NON-TECHNICAL SUMMARY

Environmental Impact Assessment Report

Continued Use & Deepening of Existing Quarry

Aghamore Near and Carrownamaddoo townlands, County Sligo

Prepared for: Lagan Bitumen Ltd.

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1.0 Introduction

1.1 Overview

This Environmental Impact Assessment Report (EIAR): Non-Technical Summary provides supporting information to accompany a Planning Application to Sligo County Council by Lagan Bitumen Ltd. in respect of the quarry at Aghamore Near and Carrownamaddoo, Co. Sligo. The application site extends to c.18 hectares – refer to Figures NTS 1 and NTS 2.

1.2 The Applicant

The applicant for the proposed development is Lagan Bitumen Limited which was previously part of the Lagan Group. On 20th April 2018, the Lagan Group was acquired by Breedon Group plc. Breedon is a public company with ordinary shares traded on the Alternative Investment Market (AIM). Throughout the UK and Ireland, the company employs approximately 3,000 people and operates 2 cement plants, 70 quarries, 40 asphalt plants, 200 ready-mixed concrete plants, 9 concrete and clay products plants, 4 contract surfacing businesses, 6 import/export terminals and 2 slate production facilities.

1.3 The Application Site and Surrounding Land Use

The quarry operations comprise extraction of limestone using blasting techniques; processing (crushing and screening) of the fragmented rock to produce aggregates for use in the manufacture of value added products, road construction and site development works.

The application site relates to the quarry extraction area only, as per the previous planning application (Plan File Ref. No. 02/271). Material extracted from the permitted quarry area is processed within the quarry void using mobile processing plant. Material is also transported to the existing processing area located on the opposite side of the local road.

The quarry area is surrounded by agricultural lands (improved agricultural grassland and arable). There are numerous industrial uses within 1 km of the quarry.

Residences within the general area consist of one-off rural houses, farmsteads with some ribbon development along the local road network – refer to EIAR Chapter 4 Population and Human Health.

1.4 Site Access

The site is located approximately 5 km southeast of Sligo Town and is accessed by the R284 and the R287 regional roads via the Drumskibbole crossroads and the Aghamore crossroads respectively.

The quarry and the processing area are located on opposite sides of the local road, with the material from the quarry being transported to the processing area via an existing access that forms a cross roads with the access to the quarry and is primarily used by lorries / dump trucks transporting material for processing.

There is a separate access to the processing area (on the Eastern side of the local road) used mainly by customers and staff, and HGV traffic delivering processed material to market. This access has been improved with road widening and upgrade works being made under Plan File Ref. No. 02/271: Condition no. 9.

All traffic enters Lagan's landholding via the site office and weighbridge and runs over a paved road surface up to the infrastructure area in the centre of the processing area.

All traffic exits the site via the weighbridge (located at the site office).

2.0 Proposed Development

2.1 Operational Phase (Limestone Extraction and Processing)

The proposed development being applied for under this current planning application is shown on **Figure NTS 3** and is similar to that previously granted under Sligo County Council Ref. No 02/271 and will consist of:

- Continued use and operation of the existing permitted quarry area (c. 10.9ha) within an overall application area of c.18 hectares;
- Deepening of the existing permitted quarry area by a further bench from -34.5m OD to -50m OD;
- Provision of a Water Settlement Lagoon (c. 2,800m2).

Aggregate extracted from the quarry will be processed within the quarry void and transported by HGV's to the existing processing area located on the Eastern side of the Local road – refer to Figure NTS 3.

The total recoverable reserve of limestone from within the proposed extraction area is assessed at c.2 million tonnes.

Blasting is, and will continue to be used within the quarry area to fragment the stone prior to processing (crushing / screening / washing etc.). Industry standard slope angles, bench heights, and bench widths will be used for extraction operations at the site. The processing of the extracted rock, into aggregate products, will consist of crushing and screening by mobile processing plant located within the quarry void.

A planning permission duration of 15 years is sought for the extraction and processing period and a further two years to complete final restoration of the site.

2.2 Restoration (Reinstatement to Natural Habitat Areas)

The application area will be restored to a natural habitat, which is one of the beneficial after uses listed in the EPA Guidelines: 'Environmental Management in the Extractive Industry' (2006) – refer to Figure NTS 4. This will be achieved by the following measures:

- The application area will be left for natural recolonisation by locally occurring grass and shrub/scrub species and the void will fill with water.
- All existing boundary fences and hedgerows will be retained to ensure that the site is secure.
- All plant and machinery will be removed from the quarry void.

