NON-TECHNICAL SUMMARY

Introduction

This Environmental Impact Assessment Report (EIAR) has been prepared by MKO on behalf of Roadstone Ltd. who intends to apply to Clare County Council (CCC) for planning permission to further develop the existing quarry at Ballyquin, Co. Clare. The planning application also includes for the infilling and restoration of the existing and future quarry void.

Applicant

Roadstone Ltd. was originally founded by the Roche Brothers in the 1930's and became part of Cement Roadstone Holdings (CRH) plc in 1970, following the merger of Roadstone and Cement Ltd. The present-day company was formed in 2009 by the amalgamation of CRH's three construction materials businesses in Ireland, Roadstone Dublin Ltd., Roadstone Provinces Ltd. and John A. Wood Ltd. The company is Ireland's leading supplier of aggregates, construction and road building materials and employs several hundred people at 65 locations throughout the country. CRH is the leading global diversified building materials business in the world, employing 75,800 in 29 countries.

Although Roadstone's principal business interest is in rock extraction and manufacture of building materials and products, it is currently backfilling and restoring former quarries using imported soil and stone at several of its locations across Ireland.

Brief Description of the Proposed Development

The Proposed Development being applied for under this current planning application includes the following:

- Stripping of overburden and removal of hedgerows.
- Construction of berms, soil inspection shed, refuelling area, drainage network, settlement ponds, road paving and new chain link permitter fence.
- Construction of a fixed processing plant including water management system and ponds for the washing of aggregates.
- Extraction, processing and washing of sand and gravel from an area measuring approximately 16.3 hectares and will allow for the extraction of approximately 1,428,571 tonnes of material.
- Infilling and restoration of an existing and future quarry void with inert soil and stone over an area of approximately 38 hectares. There will be a phased restoration of the quarry void working from the base of the void vertically building up soil and stone. The soil and stone will be spread in layers, approximately 1 to 2 metres each, up to ground level. Following completion of the infilling works, the topsoil removed during quarrying will be placed and the soils rolled. Natural colonisation of plant species will occur from the seedbank within the redistributed soil. It is proposed to import approximately 4,471,200 tonnes of inert soil and stone material for the infilling of the quarry void.

It is considered that the rate of infilling and restoration will be subject to market conditions and therefore planning permission is being sought for a 20-year operation.

Need for the Proposed Development

The need for the Proposed Development is driven by its beneficial after-use which is integral to the sustainable extraction of aggregates. The restoration of the quarry void will return the site area to a land use which is in keeping with its surrounds i.e. grassed field agricultural systems.

The Proposed Development can avail of the existing site infrastructure, site management procedures and the experienced staff all of which contributes to this being the most sustainable option for the delivery of products to industry.

Purpose and Structure of this EIAR

The purpose of this EIAR is to document the current state of the environment in the vicinity of the Proposed Development site and to quantify the likely significant effects of the Proposed Development on the environment. This EIAR submitted by the applicant provides the relevant environmental information to enable the Environmental Impact Assessment (EIA) to be carried out by the competent authority, in this case Clare County Council.

Each chapter of this EIAR has been prepared by a competent expert in the subject matter. The chapters of this EIAR are as follows:

1. *Introduction*
2. *Background to the Proposed Development*
3. *Description of the Proposed Development*
4. *Population & Human Health*
5. *Biodiversity*
6. *Land, Soils and Geology*
7. *Hydrology and Hydrogeology*
8. *Air*
9. *Climate*
10. *Noise and Vibration*
11. *Cultural Heritage*
12. *Landscape and Visual*
13. *Material Assets – including Traffic*
14. *Interaction of the Foregoing*
15. *Schedule of Mitigation and Monitoring Measures*

A Natura Impact Statement has also been prepared in line with the requirements of the Habitats Directive and has been submitted to the Planning Authority as part of the planning application documentation.

Background to the Proposed Development

Chapter 2 of the EIAR sets out the background to the Proposed Development, focussing on the relevant planning policy context, planning history, scoping and consultation, as well as setting out the nature of the cumulative impact assessment process undertaken. A summary of the Chapter is set out below.

Planning Policy

Project Ireland 2040 – National Planning Framework

The National Planning Framework states that extractive industries are *"important for the supply of aggregates and construction materials and minerals to a variety of sectors, for both domestic requirements and for export. The planning process will play a key role in realising the potential of the*

extractive industries sector by identifying and protecting important reserves of aggregates and minerals from development that might prejudice their utilisation.

"Aggregates and minerals extraction will continue to be enabled where this is compatible with the protection of the environment in terms of air and water quality, natural and cultural heritage, the quality of life of residents in the vicinity, and provides for appropriate site rehabilitation."

Further development of the circular economy will require greater efficiency with raw materials, energy, water, space and food by constantly reusing natural resources. Specifically, it is noted that additional investment in waste management infrastructure, and in particular different types of waste treatment, will be required, as exemplified by the proposed extension of the subject quarry. This is emphasised in National Policy Objective 52 and National Policy Objective 56 which state:

- ***NPO 52:*** *The planning system will be responsive to our national environmental challenges and ensure that development occurs within environmental limits, having regard to the requirements of all relevant environmental legislation and the sustainable management of our natural capital.*
- ***NPO 56:*** *Sustainably manage waste generation, invest in different types of waste treatment and support circular economy principles, prioritising prevention, reuse, recycling and recovery, to support a healthy environment, economy and society.*

Regional Spatial and Economic Strategy for the Northern and Western Region

The Southern Regional Assembly (SRA) was established in 2015 published the Regional Spatial and Economic Strategy (RSES) came into effect on 31st January 2020. The RSES provides a long-term, strategic development framework for the future physical, economic and social development of the Southern Region. The RSES seeks to achieve balanced regional development and full implementation of Project Ireland 2040 – the National Planning Framework

Local Planning Policy

The Clare County Development Plan 2023-2029 (CDP) was adopted on the 9th of March 2023 and came into effect on the 20th of April 2023. County Clare generally has a strong extractive industry sector which benefits from the reserves of stone, sand, gravel, and peat throughout the County. The Council recognises the importance of the extractive industry throughout the County as the quarrying industry contributes to the construction sector, employment generation and economic life. In the CDP the Council commits to facilitate the harnessing of the area's natural resources whilst also ensuring that the receiving environment amenities are appropriately protected.

