>3</sup>/day.

Discharge from the quarry will continue to be passed through an adequately sized settlement pond, reed bed filter and hydrocarbon interceptor. The reed bed filter is relatively new and therefore has not reached its treatment capacity in terms of nutrient removal. Increased nutrient reduction is expected to occur as the reed beds develop.

The discharge quality is monitored on a quarterly basis and this is to continue at the quarry. Discharge volumes will be continuously monitored at the discharge point location.

A silt fence will be installed between the placed overburden material and the drainage ditch at the northern boundary of the proposed development site during the emplacement of the storage area and while vegetation is establishing on the placed overburden material to prevent erosion. The silt fence will prevent any suspended solids entering the drainage ditch and potentially reaching the River Nanny.

With regard the proposed access road and site entrance, there will be a requirement for quarry traffic to use a wheel wash prior to exiting the site via the proposed new road and site entrance. This will prevent sediment build-up on the road surface. The road will also be swept regularly to maintain a clean surface.

Runoff from the road surface will be allowed disperse into the adjacent grassland which will provide a natural vegetation filter for road runoff.

Also, a soakaway will be located at the junction of the private haul road and public road no L1615. The soakaway is designed to cater for surface water runoff from the junction/entrance area.

Leakages and Spillages from Oil & Chemical Storage Areas

Sources of hydrocarbons (such as oil based substances or other hazardous chemicals) have and will be located within safely bunded areas that safely contain all spillages and prevent the migration of contaminants into the underlying bedrock aquifer. Refuelling of quarry plant has and will only take place in designated bunded refuelling areas or by mobile bowser with availability of suitable spill kits.

All discharge (surface water and groundwater) from the quarry extraction area will be passed through a hydrocarbon interceptor prior to being released into the receiving water. Runoff from the areas of the site sloping away from the extraction footprint (i.e. overburden storage area to north of the site) will not have much machinery traffic once the overburden is emplaced and therefore oil/chemical leaks and spillages is not expected to be an issue. The





proposed access road will be inspected and swept clean on a regular basis which will remove sediment and residues from the road surface.

#### Discharge of Treated Effluent to Groundwater

It is proposed that wastewater from the site will be discharged through a permitted upgraded on-site wastewater treatment system and percolation unit.

#### Water Quality Impacts on the River Nanny Estuary & Shore (SPA)

No additional mitigation proposed. Discharge from the quarry is and will continue to be passed through an adequately sized settlement pond, reed bed filter and hydrocarbon interceptor. The reed bed filter is relatively new and therefore has not reached its treatment capacity in terms of nutrient removal. Increased nutrient reduction is expected to occur as the reed beds develop.

The discharge quality is monitored on a quarterly basis, and this is to continue at the quarry. Discharge volumes are continuously monitored at the discharge point location.

In terms of the northern overburden storage area, runoff will essentially be Greenfield runoff once the overburden storage area has been vegetated. Silt fencing will be put in place until vegetation growth occurs.

The proposed access road will be inspected and swept clean on a regular basis which will remove sediment and residues from the road surface.

#### Effect on Local Groundwater Levels

No mitigation measures are proposed. Due to the low permeability of the proposed bedrock for extraction and localised groundwater catchment to the quarry, further significant effects as a result of the proposed extension will not occur.

#### Effects on Local Well Supplies (Quality and Quantity)

Due to the low permeability of the proposed rock for continued extraction and localised groundwater catchment to the quarry, further significant effects on groundwater levels or quality are not anticipated and therefore significant impacts on local well supplies is not anticipated. This distance between the local wells and proposed quarry continuation area will remain the same as the proposed lateral extension is not in the direction of the local wells.

Also, as stated above, sources of hydrocarbons (such as oil based substances or other hazardous chemicals) have and will be located within safely bunded areas that safely contain all spillages and prevent the migration of contaminants into the underlying bedrock aquifer. Refueling of quarry plant has and will only take place in designated bunded refueling areas or by mobile bowser with availability of suitable spill kits.





Monitoring of on-site groundwater levels and off-site groundwater levels (i.e. W6) will continue to ensure no significant effects are occurring.