On completion of extraction operations a lake will be formed on site as groundwater returns to its natural level. Surface water will percolate to ground or be directed to the water body within the void created by quarrying.

Existing hedges surrounding the development will be gapped up and thickened where required. These, combined with fencing and the secure and locked entrance gates to the development will prevent unauthorised third party access.

The restoration works will be carried out in accordance with the EPA Guidelines (2006).

2.3 Site Development Works

Within the planning application boundary an area of 10.9 hectares has been used for the extraction of limestone and therefore has been completely stripped of overburden and topsoil material.

2.4 Operational Hours

In accordance with condition 14 (b) of the existing planning permission no quarry operations will be carried out between 8.00 – 18.00 hrs Monday to Friday; or from 09.00 – 17.00 hrs Saturday. The quarry will not operate on Sundays or Bank Holidays, except in emergency situations.

2.5 Landscaping and Boundary Treatment

Fencing has recently been erected at the quarry site along some perimeter boundaries, where required. Prior to continuing further quarry development within the permitted extraction area a survey of the entire property boundary will be undertaken and where necessary, new boundary fencing will be erected, existing fencing will be repaired and/or replaced and hedgerows will be strengthened or fortified by additional planting.

2.6 Car/Truck Parking

Adequate provision for car parking by employees and visitors is provided at the weighbridge office.

2.7 Site Access and Traffic

All HGVs utilising the quarry will be confined within the Applicant's landholding. Trucks turn into the site from the Local road that is c. 400 meters South of the R287 regional road and travel west over a section of paved internal roadway within the application site.

2.8 Utilities and Services

Electrical power is currently provided to the application site via mains supply. Electricity will provide the principal source of energy for office lighting and heating. Site based staff at the application site are contactable by mobile phone, landline and email and broadband connections to the site office are provided via a mobile network. An existing effluent treatment system is located in the ancillary area to the East of the application area. Potable water is provided to the site via a private well.

2.9 Waste Management

2.9.1 Extractive Waste Management

Almost all products and by-products arising from the aggregate processing have commercial value. Any waste materials from the site are stored, collected, recycled and/or disposed of in accordance with any requirements of Sligo County Council.

2.9.2 General Waste Management

Lagan Bitumen Ltd. as a member of the Irish Concrete Federation commits themselves to the principles of the Federations Environmental Code. The code states:-

"ICF members will minimise production of waste and where appropriate consider its beneficial use including recycling. They will deal with all waste in accordance with the relevant legislation and other controls in place, including using waste contractors with valid Waste Collection Permits"

Potential waste produced and the measures used to control it are described as follows:-

- Scrap metal – these materials are chiefly produced from the maintenance of the possessing plants and can cause a nuisance if allowed to build up in an uncontrolled manner. A designated scrap metal area will be demarcated on site and the build-up of scrap is controlled by the regular removal by licensed scrap metal dealers.
- Used Oil and Oil Filters – any waste oil/oil filters that may arise from servicing of fixed or mobile plant will be removed from the site by a licensed waste contractor.
- Used Batteries – similarly all used batteries will be removed from site for collection and recycling by a licensed waste contractor in accordance with the Waste Management Regulations.
- Domestic Style Waste (Canteen Waste) – domestic waste generated at the offices and employee's facility will be collected by a licensed waste collection contractor.

2.10 Fuel and Oil Storage

Fuel and chemical storage will continue at the current location. The only chemicals to be stored on site for the quarry development that will have the potential to cause water pollution are lubricating oils, hydraulic oils and diesel fuel. All of these chemicals are / will continue to be stored in the following manner:

- suitably certified tanks within areas bunded to a capacity of 110% of the tank, in compliance with condition 21 of the existing planning permission;
- where two tanks are bunded, bund capacity will be 120% of the largest tank;
- no pipe work will go through the bund at any point to reduce the risk of leakage;
- surface water from bunds will be pumped out through a suitable oil interceptor.

2.11 Existing Environmental Monitoring

The site has an established environmental monitoring programme on site (when operational) – refer to Condition No. 22 imposed under Plan File Ref. No. PL02/271. Water, noise, dust and blast monitoring is carried out on a regular basis, to demonstrate that the development is not having an adverse impact on the surrounding environment.