The Proposed Development is consistent with the policies and objectives set out in the Development Plan. The EIAR demonstrates that the works proposed can be carried out without adverse impacts on the environment.

Material Considerations

The Guidelines, issued by the Department of the Environment, Heritage and Local Government. In terms of quarrying, the Guidelines state *"Aggregates are a significant natural resource. The extractive industries make an important contribution to economic development in Ireland. However, the operation of quarries can give rise to land use and environmental issues which require to be mitigated and controlled through the planning system."*

Scoping and Consultations

A scoping report has been prepared by MKO and issued to relevant parties to inform the EIAR. Scoping is the process of determining the content, depth and extent of topics to be covered in the environmental information to be submitted to a competent authority for projects that are subject to an

Environmental Impact Assessment (EIA). This process is conducted by contacting the relevant authorities and Non-Governmental Organisations (NGOs) with interest in the specific aspects of the environment with the potential to be affected by the proposal. Full detail of scoping requests and responses are set out at Section 2.5.1 of Chapter 2 of the EIAR. Section 2.5.2 of the Chapter also details the engagement between the Local Planning Authority, Clare County Council, the Applicant and the members of the project team.

Community Engagement

A Public Information Event (PIE) was held in advance of lodgement of the planning application, to allow time for the feedback to be considered and communicated to the wider team, and to allow time for any modifications to the design arising from the consultation process. Full details of the event and its format can be found in Appendix 2-3 of the EIAR which contains a dedicated Community Engagement Report.

Cumulative Impact Assessment

The EIA Directive and associated guidance documents state that as well as considering any direct, indirect, secondary, transboundary, short-, medium-, and long-term, permanent and temporary, positive and negative effects of a project (all of which are considered in the various chapters of the EIAR), the description of likely significant effects should include an assessment of cumulative impacts that may arise.

Geographical boundaries within which there may be potential for cumulative impacts to arise, relative to each individual EIAR topic (i.e. each chapter) is set out within the Chapter. A long list of all plans and/or projects considered by each of the different disciplines in their cumulative impact assessment are included in Appendix 2-2 of the EIAR.

Description of the Proposed Development

The Proposed Development site comprises land in the townlands of Ballyquin More, Leitrim, Woodpark and Fahy More North, Co. Clare. The Proposed Development site is located approximately 8 kilometres southwest of the town of Killaloe and 1.5 kilometres to the northwest of the village of Bridgetown, Co. Clare. The site comprises a quarry void area which has been used for sand and gravel extraction since c. 1954. The Grid Reference co-ordinates for the approximate centre of the site are X 562651, Y 669425 in Irish Transverse Mercator (ITM).

Proposed Development

The Proposed Development being applied for under this planning application includes for the construction of a soil inspection shed, refuelling area, settlement ponds, road improvements, drainage network and environmental berms. The Proposed Development also includes for the extraction, processing and washing of sand and gravel from an area measuring approximately 16.3 hectares (ha) which will allow for the extraction of approximately 1,428,571 tonnes of material.

The development proposals also include for the infilling and restoration of an existing and future quarry void back to original land contour levels. It is proposed to fill the void with either inert soil and stone waste (imported inert greenfield and non-greenfield soils and stone, and river dredge spoil) which will be a soil recovery facility and require a waste management licence or soil and stone by-product (i.e., essentially virgin soil or equivalent to virgin soil and stone, and river dredge spoil) which will be notified to the Environmental Protection Agency (EPA) as an Article 27 by-product. The quantity of soil and stone material required for restoration has been estimated to be approximately 4,471,200 tonnes.

Management of Site Operations

The Proposed Development will be carried out in accordance with the requirements of the Environmental Management System.

It is expected that the extraction and infilling works will occur during the following working hours:

- 07:00 – 18:30 Monday to Friday; and 08:00- 16:00 Saturdays.
- Closed Sunday, Bank Holiday and other Public Holidays.

Traffic Management

All traffic accessing and egressing the site will utilise the existing site entrances and established haul routes. Traffic on site will be controlled by the Facility Manager. Signs on site will indicate maximum permissible speeds and directional information. The weighbridge operator will provide the primary means of marshalling traffic. Traffic control at the site will involve restricting the number of vehicles entering the extraction and infill areas at any one time. No queuing of vehicles will be allowed outside the entrance to the site on the R466 Regional Road.

Dust Control

- The hardstanding/roads adjacent the site will continue to be regularly inspected by the Facility Manager for cleanliness and cleaned as necessary.
- Any hardstanding areas/site roads with the potential to give rise to dust will be regularly watered, as appropriate, during dry and/or windy conditions (also applies to vehicles delivering material with dust potential). Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff.
- The transport of material, which has significant potential to cause dust, will be undertaken in tarpaulin-covered vehicles.
- All vehicles required to pass through the wheel-wash on exiting the site.
- Following reinstatement, the area will be reseeded to facilitate immediate revegetation of the site and prevent dust generation.
- All plant and machinery will be maintained in good operational order while onsite.
- All plant and materials vehicles shall be stored in the dedicated compound area.