## 16.6 Air and Climate

### 16.6.1 Mitigation Measures Proposed

There are a number of mitigation measures in place on site to prevent significant dust emissions from on-site activities. These measures include:

- A wheel wash is in place on site which trucks must pass through prior to exiting onto the public road.
- A water bowser is used during dry periods to dampen all internal site roads and the proposed private road.
- Sweeping and cleaning of site roads and adjoining public roads on a regular basis.
- All fine materials are covered when leaving the site to prevent dust escaping.
- Dust suppression in the form of water misters and sprays are in place on the screening and crushing plant.
- Speeds restrictions are in place on site and to be imposed on the proposed private road

These measures have been incorporated into the modelling assessment to determine the impact of the site on levels of dust deposition and ambient levels of particulate matter ( $PM_{10}$  /  $PM_{2.5}$ ). The modelling assessment found that there was an imperceptible impact on the ambient air quality environment as a result of the development and therefore further mitigation is not required. These mitigation measures will continue to be enforced to prevent significant dust emissions from the site.

### 16.6.2 Monitoring

Monitoring for dust deposition is currently conducted at 4 locations on site using the Bergerhoff Method as per German Standard VDI 2119. It is recommended that monitoring continue on site to ensure that no significant dust nuisance is occurring. It is further recommended that an additional monitoring point towards the north eastern end of the new private access road is installed to capture dust emissions associated with site vehicles entering and exiting the site and the impact to nearby receptors in this area.

## 16.7 Noise and Vibration

### 16.7.1 Mitigation Measures

#### Construction Phase Noise

Typical construction noise thresholds are not expected to be exceeded therefore no specific mitigation measures are proposed. However, best practice in accordance with BS 5228 should be adhered to.





### Construction Phase Vibration

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

### Operational Phase Noise

This noise impact assessment has been carried out using worst case scenario assumptions. As mentioned earlier the noise emissions from the quarry will vary depending on the intensity of quarry operations and there will be times when the noise emissions predicted herein will be lower. The construction of an earth berm on the west and northern sides of the excavation area will serve to reduce noise emissions to the surrounding area.

The calculated noise levels at the nearest noise-sensitive receptors to the quarry for the two phases do not exceed the recommended operational criterion adopted for the quarry. Notwithstanding this, best practice noise mitigation measures will form part of site management practices to ensure noise from on-site operations do not cause a noise nuisance at the nearest NSR, the following measures are recommended:

- Regular maintenance of items of plant to ensure that they are operating efficiently;
- Location of noisy items of plant at the lowest part of the working quarry floor and as close to the quarry face as possible to provide optimum noise screening;
- Design of internal haul roads with as low a gradient as possible to minimise excessive revving of vehicle engines travelling on-site.
- Regular maintenance of haul routes to avoid potholes and uneven surfaces;
- Avoiding unnecessary revving of engines, reducing speed of vehicle movement and keeping lorry tailgates closed where possible;
- All mobile equipment is throttled down or switched off when not in use;
- Use of rubber linings in chutes, dumpers, transfer points etc. to reduce the noise of rock falling on metal surfaces;
- Using rubber mats around screening and crushing plants;
- Enclosing pumps, covering conveyors, cladding the plant and keeping noise control hoods closed when machines are in use;
- Within the constraints of efficient production, limiting the use of particularly noisy plant, limiting the number of items in use at any one time, starting plants one-by-one and switching off when not in use, and;
- Pointing directional noise away from sensitive areas where possible.

## **16.8 Landscape and Visual Impact**

### **16.8.1 Mitigation Measures**

A key objective of the operational phase is to ensure that the proposed development is carried out in order to minimise the visual impacts of the proposal.