3.0 THE EXISTING ENVIRONMENT, EFFECTS AND MITIGATION MEASURES

3.1 Population and Human Health

Human health is considered in the context of the relevant pathways, such as noise, air, soil and water in the context of acceptable doses or limits. The EIAR shows that the quarry would operate within acceptable limits for noise and dust and potential effects on soil and water would be addressed through good practice and mitigation measures to avoid accidental spillages of fuel, etc.. Water would be discharged from the site in accordance with the existing discharge licence. The restoration of the quarry would be beneficial when compared against the existing baseline. The traffic assessment shows that the existing road junctions have sufficient capacity to accommodate the quarry traffic to 2034 and beyond.

On the basis of the above it is considered that there would not be significant adverse effects on human health or amenity. The proposed development would have positive and medium term effects on employment by providing jobs at the quarry.

Mitigation measures are proposed in relation to the various environment topics. For that reason, specific mitigation measures in relation to human health and population are not proposed.

3.2 Biodiversity

The Biodiversity chapter describes the existing environment, in terms of biodiversity, at Aghamore and Carrownamaddoo Quarry ("the Site"). The chapter was prepared using the results of the desk study and site visits on 20 May 2016 and on 14 September 2017. The potential Zone of Influence for the quarry operation at Aghamore and Carrownamaddoo is identified as likely to be less than 2 km but a precautionary approach was applied and a distance of 5 km was used.

The available existing ecological information on Aghamore and Carrownamaddoo Quarry was collated during the desk study. Sites designated for nature conservation within 5 km of the quarry location were included in the desk study as were records for the 1 km^2 grid squares G6931, G6392, G7031 and G7032within which the Site is located. The Site was walked and the habitats identified and classified to level 3 of the standard Heritage Council classification scheme (Fossitt, 2000) during the site visits. The dominant plant species present in each habitat type were recorded. Incidental sightings of birds, mammals or amphibians were noted during the walkover survey. Trees providing suitable features for bat roosts within the Site and potential suitable bat foraging habitat were also noted during the daytime walkover of the Site. There were no limitations to carrying out the surveys.

The ecological evaluation and impact assessment within the Biodiversity Chapter was undertaken with reference to relevant parts of the 2016 Guidelines for Ecological Impact Assessment in the United Kingdom and Ireland developed by the Chartered Institute of Ecology and Environmental Management (CIEEM, January 2016).

The Aghamore and Carrownamaddoo Quarry is not within a site designated for nature conservation or subject to any nature conservation designations. There are seven Natura 2000 sites within 5 km of the boundary of the application area. Lough Gill SAC (Site code 001976) is within 520 m of the Site boundary at its closest point. Ballysadare Bay SAC (Site code 000622) and SPA (Site code 004129) are approximately 3 km east while the Unshin River SAC (Site code 001898) is approximately 4 km east of the Site. Union Wood SAC (Site code 000638) is approximately 2.7 km south – west of the Site. Cummeen Strand/Drumcliff Bay (Sligo Bay) SAC (Site code 000627) and Cummeen Strand SPA (Site code 004035) are approximately 4 km north and west of the Site at Aghamore. The Appropriate Assessment screening report prepared as a standalone document to accompany this EIAR addresses potential impacts on Natura 2000 sites in detail. The AA screening report found that

significant effects on Natura 2000 sites are not likely and that the project does not require progression to second stage Appropriate Assessment.

The habitats present within the Site are described, classified and evaluated in the Biodiversity Chapter. The dominant habitat present is Active Quarry ED4. Mixed broadleaf woodland WD1, improved agricultural grassland GA1, improved agricultural grassland / dry calcareous grassland GA1 / GS1 are also present within the quarry. Hedgerows WL1 are present along the perimeter of the Site. There are treelines along the south and west perimeter. Scrub WS1 is encroaching into fringes of the quarry in places. The habitats present are all evaluated as important at the Site level.