Noise Control

It is anticipated that there will be no significant noise effects from the plant and HGV movements associated with the Proposed Development. Notwithstanding this, the following general mitigation measures will be in operation at the site:

- In order to reduce the noise levels at Noise Sensitive Receptor SR1, an acoustic barrier of 3 metres height is proposed.
- Regular maintenance of items of plant to ensure that they are operating efficiently;
- Where practicable, 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;
- 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;
- Orienting directional noise away from sensitive areas where possible; and
- Monitoring of noise will continue at the existing and proposed locations (Chapter 10).

Refuelling

There will be no storage of fuel onsite. The mobile plant at the site will be refuelled using a mobile tanker which will be carried out in a dedicated refuelling area. The proposed dedicated refuelling area will be constructed on the new concrete hardstanding, adjacent to the soil inspection area. All vehicle refuelling operations will take place in this designated area. The mobile plant on site is currently fuelled by diesel, however it is planned to phase out the use of diesel as a fuel and replace with HVO (Hydro treated Vegetable Oil) over the course of the Proposed Development.

Final Restoration and Aftercare

One of the principal activities to be undertaken at the application site is for the restoration of lands within an existing and future quarry void. The quarry void will be backfilled to original land contours and restored for beneficial after use.

Following completion of the infilling works, topsoil will be placed (approximate 300 mm depth) and the soils will be rolled and reseeded with grasses. The final landform will be profiled to ensure surface water run-off over the ground surface is directed to boundary ditches and site drainage infrastructure.

Following completion of the restoration and site decommissioning works, provision will be made for further, short-term (2 year) environmental monitoring of air, surface water and groundwater.

Population and Human Health

One of the principal concerns in the development process is that people, as individuals or communities, should experience no diminution in their quality of life from the direct, indirect or cumulative effects arising from the operation of a development. arising from the construction, operation and decommissioning of a development. Ultimately, all the effects of a development impinge on human beings, directly and indirectly, positively, and negatively. The key issues examined in this section of the EIAR include population, employment and economic activity, land-use, services, tourism, human health, property values, residential amenity and vulnerability of the project to natural disasters and major accidents.

The information regarding human beings and general socio-economic data were sourced from the Central Statistics Office (CSO), the adopted '*Clare County Development Plan 2022-2028',* and Fáilte Ireland. The study included an examination of the population and employment characteristics of the area. This information was sourced from the Census of Ireland 2022, the Census of Ireland 2016 and the Census of Agriculture 2020 (CSO website, www.cso.ie. Census information is divided into State, Provencial, County, Major Town and Electoral Division (EDs) level. The Study Area is made up of Fahymore ED, Killokennedy ED, Lackareagh ED, Cloghera ED, O'Briensbridge ED, Kilseily ED, and Kiltenanlea ED. The Proposed Development is located within Fahymore ED.

The Proposed Development site is located to the southeast of Broadford Village. There are 33 no. dwellings located within 500 metres of the Proposed Development site. The closest occupied dwelling (Dwelling ID no. 27) is located approximately 15 metres from the Proposed Development site at its closest point.

The population density for the Study Area recorded during the 2022 Census was 32.69 persons. This is less than the figures recorded at both State and County level. The Proposed Development is located completely within Fahymore ED which recorded a population density of 17.17 persons.

The proportion of the Study Area population within each age category is broadly similar to those recorded at national and County level for most categories. Within the Study Area, the highest population percentage occurs within the 45-64 age category at 27.8%. This age category would be considered to be slightly sensitive to change. When the data is examined more closely, it can be seen

that the figures for the 65 + age category which would be considered one of the more sensitive age categories vary between EDs. Fahymore ED where the Proposed Development is located recorded one of the lowest percentages in this category at 15.93% compared to Killokennedy which recorded a percentage of 17.72% in the 65+ category. Kilseily ED recorded the lowest percentages in this category at 12.8%

The highest levels of employment within the Study Area were recorded in the Managerial and Technical category. The level of employment within the Professional Workers and Managerial and Technical category within the Study Area was higher than those seen either at a county or State level. Conversely, the levels of employment seen in the Unskilled and Semi-skilled categories were higher at a State and County level than in the Study Area.

Ireland is divided into seven tourism regions. The Proposed Development is located within the Mid-West Region. According to '*Regional Tourism Performance in 2019*' (Fáilte Ireland, March 2021), the Mid-West Region which comprises the counties Clare, Limerick and Tipperary, benefitted from approximately 9.5% of all overseas tourists to the country and approximately 9.1% of the associated tourism income generated in Ireland in 2019.

There are no key identified tourist attractions pertaining specifically to the site of the Proposed Development itself. The nearest tourist centre to the Proposed Development site is Killaloe.

Effects on human beings during the construction and operational phases are described in Chapter 4 in terms of health and safety, population, land-use, tourism, dust and air quality, noise and traffic. Where a negative effect was identified, the appropriate mitigation measure is also described in this section of the EIAR and will be put in place to ensure that there will be no adverse impacts on human beings within the Study Area.

Following consideration of the residual effect (post-mitigation), the Proposed Development will not result in any significant effects on population and human health. Provided that the Proposed Development is operated in accordance with the design, best practice and mitigation that is described within this application, significant effects on population and human health are not anticipated.

Biodiversity

This chapter assesses the likely significant effects (both alone and cumulatively with other projects) that the Proposed Development may have on Biodiversity, and sets out the mitigation measures proposed to avoid, reduce or offset any potential significant effects that are identified.

To inform the assessment, a comprehensive desk study and suite of field surveys have been carried out. Multidisciplinary walkover surveys were undertaken on the 30th of March 2023, 25th of April 2023, 18th of May 2023, 28th of August 2023 and 17th of April 2024. Habitat surveys of the Proposed Development site covered the recognised optimum period for vegetation surveys/habitat mapping, i.e. April to September (Smith et al., 2011). Dedicated species/habitat specific surveys including for barn owl, bats and other protected mammals and detailed habitat assessment surveys were carried out, during which any incidental records of other species were also recorded.