The existing quarry access/egress point will be moved southwards and new access/egress points will be created into the agricultural fields; one at each end of the proposed new road. Boundary fencing will also be provided at these points and either side of the proposed access road for its entire length across the agricultural land (i.e., approx. 1.7km). In addition, an existing stonewall to the south of the east access/exit point will be extended north to meet the new entrance. In constructing the proposed access road, to decrease and increase ground levels, land will need to be excavated (c. 789m<sup>3</sup> of materials) as well as infilled (c. 1,169m<sup>3</sup> of materials), respectively, as and where needed. It is intended that any materials excavated at the site will be used to fill in areas that require it. Where additional materials are required to infill land, these will comprise 380m<sup>3</sup> and will be obtained from the quarry.

The function of the proposed mitigation planting is primarily for screening, but will also create new and enhanced existing ecological corridors within the site application boundaries. At that eastern access/exit point of the proposed new road, a native hedgerow will be planted inside the new fence (to the north of the exit) and stonewall (to the south of the exit). In accordance with the Landscape Plan (LD.BLLWSTWN 1.0), which is included as part of this application, that same native hedgerow will be planted along the northern and eastern side of this proposed new access road, for its entire length of the approx. 1.7km. This proposed hedgerow will be planted with a triple staggered row of native whips and advanced nursery stock at 600m spacing. Aside from its considerable ecological benefits, this new proposed hedgerow will help knit the new access road into the prevailing landscape fabric. Upon maturity, this will engender the sense of the access road being an 'original' field boundary, as well as helping to screen views of HGVs from lower land and receptors to the north, as well as aiding visual absorption when viewed from the south (i.e., HGVs will be less visible with an immediate backdrop of native vegetation than that of 'bare' agricultural land). At the entrance to the existing quarry, behind the proposed new fencing, the same native hedgerow will be planted, matching that of the proposed hedgerow along one side of the new access road

At the western access/exit point of the proposed access road, for a length of approx. 300m along both sides of the proposed access road, a low-canopy native woodland mix is proposed, generating extensive ecological and screening capacity. This is same native low canopy woodland mix proposed for large swathes to the north and west of the permitted quarry extension. Indeed, between the all areas of the site (i.e., east and west of Mullagh Road), a total of 5.04ha of low-canopy native woodland mix is proposed.

#### 16.8.2 Decommissioning & Rehabilitation

The cessation of commercial rock extraction at year 25 provides an opportunity to create new habitats and contribute to the promotion of biodiversity, with an additional year required to facilitate restoration work (i.e., 26 years in total).

The restoration plan for the quarry area was permitted under the 37L development. It is proposed to continue to propose this Restoration Plan on cessation of the quarry. These landscaping proposals provide for the natural regeneration of vegetation in certain areas, together with additional native hedge and tree planting. This planting will augment existing well-established planting located on existing perimeter screening mounds to the south and east.

On cessation of the quarry at year 25, new proposed mounds will be constructed along the extended southern, western and northern limits of excavation and will be planted in accordance with the Landscaping Plan enclosed as part of this application. All hard standing areas and plant will be removed at the end of the quarrying activities. The area of land





accommodating the proposed road and entrances will remain to serve the agricultural land. As detailed in Chapter 11, the majority of the internal worked quarry faces will not be visible from outside views.

At an early stage of the proposed new extraction areas, mounds will be constructed from the stripped overburden along the extended western and northern limits of excavation and will be planted in accordance with the Landscaping Plan (LD.BLLWSTWN 1.0) included as part of this application. All hard standing areas and plant will be removed at the end of the quarrying activities. The area of land accommodating the proposed road and entrances will remain to serve the agricultural land. It is anticipated that the basin of the quarry will flood to produce a deep lake and become an attractive habitat for birds. Many such flooded former quarry sites are of biodiversity interest and it would be expected that the site will be an area of some importance for waterbirds in the post-closure period.

## 16.9 Traffic

### 16.9.1 Prevention and Mitigation Measures

The proposed development is forecast to be beneficial to the greater receiving road network serving Bellewstown and will reduce the volume of HGV traffic traversing the network. The development proposes a revised haul route regime that will see a significant proportional impact upon the northernmost 1km section of L1615 which connects to the R150 at a priority controlled junction.

Mitigation measures are set out in this Chapter and include.