Irish Raptor Survey Group (IRSG) confirmed that peregrine falcon had nested in 2017 within the area within which the quarry is located. The Site has regularly held breeding peregrine and kestrel in previous years and supports a regular pair of nesting raven. A raptor survey was carried out on the Site during April / May 2018. This survey determined that peregrine did not nest successfully at the Site during 2018, a single adult and subadult were observed during the survey perching within the quarry. Kestrel courtship behaviour including Copulation and food provisioning was observed between an adult pair occupying a used ravens nest on the southern face of the quarry. Two grey wagtails *Motacilla cinerea* were observed displaying breeding behaviour, a single common sandpiper *Actitis hypoleucos* and two non-breeding choughs *Pyrrhocorax pyrrhocorax* were also observed. The bird assemblage of the quarry would be evaluated as important at Townland level due to the historical records of breeding raptors and raven.

Amphibians are not considered likely to utilise the Site due to the lack of suitable habitat. Pine marten *Martes martes* was recorded during the raptor surveys carried out at the site but no other sightings of mammals, or their tracks and signs, were noted during the site visits. The active quarry habitat is of negligible value to foraging mammals such as badger *Meles meles* while there is no suitable habitat present for otter *Lutra lutra.* A ground level daytime visual assessment of the trees within the Site was carried out and they were evaluated for their suitability to support roosting bats. Active quarry is the dominant ecological features within the Site and is of negligible value to foraging and commuting bats.

Design principles and “designed-in” mitigation informed the assessment of impacts; these include the detailed Landscape Mitigation and Restoration Plan (refer to Figure NTS 4) and the incorporation of good practice environmental and pollution control. Impacts as a result of the development will be limited to potential disturbance of breeding peregrine falcon, kestrel and grey wagtail and pine marten due to noise that could result in displacement from the Site. The designed – in mitigation measures include gapping up and provision of additional hedgerows for screening. This would be a slight positive effect for foraging and commuting bats, mammals and breeding birds in the surrounding landscape.

The site will be restored to natural habitat when operations cease. The restoration plan for the Site has incorporated the retention of the cliff faces used by the peregrine falcon in the exhausted / worked out areas of the Site.

It is considered that there is no pathway for other plans and projects to act in-combination and to give rise to cumulative effects.

A breeding bird survey will be carried out on the Site prior to the recommencement of quarrying activities. This survey will consist of multiple site visits during the breeding season to determine whether raptors continue to breeding within the quarry and, if so, identify which areas are being utilised. Specific mitigation will be developed on foot of the findings to prevent any disturbance of breeding birds during operation.

With the mitigation measures, as set out in detail in the biodiversity chapter, in place during operation and post –operation stages residual negative impacts on the receiving environment are not anticipated to be significant.

The year after restoration has been completed the Site should be visited during bird breeding season, preferably in the period May – June, to check that the peregrine falcon, kestrel and raven continue to use the Site.

3.3 Land, Soils and Geology

Existing information on the regional soils, superficial deposits and bedrock geology of the area and its surrounds was collated and evaluated. Subsequent to this data compilation and review, site visits and inspections were undertaken to review the superficial deposits and bedrock geology at the Quarry and in the surrounding area.

Soils and superficial deposits have been entirely stripped from the footprint of the current and previous extraction areas. A small amount of soils / subsoil material will be removed to construct the proposed settlement lagoon.

The bedrock geology at Aghamore Quarry is well understood from abundant quarry face exposures and rotary core drilling to the north, east and southeast of the existing extraction area.

The existing extraction area is developed within the Dartry Limestone Formation located on the hangingwall (downthrown) side of a northwest downthrowing major fault, part of the Ox Mountains fault complex.

The information available indicates that the current and future extraction at the existing quarry is derived from strong, fresh, mid to dark-grey, fine-grained well bedded bioclastic cherty silicified and dolomitised limestones of the Dartry Limestone Formation.

When operational, quarry aggregates produced at the site will be independently tested and geologically assessed on an annual basis to confirm that the aggregates are compliant with the requirements of the relevant aggregate quality standards and to ensure that the aggregates are of suitable quality and are fit for purpose.

3.4 Water

Receiving Environment

The quarry is located at the top of a low hill at an elevation of c. 30mOD, with a gentle topographic slope away from the site to the north, west and south; the topographic gradient to the east is slightly steeper, into a wide shallow valley between the site and the Slieve Dargan/Slieve Daeáne Mountains.

There are few surface water bodies in the vicinity of the quarry: a small unnamed stream (referred to as the 'Aghamore Stream') lies c. 300m to the east of the quarry and drains water from Lough Nameenbrack c. 450m to the southeast of the quarry to Lough Gill c. 520m to the northeast. There are no flood events recorded in the vicinity of the quarry, however the Aghamore Stream is prone to recurring flooding further downstream at the crossroads of the N287, close to Lough Gill.