The multi-disciplinary walkover surveys comprehensively covered the lands within the EIAR Site Boundary and based on the survey findings, further detailed targeted surveys were carried out for features and locations of ecological significance. These surveys were carried out in accordance with National Roads Authority (NRA) Guidelines on Ecological Surveying Techniques for Protected Flora and Fauna on National Road Schemes (NRA, 2009).

During the multidisciplinary surveys, a search for Invasive Alien Species (IAS) listed under the Third Schedule of the European Communities Regulations 2011 (S.I. 477 of 2015) was conducted.

The habitats on the Proposed Development site were the subject of a detailed survey and assessment and habitat mapping. This habitat mapping and assessment was undertaken following the 'A Guide to Habitats in Ireland' (Fossitt, 2000).

The Proposed Development site is a quarry comprising a quarry void and regenerating habitats since the active quarry works onsite. The Proposed Development site comprises Active quarries and mines (ED4), Spoil and bare ground (ED2), Scrub (WS1), Immature woodland (WS2), with Improved agricultural grasslands (GA1) predominantly and Dry meadows and grassy verges (GS2) to the south and north of the site. There are occasional Hedgerows (WL1) and Treelines (WL2) that border these grasslands within the Proposed Development site. Occasional Other artificial lakes and ponds (FL8) occur within the site, as well as Marsh (GM1) to the north and Reed and large sedge swamps (FS1) to the southeast. These wetland areas drain into three watercourses that border the Proposed Development site. No Annex I habitats were recorded within the Proposed Development site.

The construction of the Proposed Development will result in the direct loss of approximately 1.9ha of improved agricultural grassland (GA1), 3.4ha of recolonising bare ground (ED2), and 0.4ha of other artificial lakes and habitats (FL8). These habitats are assessed as being of local importance (lower value), the loss of which is not considered significant at any scale. During construction there will be the loss of 3.8ha of scrub (WS1) and 3.2ha of immature woodland (WS1.

The construction of the Proposed Development will result in the loss of 104 linear metres of hedgerow (WL1) and 186 linear metres of treeline (WL2) habitat. However, a Biodiversity Management and Enhancement Plan is in place as part of the Proposed Development. Measures include replanting 493 linear metres of hedgerow habitat, 25 linear metres of treeline habitat and bolstering 404 linear metres of hedgerow habitat currently onsite. In addition, the Biodiversity Management and Enhancement Plan sets out measures for the operational phase which encompasses the restoration of the quarry. This will see the quarry void being infilled and the return of the site to previous land use prior to quarrying works. This will result in the creation of 15.8ha of grasslands, composed of a mosaic of Dry calcareous and neutral grasslands (GS1) and Dry meadows and grassy verges (GS2) and will include replanting 2,756 linear metres of hedgerow and 160 linear metres of treelines habitats. These measures will provide a biodiversity net gain as part of the Proposed Development and are detailed within the Biodiversity Management and Enhancement Plan (Appendix 5-1 of the EIAR).

Bat species composition and abundance was found during detailed bat surveys undertaken at the Proposed Development site to be typical of the geographic location and the largely open nature of the Proposed Development site. Bats as an Ecological Receptor have been assigned Local Importance (Higher value) on the basis that the habitats within the study area are utilized by a regularly occurring bat population of Local Importance. Following the implementation of mitigation, no potential for residual significant effects with regard to loss of roosting habitat, loss of commuting and foraging habitat, and disturbance or other construction phase impacts have been identified; the proposed net gain in linear landscape features within the site will result in a long-term positive impact on bats at the local level. There is no potential for significant residual effects on local bat populations during the operational phase of the Proposed Development. In addition, pre-commencement surveys for bats will be carried out on the four trees proposed to be felled.

There are 3 watercourses located within the Proposed Development site., no signs of otter activity was found in the form of spraint, footprints, scat, slides or couches or holts along the watercourse. There is no potential for direct loss or fragmentation of significant otter habitat including loss of breeding or resting places. Given that no otter holts or resting places were recorded within the Proposed Development site, no direct mortality, significant disturbance or any barrier to the movement of otter is anticipated. In addition, a pre-commencement survey for otter will be carried out.

A barn owl nest was confirmed within the Proposed Development site. Nest occupancy and barn owl activity at the nesting location was found in the form of fresh pellets and whitewash. Adult and fledglings were sighted emerging from the quarry infrastructure. The proposed works have the potential to cause in-situ disturbance at the nesting location during the construction and operational phases of the

Proposed Development, therefore alternative nesting habitat in the form of a Wildlife Tower is proposed to ensure no significant or residual effects on barn owl occur. The restoration of the quarry will result in tussocky rich grasslands providing suitable long-term foraging habitat for the species.

A sand martin colony was confirmed within the Proposed Development site. The proposed works have the potential to cause in-situ disturbance at the colony location during the operational phase of the Proposed Development, therefore alternative nesting habitat in the form of a Sand Martin Wall is proposed to ensure no significant or residual effects on sand martin occur.

No pine marten dens were recorded within the Proposed Development site. Evidence of pine marten activity was found within the Proposed Development site in the form of fresh scat. Pre-commencement surveys for pine marten will be carried out on a precautionary basis. With these measures in place, there is no potential for significant effect to pine marten via habitat loss or disturbance.

No badger setts were recorded within the Proposed Development site. Evidence of badger activity was found within the Proposed Development in the form of latrines and snuffle holes. Pre-commencement surveys for badger will be carried out. With these measures in place, there is no potential for significant effect to badger via habitat loss or disturbance.