- Construction of 1.7 km private access road bypassing local road network
- Relocation of development access to optimise sightlines
- This Chapter includes at Section 12.3.12 a comprehensive assessment of the receiving road infrastructure and identifies for the consideration of Meath County Council a suite of road strengthening and widening works together with bridge strengthening recommendations appropriate to the maintenance of the existing road for the opposed passage of both existing and forecast HGV traffic. This suite of works is not part of the proposed development but will be done separately and Kilsaran will contribute financially to them or they will carry out the road improvement and bridge strengthening works on behalf of Meath County Council subject to agreement and subject to the appropriate licences, whichever Meath County Council decides.
- Subject to agreement with Meath County Council advance warning signing and high friction surfacing will be provided at the new junction on L1615.

### 16.9.2 Monitoring

#### Construction Phase

None required.

#### Operational Phase





The implementation and performance of traffic management and haul route management measures and initiatives including any ongoing revisions or new initiatives will be monitored and evaluated throughout the Operational Phase.

## 16.10 Archaeology

### 16.10.1 Mitigation Measures

#### Construction Phase

In advance of construction, a geophysical survey and test trenching will be carried out on all greenfield areas forming part of the development, including the site recorded ring-ditch (ME027-114). Subject to the results of these surveys further mitigation may be required including preservation in situ and/or preservation by record.

The possible artefact (a saddle quern) identified during the field inspection of the proposed development area will be recovered prior to the commencement of construction and deposited with the National Museum of Ireland, as this artefact, under the National Monuments Acts 1930 to 2014, is automatically in the ownership of the State.

All ground disturbances associated with the proposed development will be monitored by a suitably qualified archaeologist. If any features of archaeological potential are discovered during the course of the works further archaeological mitigation may be required, such as preservation in-situ or by record. Any further mitigation will require approval from the National Monuments Service of the DoHLGH.

*It is the developer's responsibility to ensure full provision is made available for the resolution of any archaeological remains, both on site and during the post excavation process, should that be deemed the appropriate manner in which to proceed.*

Please note that all recommendations are subject to approval by the National Monuments Service of the Heritage and Planning Division, Department of Housing, Local Government and Heritage (DoHLGH).

#### Operational Phase

No mitigation is required in relation to the archaeological, architectural or cultural heritage resource as part of the operation phase.

### 16.10.2 Monitoring

The mitigation measures recommended above will also function as a monitoring system during the operation phase to allow the further assessment of the scale of the predicted impacts and the effectiveness of the recommended mitigation measures.





## 16.11 Waste and Material Assets

### 16.11.1 Prevention and Mitigation Measures

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

#### Construction Stage

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the construction phase where there is a potential for waste management to become secondary to progress and meeting construction schedule targets. The C&D WMP specifies the need for a waste manager to be appointed who will have responsibility to monitor the actual waste volumes being generated and to ensure that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the waste manager will identify the reasons for targets not being achieved and work to resolve any issues. Recording of waste generation during the project will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future projects.

#### Operational Stage

During the operational phase, waste generation volumes should be monitored against the predicted waste volumes outlined in Table 14.2. There may be opportunities to reduce the number of bins, waste collections and equipment required in the WSAs where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contractor costs.

Waste legislation should also be consulted on a regular basis in case of any changes which may impact on waste management procedures.

### 16.11.2 Monitoring

The management of waste during the construction phase should be monitored to ensure compliance with relevant local authority requirements, and effective implementation of the C&D WMP including maintenance of waste documentation.

The management of waste during the operational phase should be monitored to ensure effective implementation of source segregation of waste types and appropriate storage by the facilities management team and the nominated waste team members.

#### Construction Stage

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the construction phase where there is a potential for waste management to become secondary to progress and meeting construction schedule targets. The C&D WMP specifies the need for





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#### Operational Stage

During the operational phase, waste generation volumes should be monitored against the predicted waste volumes outlined in Table 14.2. There may be opportunities to reduce the number of bins, waste collections and equipment required in the WSAs where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contractor costs.

Waste legislation should also be consulted on a regular basis in case of any changes which may impact on waste management procedures.

### **16.12 Interactions**

#### **16.12.1 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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