Current water management within the quarry involves pumping a combination of rainwater and groundwater from the quarry floor directly to the Aghamore Stream. This is an interim measure agreed with Sligo County Council until activities recommence on site. The site was granted a Trade Effluent Discharge Licence from Sligo County Council in December 2011 to discharge water from the quarry to the Aghamore Stream, subject to conditions.

Recent samples of the water discharged from the quarry in 2018 have shown that all parameters are below the licence emission limit values. Past samples of the discharge have shown slightly elevated Biological Oxygen Demand (BOD) and Phosphorus concentrations above the emission limit values, related to background groundwater quality in the groundwater seeping into the quarry from surrounding agricultural lands. Samples of the Aghamore Stream taken upstream of the discharge show that the background water quality of the

Aghamore Stream is quite good, with faecal bacteria and traces of total ammonia present, typical of streams in an agricultural catchment.

The limestone bedrock of the quarry (Dartry Limestone Formation) is classified as a Regionally Important Karstified Aquifer, dominated by flow through 'conduits' (solution-enhanced pipes). 'Karst' features (solution features) are present in this formation further to the west of the site, however no conduits or any other karst features are noted within the quarry. Although bedrock at the site is classified regionally as a regionally important aquifer, evidence from the site investigations undertaken indicate that locally in the Aghamore area the limestone is of low permeability with poor well yields.

The existing quarry floor is below the water table and groundwater levels in the vicinity of the quarry are lowered due to drainage of groundwater into the quarry ('drawdown'). Groundwater flow further away from the quarry would be expected to follow the topography; groundwater to the east of the quarry would be expected to discharge to Lough Gill, and groundwater to the west of the quarry would be expected to discharge to the coast at Ballysadare Bay.

Recent samples of groundwater from monitoring wells surrounding the quarry have shown that there are no elevated parameters present in groundwater other than faecal bacteria, indicating recent faecal pollution from agricultural activities in the lands surrounding the quarry.

Impact Assessment & Mitigation Measures

The proposed development is to continue operations and deepen the existing quarry.

The only construction activity in advance of activities recommencing will be the installation of a settlement lagoon to treat surface water pumped from the quarry floor before being discharged to the Aghamore Stream. There is the potential for generating suspended sediment in rainfall runoff during construction of the lagoon, and the potential for accidental spills of fuels/oils from construction vehicles. These potential impacts will be mitigated by employing good site practice in managing runoff and spill prevention during construction.

Deepening of the quarry will increase drawdown on the water table surrounding the quarry. At the lowest proposed quarry floor level of -50mOD, the influence of drawdown on the water table is estimated to extend c. 286m from the quarry face in all directions. There are very few private wells in the vicinity of the quarry, the nearest is a disused farm well just south of the quarry boundary. Calculations would suggest a future lowering of the water table at this well of up to c. 12-18m from the existing water level. It is proposed to monitor levels in this disused well (with permission); if water levels in the well drop significantly and affect the use of the well as a water supply then a replacement well will be provided by Lagan Bitumen. The influence of drawdown on the water table is not estimated to extend as far as the Aghamore Stream or Lough Gill further away from the site.

There is a potential risk of groundwater pollution from blasting activities, this risk is effectively controlled by careful management of the blasting sequence. Other potential sources of groundwater pollution during operations are accidental leaks or spills of fuels/oils. Mitigation measures will be put in place to prevent groundwater pollution from leaks/spills (storage of all petroleum-based products in bunds, a hardstand service/refuelling area draining to an interceptor and provision of spill kits within the quarry). There are no sources of waste water within the quarry, toilets are provided in the offices across the road (outside the proposed development).

The increased discharge of water from the quarry has the potential to exacerbate the existing flood risk along the Aghamore Stream. A channel survey was carried out along the Aghamore Stream from the quarry discharge point to Lough Gill. The most sensitive location was found to be a road culvert by the entrance to the Top Coast Oil depot, where the restricted size of the pipe culvert may result in flooding of the adjacent road only in extreme weather events. Any discharge of water from the quarry at such times would exacerbate such flooding downstream. To mitigate the potential for exacerbating flooding at this culvert, Lagan Bitumen will ensure that there is no pumping during flooding events.