Irish hare (Lepus timidus ssp. hibernicus), Fallow deer (Dama dama) and Fox (Vulpes vulpes) droppings and tracks were observed on occasion within the Proposed Development site, however no potential for impacts on these species were identified. No signs of any additional protected fauna were recorded within the Proposed Development site during the survey work undertaken.

No residual significant effects on surface water quality, groundwater quality or the hydrological/ hydrogeological regime were identified during construction or operation phases. No significant effects as a result of groundwater pathways to nearby designated sites or on local groundwater was identified. A full hydrological assessment in relation to the Proposed Development has been carried out in Chapter 7 of the EIAR.

In relation to nationally designated sites, Doon Lough Natural Heritage Area (NHA) [000337], Inner Shannon Estuary, South Shore proposed Natural Heritage Area (pNHA) [000435] and Fergus Estuary and Inner Shannon, North Shore pNHA [002043] were identified as being within the Likely Zone of Influence and is assessed in the EIAR.

In relation to European designated sites, the Lower River Shannon Special Area of Conservation (SAC) [002165] and the River Shannon and River Fergus Special Area of Conservation (SPA) [004077] have been fully assessed within the Appropriate Assessment Screening and Natura Impact Statement (NIS) that accompanies this EIAR. This report has been prepared to provide the competent authorities with the information necessary to complete an Appropriate Assessment Screening and an Appropriate Assessment for the Proposed Development in compliance with Article 6(3) of the Habitats Directive. The NIS concludes that the Proposed Development, individually or in-combination with other plans or projects, will not adversely affect the integrity of any European Site.

It is therefore judged that, provided that the Proposed Development is constructed and operated in accordance with the design, best practice and mitigation that is described within this application, significant individual or cumulative effects on ecology are not anticipated at the international, national, county, or local scales or on any of the identified KERs.

Land, Soils and Geology

This chapter assesses the likely and 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 Proposed Development site is an existing sand and gravel pit. Previous extraction was focused along the more elevated eastern half of the Proposed Development site where natural ground levels are between 90 and 100 metres above Ordnance Datum (m OD) along the eastern boundary.

The western half of the Proposed Development site, where natural ground levels reduce to 46m OD at the western boundary, is heavily vegetated with trees and scrub. The existing extraction areas have floor levels of between approximately 86m OD and 53m OD at the eastern and central areas of the site respectively.

Sand/gravel depths of between 4m and >10m were encountered during the recent drilling investigation. The deepest sand and gravels were found to the northwest (>10m) and west (10.5m) of the proposed infill/extraction area.

The shallowest sand/gravel deposits (~4m) were encountered to the southeast and south of the proposed infill/extraction area. The sand/gravels are underlain by either sandy gravelly CLAY or sandstone bedrock.

The Proposed Development site is not located within or adjacent to any designated site or geological heritage site. The closest designated site to the Proposed Development site is Glenomra Woods SAC located ~1.5km to the southwest and remote from the Proposed Development.

The Proposed Development being applied for under this planning application includes for the concurrent extraction of sand and gravel along with the importing of inert soil material. There will be no sand and gravel extraction below either the level of bedrock or the groundwater level.

The Proposed Development will have a permanent effect on geology due to sand and gravel excavation and soil importation, however this is seen as an acceptable and unavoidable consequence of the Proposed Development.

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. Proper sourcing of inert material/soil prior to transport to the site, pre-agreed source sites for inert material and regular load checks of incoming loads will ensure the importation of uncontaminated material.

The extraction will result in local topographic changes with the removal of sand and gravel deposits down to between 57.5 and 76m OD from a maximum original ground level of 186m OD. There will be no effects on third party lands adjoining the site.

Upon completion of the proposed extraction and infilling, a restoration plan will be implemented which will consist of ground levels being restored back close to original ground level and restored for beneficial afteruse.

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.

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.

On a regional scale, the Proposed Development site is located in the River Shannon catchment with the northern portion mapped in the Shannon Estuary North and the southern portion in the Lower Shannon.

The site is underlain by a Locally Important sand and gravel aquifer and a Poor bedrock aquifer. The depth to groundwater level across the overall site varies from approximately 0.6m to 35m below ground level (mbgl) which is a reflection of the local topography. Groundwater level elevations across the 4 no. monitoring well locations ranged from approximately 47m OD to 53m OD and suggest a westerly / south-westerly groundwater flow direction.

The Proposed Development will involve the continued extraction of sand and gravel deposits above the groundwater table. Water used for washing/processing and dust suppression and at the wheel wash will be sourced from an existing manmade pond (groundwater source). Aggregate wash water will be directed to a proposed lagoon/settlement pond system for fines removal, settlement of silt and water recycling. Any additional water requirements for the washing plant will be pumped up from the manmade pond as required. Any overflows from the settlement pond/lagoon system, which will be clean water, will be discharged to ground under an existing discharge licence (WP170).

Management of surface water from the proposed inspection area, the wheelwash area and ancillary buildings will be directed through existing lagoons on the west of the site. Drainage from the refuelling area will be routed through a proposed full hydrocarbon interceptor before discharging to the existing lagoons on the west of the site for final discharge to ground as permitted under WP170.

No effects to surface water (quality and flows) will occur as a result of the Proposed Development as no surface water discharges are proposed. Nevertheless, the EIAR presents proven and effective mitigation measures to protect surface and groundwaters.

Glenomra Wood SAC is located 1.5km to the southwest of the Proposed Development site. There are no surface water or groundwater interaction between the Proposed Development site and Glenomra Wood SAC.

The Lower River Shannon SAC is located 3.5km to the southeast of the Proposed Development site and is hydrologically connected via the Bridgetown River.

Due to the absence of surface water discharges and by implementation of the proposed appropriate mitigation measures as outlined in the EIAR no significant impacts on Lower River Shannon SAC 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.

Due to the lack of any mapped flood zones or historic flooding within the site, the infilling of the site back to the original topography and the proposed sustainable drainage systems (SuDS) measures, there is no risk of increased flood risk.

An assessment of potential cumulative effects associated with the Proposed Development and other developments on the hydrological and hydrogeological environment has been completed. Firstly, it needs to be stated that potential for the Proposed Development to contribute to cumulative effects is very low due to the absence of any surface water discharges, limited surface water flowpaths/land drainage between the proposed extraction/infill area and downstream river waterbodies. Also, Due to the localised groundwater flow pattern at the Proposed Development site, which is towards the local watercourses, groundwater cumulative effects are also unlikely.

Nevertheless, 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.

Air

This chapter identifies, describes and assesses the potential significant direct and indirect effects on air quality arising from the construction, operation and decommissioning of the Proposed Development.

The Environmental Protection Agency (EPA) has designated four Air Quality Zones for Ireland:

- Zone A: Dublin City and environs;
- Zone B: Cork City and environs;
- Zone C: 16 urban areas with population greater than 15,000;
- Zone D: Remainder of the country.

These zones were defined to meet the criteria for air quality monitoring, assessment and management described in the CAFE Directive, Framework Directive and Daughter Directives. The site of the Proposed Development lies within Zone D, which represents rural areas located away from large population centres.

The EPA publishes Air Monitoring Station Reports for monitoring locations in all four Air Quality Zones. The most recent report on air quality in Ireland, 'Air Quality in Ireland 2023' was published by the EPA in September 2024. The EPA reports provide SO_2, PM_{10}, NO_2 and O_3 concentrations for areas in Zone D. Values for each of these elements recorded within the Zone D monitoring stations listed in the report, have been averaged to give representative values for Zone D. Similar measurement values for all air quality parameters would be expected for the Proposed Development site as it lies in a rural location, within Zone D.

Dust monitoring at the existing quarry site is undertaken monthly by BHP Laboratories on behalf of Roadstone. In general, the results show that total depositional dust levels measured at all monitoring locations were below the 350 mg/m^2/day limit value over the monitoring period. Whilst there were elevated levels recorded at monitoring C in July 2023, it is noted that the elevated levels were in most instances due to contamination with organic material. It is noted that the inorganic particulate faction of the sample which is representative of site activities was well below the 350 mg/m^2/day limit value in all samples.

Potential effects from the Proposed Development are described in Chapter 8 of the EIAR. Where a negative effect was identified, the appropriate mitigation measure is also described in this section of the EIAR and will be put in place to ensure that there will be no adverse impacts on air quality.

Climate

This chapter identifies, describes and assesses the potential significant direct and indirect effects on climate arising from the construction, operational and decommissioning phases of the Proposed Development.

Although variation in climate is thought to be a natural process, the rate at which the climate is changing has been accelerated rapidly by human activities. Climate change is one of the most challenging global issues facing the world today and is primarily the result of increased levels of greenhouse gases in the atmosphere. Increasing anthropogenic emissions of carbon dioxide and other greenhouse gases cause a positive radiative imbalance at the top of the atmosphere, meaning energy is being trapped within the global climate system. The imbalance leads to an accumulation of energy in

the Earth system in the form of heat that is driving global warming.[1,2] Greenhouse gases come primarily from the combustion of fossil fuels in energy use.

In May 2024, the Environment Protection Agency (EPA) released '*Ireland's Greenhouse Gas Emissions Projections 2023-2050'*. The EPA has produced two scenarios in preparing these greenhouse gas emissions projections: a "With Existing Measures" (WEM) scenario and a "With Additional Measures" (WAM) scenario. These scenarios forecast Irelands greenhouse gas emissions in different ways. The WEM scenario forecasts Ireland emissions including all national policies and measures implemented by the end of 2021, the latest inventory year. The WAM scenario has a higher level of ambition and includes government policies and measures to reduce emissions, such as those in Ireland's Climate Action Plan 2024 (CAP 2024), that are not yet implemented. As implementation of policies and measures occurs, they will be migrated into the WEM Scenario.

The latest EPA projections show that currently implemented policies and measures (WEM) will result in Ireland achieving a total GHG reduction of 9% on 2005 levels by 2030, significantly short of Irelands 2030 target under the EU Effort Sharing Regulation (ESR), i.e., 42% reduction of emissions compared to 2005 levels by 2030, and also lower than the 10% reduction projected in the 2023 report.[3] If policies and measures in the higher ambition (WAM) scenario are implemented, EPA projections show that Ireland can achieve a reduction of 25% by 2030, still short of the 42% reduction target and also lower than the 30% reduction projected in last year's estimates. The EPA projections show that agriculture and transport emissions form the majority of ESR emissions; combined they represent 78% and 80% of emissions in 2022 (latest inventory data) and 2030, respectively.

Roadstone is a part of Cement-Roadstone Holdings (CRH). CRH is ranked among sector leaders by Environmental, Social and Governance (ESG) rating agencies. They have been accredited by the National Standards Authority of Ireland (NSAI) in ISO 14001 (Environmental Management) and ISO 50001 (Energy Management). These systems are externally audited and verify the company's commitment to continuous assessment and improvement of their management systems in these areas. Roadstone is committed to the use of sustainable and recycled materials.