There is the potential that certain parameters in the discharge from the quarry could impact on water quality in Lough Gill. Total Ammonia and Phosphorus (Orthophosphate) are the parameters of most interest in the discharged water. Conservative dilution estimates for the discharge entering Lough Gill indicate that background concentrations within the first 100m from shore increase by a negligible c. 0.5% increase for each parameter, reflecting the large volume of water that dilutes the discharge on entry to the lake. Some additional faecal bacteria are added to the Aghamore Stream from the discharge, however the net effect of the discharge is to reduce the overall faecal bacteria concentrations in the stream going to Lough Gill due to dilution. Suspended solids in the discharge will be controlled by construction of the proposed settlement lagoon.

Any groundwater abstraction has the potential to over-abstract an aquifer, where more water is taken out than goes in. The limestone aquifer at the quarry has been assessed regionally as part of the Water Framework Directive work undertaken by the Environmental Protection Agency and is not at risk of over-abstraction. The potential impact of abstracting small additional volumes of groundwater from the aquifer are negligible.

On cessation of activities at the quarry, pumping of water from the quarry will stop and the quarry will be allowed to flood and become a natural habitat – refer to Figure NTS 4. All chemicals, petroleum-based products, mechanical and electrical equipment will be removed from the site prior to its closure to eliminate potential sources of groundwater contamination. Site security will be maintained post-closure to discourage unauthorised dumping or any other potentially contaminating activities in the vicinity of the quarry. No post-operational impacts on the water environment have been identified.

Residual Impact Assessment

If the proposed mitigation measures are fully implemented, no residual impacts are anticipated during the construction, operational and post-operational stages of the quarry development.

3.5 Air Quality

An assessment of fugitive dust emissions from the quarry has been undertaken. The assessment takes into consideration the potential sources, surrounding receptors, and the pathway between source and receptor in order to assess the magnitude of risk of impact without mitigation measures in place.

The main focus of the assessment is the potential impact on sensitive receptors from fugitive dust emissions from the following activities:

- transport – access road and internal haulage routes;
- soil and overburden handling;
- excavation, storage and transfer of stone; and
- processing plants and facilities.

There were approximately 12 groups of sensitive receptors identified within 1km of the planning application area. A number of these receptors were assessed in greater detail, as they are considered to have a potential greater risk of dust impact.

In the absence of any mitigation measures, the risk of impact from dust emissions associated with the proposed development at the Quarry generally varies from insignificant to moderate adverse at the residential receptors within 500 meters of the quarry boundary.

A number of existing mitigation measures are in place to minimise the generation / migration of fugitive dust and to ensure that the extraction, processing and restoration operations comply with the threshold values described above. These mitigation measures are in accordance with the ‘best practice / mitigation’ measures for the sector.

With the range of mitigation measures to be implemented and design measures to be incorporated into the working scheme will reduce to acceptable.

3.6 Climate

The planned continuation of rock extraction at the quarry will not have a significant impact on the micro-climate beyond the quarry boundary as the extraction progresses westwards. Any change in wind turbulence near the rock face will be imperceptible at the nearest house. No mitigation measures such as shelter-belts are required in relation to microclimate conditions beyond the quarry boundary.

Rock extraction from the quarry will be the same process as is currently permitted with no significant change in the quantity of emissions from trucks and other machinery associated with transporting and processing of the material. Any change in the carbon footprint of the quarry site related to rock recovery, truck transfer and operating the aggregate production plant will be insignificant.

3.7 Noise and Vibration

3.7.1 Noise

To determine the noise impact from the activities within the application site, SLR Consulting Ireland carried out a noise prediction assessment, whereby the existing measured noise levels within the site boundary have impact at the nearest noise sensitive receptors (residences). The daytime noise criterion limits arising specifically from site operations at the sensitive receptors are met at all noise sensitive locations during site operations.

With reference to the Guidelines for Noise Impact Assessment produced by the Institute of Environmental Management and Assessment (IEMA), the cumulative short-term noise impact within the application area from plant associated with the rock extraction at the nearest receptors is Minor at R1, R4, R7, R8 and Negligible at all other receptors; long term associated noise effects are Negligible at all receptors. The noise criterion limits for protection of wildlife arising specifically from proposed development activity at the quarry are comfortably met at nearby ecological noise sensitive locations.

Notwithstanding the findings of the impact assessment, and in line with practice at other Lagan Bitumen Ltd. facilities, a number of best practice measures will continue to be implemented wherever practicable at the existing permitted quarry to minimise the potential noise impact of on-site activities.