CRH publishes an annual sustainability report. The key highlights from the most recently published report, CRH 2023 Sustainability Report[4] are:

- An 8% reduction in Scope 1 and 2 CO_2e emissions in 2023;
- 43.9 million tonnes of alternative fuels and materials recycled;
- Approximately 153 billion litres of water saved by recycling at CRH locations;
- Validated Science Based Target Initiative (SBTi) target of:
    - Reduce gross Scope 1 and Scope 2 greenhouse gas (GHG) emissions by 33.5% per tonne of cementitious product by 2030 from a 2021 base year;
    - Reduce absolute gross Scope 1 and Scope 2 GHG emissions from other activities by 42.0% by 2030 from a 2021 base year;
    - Reduce gross Scope 3 GHG emissions by 23.5% from purchased clinker and cement per tonne purchased over the same timeframe.
- Awarded the highest 'A' score for climate related disclosures by the Carbon; Disclosure Project (CDP);
- Launched Water Solutions innovation accelerator.

[1] *Hansen, J.; Sato, M.; Kharecha, P. et al. Earth's Energy Imbalance and Implications. Atmospheric Chemistry and Physics 2011, 11 (24), 13421–13449.* https://doi.org/10.5194/acp-11-13421-2011

[2] *von Schuckmann, K.; Palmer, M. D.; Trenberth, K. E. et al. An Imperative to Monitor Earth's Energy Imbalance. Nature Clim Change 2016, 6 (2), 138–144.* https://doi.org/10.1038/nclimate2876.

[3] *Irelands Greenhouse Gas Emission Projections 2022-2024 (June 2023)* <https://www.epa.ie/publications/monitoring--assessment/climate-change/air-emissions/EPA-GHG-Projections-2022-2040_Finalv2.pdf>

[4] *CRH 2023 Sustainability Performance Report* <https://www.crh.com/media/5157/crh-sustainability-report-2023_interactive_vhr.pdf>

Roadstone are a leading manufacturer of ready-mix concrete, aggregates, asphalt and macadam, mortar and plaster, concrete blocks and masonry, paving products, roof tiles and agricultural lime in Ireland. Operations at all Roadstone's quarry and concrete production facilities adhere to the environmental guidelines of the Irish Concrete Federation (ICF) and current best practice in the quarrying industry, as set out in the publication Guidelines on Environmental Management in the Extractive Industries published by the EPA (EPA, 2006).

Quarrying is an essential component to the Irish economy and a vital element in a recovering construction sector. However, in Ireland, the construction sector is responsible for 37% of Ireland's emissions with 14% of this being from embodied carbon within construction materials.[5] Climate Action Plan 2024 has reaffirmed the 2030 target of reducing embodied carbon emissions by at least 30% for all materials produced and used in Ireland and to reduce fossil fuel demand through energy efficient measures by 10%. Achievement of these targets will equate to a 0.2MtCO_2eq and 0.4MtCO_2eq emissions abatement as compared to 2018 levels.

Carbon emissions or losses associated with embodied carbon of materials used in the construction, operational and decommissioning phase of the Proposed Development have been identified. Embodied carbon refers to the emissions associated with procuring, mining and harvesting raw materials, the transformation of those materials into construction products, transporting them to site, installation of these materials during a construction phase, and the subsequent replacement, removal, and disposal of these materials upon decommissioning.[6] The emissions associated with the embodied carbon, along with the construction phase transport movements, of the Proposed Development site are considered using the Transport Infrastructure Ireland (TII) Carbon Tool (TII 2022)[7]. The TII Carbon Tool is customised for road and light rail projects in Ireland, using emission factors from recognised sources during the construction, maintenance and operation of TII projects in Ireland.

The Proposed Development will result in the loss of 42,147tCO_2e, the details of these carbon losses are provided in Table 9-6 of Chapter 9 of the EIAR. Please note, that in completion of these calculations a number of assumptions have been made under theoretical precautionary conditions; all assumptions are detailed in Appendix 9-1 Carbon Calculations. Therefore, it can be determined that the actual carbon losses associated with the Proposed Development will likely be less than the values provided in Table 9-6 of Chapter 9.

When considering these greenhouse gas emissions within the context of the National Industry Sectoral Emissions Ceilings detailed in Section 9.3.2.5, Carbon Budget 1 (2021-2025) has an Industry Sector budget of 30 MtCO_2eq and Carbon Budget 2 (2026-2030) has an Industry Sector budget of 24 MtCO_2eq. Within the context of the 5-year Carbon Budget periods, the Proposed Development will give rise to 42,147tCO_2eq or 0.0421MtCO_2eq; this accounts for **0.14%** of the available budget in the first carbon budgeting period and **0.18%** of the available budget in the second carbon budgeting period.

Following construction of the Proposed Development, there will be a Permanent Imperceptible Negative Effect on Climate as a result of greenhouse gas emissions from construction plant and vehicles and embodied carbon associated with construction materials. During the operational phase of the Proposed Development, there will be a Permanent Slight Negative Effect on Climate. The potential for health effects is considered to be imperceptible due to the quantity of greenhouse gases that will be emitted. Whilst the operational phase of the Proposed Development will result in greenhouse gas emissions, the implementation of the mitigation measures discussed above, and good management practices can prevent and minimise effects.

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[5] *Building a Zero Carbon Ireland – A roadmap to decarbonise Irelands Built Environment across it's Whole Life Cycle (2022)* <https://www.igbc.ie/wp-content/uploads/2022/10/Building-Zero-Carbon-Ireland.pdf>

[6] *Irish green Building Council – What is embodied carbon?* <https://www.igbc.ie/what-is-embodied-carbon/>

[7] *Transport Infrastructure Ireland Carbon Tool for Road and Light Rail Projects: User Guidance Document* https://www.tiipublications.ie/library/GE-ENV-01106-01.pdf

Noise and Vibration

An environmental noise survey has been carried out to establish existing levels of environmental noise in the vicinity of noise sensitive receivers surrounding the Proposed Development site.