With the range of mitigation measures implemented the development will comply with the recommended noise emission limit values for the sector.

3.7.2 Vibration

Blasting-induced vibration is impulsive and transient in nature. A typical blast consists of a number of drilled blast holes into which are placed explosive charges. The charged holes are detonated individually by use of detonators each with different delays.

The main reason for complaints from blast-induced vibration is usually attributed to the fear of damage and/or nuisance rather than actual damage or nuisance itself. The human body is very sensitive to vibration; this can result in concerns being raised at vibration levels well below the threshold of cosmetic damage to buildings or the levels stated in the existing planning conditions.

The frequency of blasts is dependent on market demand. The duration of a blast in terms of noise is of short duration, similar to a clap of thunder.

A number of existing mitigation measures are in place to minimise disturbances due to blasting. These mitigation measures are in accordance with the '*best practice / mitigation*' measures for the sector. Blasting is carried out by a qualified "shotfirer". The blast design is reviewed on a regular basis and modified where necessary to ensure compliance with groundborne vibration limits.

All blasts are monitored, with records kept detailing the results of vibration, air over pressure, and the blast design as part of the environmental monitoring programme implemented at the quarry.

The comprehensive environmental monitoring programme implemented at the quarry (when operational) confirms that the quarry has operated within the recommended blasting emission limit values set out in the best practice guidelines for the sector.

3.8 Cultural Heritage

The cultural heritage and archaeological component of an environmental impact statement of the proposed development at Aghamore Near, Co. Sligo consisting of a paper and fieldwork study was carried out in March 2018 - May 2018. There are no items of cultural heritage, archaeological sites or monuments or buildings of heritage interest known from the application area. There are no direct or indirect impacts on any known items of cultural heritage, archaeology or buildings of heritage interest in the application area or the vicinity.

One appendix is included dealing with Recorded Monuments in the study area. This section should be read in conjunction with the appendix.

3.9 Material Assets

The Environmental Protection Agency guidelines in relation to environmental impact assessment (2017) indicate that the consideration of material assets relates to built services, roads and traffic and waste management. Roads and traffic are addressed separately in the EIAR and this non-technical summary relates to built services and waste management only.

The application site is located south-west of Sligo town, off the R287 regional road in the town lands of Aghamore Near and Carrownamaddoo. Although there is a dispersed pattern of housing development in the vicinity, there is no distinctive village or settlement in the immediate vicinity. The application site is located in a rural area, but the nearby roads and in particular the roads to the north-east and north-west display a pattern of ribbon development. There is a more dispersed pattern of residential development along the local road to the south of the site. There is a number of industrial and commercial developments to the south-east of the site associated with the manufacturing area of the site and the nearby business park. There are no residences within 200 metres of the quarry void.

The application area is bounded on all sides by agricultural land and there are a number of dwellings located along the roads in the vicinity. There is a sports ground located to the northwest of the application area. The site is access from a local road (L3603). Lough Gill is located c. 520m north-east of the application site.

A manufacturing area and welfare and office facilities associated with the application site are located to the east of the road. The application site comprises of a quarry. There are no manufacturing facilities or welfare facilities within the application site. Electrical power is currently provided to the application site via mains supply. Electricity will provide the principal source of energy for office lighting and heating. Site based staff at the application site are contactable by mobile phone, landline and email and broadband connections to the site office are provided via a mobile network. An existing effluent treatment system is located in the ancillary area to the East of the application area. Potable water is provided to the site via a private well.

Waste management facilities for general waste, ancillary operational waste and extractive waste are already in place at the quarry. Waste oils, batteries, tyres, domestic waste and scrap metal are stored on site in designated areas and collected and recycled or disposed of by an authorised waste contractor. Very little extractive waste is produced at the site and any such waste is disposed of appropriately.

The proposed development would not conflict with any built services already present at the site and would not, therefore, have any impact on built services. The proposed development would produce general waste, extractive waste and other waste ancillary to the operations. This would be stored and handled appropriately and would be removed by licenced waste contractors in accordance with the current practice at the site.

It is considered, therefore, that the proposed development would not result in significant effects on material assets. On this basis, no mitigation measures (other than the continued appropriate handling and disposal of waste) are proposed and no residual impacts are anticipated.

3.10 Landscape

A landscape and visual impact assessment has been undertaken for the proposed development. The assessment approach was informed by the Guidelines for Landscape and Visual Impact Assessment, Landscape Institute and Institute of Environmental Management & Assessment, Third Edition, 2013.

The proposed change comprises the continuation of use of the existing permitted quarry development and the deepening of the existing extraction area below the current permitted level of -34.5m OD to a depth of -50m OD within an overall application area of c. 18 hectares after which, measures to restore the landscape of the application area would be implemented.

Effects on landscape character were considered in the context of the published landscape characterisation map taken from the Sligo County Development Plan 2017-2023 The proposed development would be located within a Normal Rural Landscape. Direct changes to this landscape would be very limited as the nature of the proposal comprises for the most part, the continuation of the existing permitted development and the proposed deepening of the existing quarry void.

Effects on the character of the surrounding landscape would be limited and not significant. The deepening of the existing quarry void would be apparent from elevated upland landscapes such as that in the vicinity of Slieve Dargan and Slieve Daeane. The scale and extent of the change however would be very limited and would be apparent in the context of an existing quarry facility. The lakeland landscape of Lough Gill would not be affected due to screening by intervening woodland.

Visual effects at a selection of viewpoint locations were assessed and judged to be not significant. These included residents of dwellings, road users and recreational viewers. These viewers would continue to attain views of elements associated with the existing permitted development. In all cases, the proposed deepening of the existing quarry void would not be visible.

The assessment concludes that no significant adverse effects would arise to the designated scenic routes located within the study area.

During the post operational phase, beneficial effects on landscape and visual amenity are considered to arise. – refer to Figure NTS 4 This would result from the restoration of the site in a manner that would be more sympathetic to landscape character, visual amenity and would enhance habitats.

3.11 Traffic

This report addresses the traffic related impacts associated with the continued use and deepening of the existing permitted quarry at Aghamore Near and Carrownamadoo, Co. Sligo, within an overall application area of c. 18 ha.

The existing quarry has historically been used for the extraction of limestone and the applicant intends to continue extracting limestone from the existing quarry area.

Classified traffic turning counts were undertaken to obtain an accurate representation of the traffic volumes and movements in the vicinity of the development and Transport Infrastructure Ireland (TII) traffic growth factors were applied to this data to estimate future year flows. The development flows to and from the site have been calculated based on historical data and information received from the applicant on the proposed future level of activity at the site. The total daily trips associated with the quarry operation is estimated to be 138, of which 106 (77%) would be HGV's.

It is proposed to maintain extraction rates in line with the current permitted output of 300,000 tonnes per annum, resulting in a maximum of 53 loads per day from the development. The development will directly employ approximately 6 full time staff and it is assumed that the arrivals and departures of staff will primarily occur during the peak hours.

The "Traffic and Transport Assessment Guidelines" published by TII recommend the assessment of traffic in the Opening Year, the Opening Year +5 years and the Opening Year +15 years. The assessment years for the impact assessment are 2019 for the Opening Year and 2024 & 2034 for the Future Assessment Years.

A link capacity analysis has been undertaken for the R284 and R287 Regional Roads and L3603 Local Road for the current year, 2018, the opening year, 2019, and the future assessment years 2024 and 2034. The analysis concludes that each road currently operates within capacity and will continue to operate within capacity for each of the future assessment years.

A junction capacity analysis has been undertaken for the quarry access, the R287/L3603/L36025 crossroads and the R284/L3603 crossroads for the current year, 2018, the opening year, 2019, and the future assessment years 2024 and 2034. The analysis concludes that all of the junctions assessed currently operate within capacity and will continue to operate within capacity for each of the future assessment years.

The assessment indicates that the existing road network can accommodate the site development traffic for each of the assessment years.

The quarry access has restricted sightlines for exiting drivers, however the required sightline to the south can be achieved by the cutting back of vegetation within the client's land ownership. The sightline to the north is deemed acceptable, as approach speeds are passively limited by the location of a crossroad junction within 220m of the site access, which can be expected to constrain prevailing vehicle speeds as they approach the access. Additionally, warning signs on both approaches to the main quarry access and haul route access will be provided to advise approaching drivers of the upcoming quarry access.

3.12 Interactions Summary

The interactions of the various potential impacts and mitigation measures have been covered, where applicable, under the relevant sections within the EIAR.

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