Appropriate noise and vibration criteria for the Proposed Development have been identify in accordance with the following documents,

- Environmental Protection Agency (EPA) publication, Environmental Management in the Extractive Industry (Non-Scheduled Activities, 2006); and
- Department of Environment, Quarries and Ancillary Activities, Guidelines for Planning Authorities 2004.

The construction phase, which will be limited to 1 month, will generate degree of noise but at levels well within the criteria and significant noise effects are not expected.

With the implementation of noise mitigation measures clearly explained in the noise chapter, the noise due to the proposed overburden removal, sand extraction and infilling activities at Proposed Development site are expected to be below the noise and vibration emission limit values (ELVs). The Proposed Development does not include blasting or rock breaking, therefore no significant off-site vibration effects are expected.

The assessment has concluded that with the implementation of the mitigation measures set out the EIAR, noise and vibration levels associated with the proposed activities will be below the noise limit value at the nearest noise sensitive locations. The implementation of best practice noise and vibration mitigation measures will form part of site management practices to minimise the potential for any significant effects at the nearest noise sensitive locations.

Monitoring of noise and vibration emissions will be continue in accordance with the relevant planning conditions for development to ensure compliance with operational noise and vibration ELV's.

Landscape and Visual

Chapter 12 comprises a Landscape and Visual Impact Assessment (LVIA) which assesses the likely significant landscape and visual effects of the Proposed Development. The LVIA is informed by a desk study and review of relevant planning policy, a mapping analysis and a site visit. Visibility of the Proposed Development was assessed from all landscape and visual receptors within a wider Study Area which extends 2.5km from the site boundary – termed the 'LVIA Study Area'. As established throughout this chapter, the greatest landscape and visual effects will arise from extraction of a greenfield area at the south-eastern extent of the site. This will cause the most noticeable and visually prominent change in landscape character as fields of grassland will become a quarry. This change will only occur within a small portion of the landscape but will be visible from a small number of receptors to the west including rural housing and occasional instances on the R446 Regional Road.

The soil inspection shed will be mostly screened from view by vegetation along the site boundary and localised landform. Therefore, visibility will be limited to the most elevated elements of this building.

The key sensitive receptors with any visibility of the Proposed Development were identified as a small portion of Scenic Route 26 on the R446 Regional Road and residential receptors in close proximity to the site. In this regard, the Proposed Development will cause highly localised landscape and visual effects to a few receptors to the west and south-west of the LVIA Study Area, and 3 No residential receptors to the north-east of the site.

Scenic Route 26 runs in close proximity to the western boundary of the Proposed Development site, however, visibility along this route will be limited to a few occasional gaps in the roadside vegetation

along this route where Moderate visual effects will occur. The Proposed Development will not significantly affect the key scenic sensitivities of this scenic route.

Moderate visual effects will occur from residential receptors to the west and south-west of the site where there will be open views of extraction and infilling operations in the greenfield area at the south-eastern extent of the site. A small cluster of residences adjacent the north-eastern boundary of the site are highly susceptible to visual effects due to their proximity. However, many mitigation measures are proposed to eliminate visual impacts as part of the Landscape Restoration Plan (LRP) and will ultimately result in 'Slight' residual visual effects.

The measure implemented as part of the LRP, including replanting of treelines and hedgerows along the site boundary and landscape berms, will provide substantial visual screening of extraction phase activities and mitigate many of the associated visual effects for receptors in close proximity to the Proposed Development site. Positive landscape and visual effects will occur following the restoration phase as the quarry void will be infilled and restored to its original condition prior to quarrying activities in this area of the landscape. Short-term negative landscape and visual effects will occur as a result of operations required to infill the site. Following decommissioning and complete implementation of the LRP including extensive planting, the landscape of the site will harmonise with the landform, landcover and character of the surrounding lands, resulting in Long Term, Positive/Neutral landscape and visual effects.

Cultural Heritage

An assessment of the potential effect of the Proposed Development at Ballyquin More, Leitrim, Woodpark and Fahy More North, Co. Clare on the Cultural Heritage resource was carried out. Cultural heritage includes archaeology, architectural heritage and any other tangible assets. The assessment was based on comprehensive desktop research and field inspection of the Proposed Development area and the potential direct and indirect effects of the Proposed Development on the surrounding cultural heritage landscape were assessed.

Three recorded monuments are located within the Proposed Development site, two of which have been removed from previous quarrying activity. The third monument is located c. 30m to the south of the proposed extraction and restoration area and will not be directly affected by the development proposals. It also has no above-ground remains therefore potential visual effects are regarded as Imperceptible. No Protected Structures, National Inventory of Architectural Heritage (NIAH) structures or historic gardens are located within the Proposed Development boundary. The historic garden associated with Ballyquin House (no longer extant) is located a short distance outside of and to the north-west of the Proposed Development boundary. No direct or indirect effects to the historic garden are identified.

A potential direct effect to sub-surface archaeological sites or features, should they exist within the Proposed Development site, is noted. Mitigation in the form of pre-development archaeological testing of the proposed extraction area including targeted testing of the potential archaeological geophysical anomalies is recommended, with the results of same informing any further mitigation which may be required, such as preservation in situ, archaeological monitoring, etc. Any potential direct effects to the archaeological resource will be effectively mitigated through the implementation of the recommended mitigation measures.

Material Assets

Traffic and Transport

An assessment of the traffic effects of the Proposed Development was undertaken. The Proposed Development site is located off the R466 between O'Briensbridge and Broadford in County Clare.

Estimates of future traffic volumes on the study area road network were made for the assumed first year of operation (2026) and for the final year 20 years hence (2046), based on observed traffic counts undertaken in the year 2022, and national traffic growth forecasts produced by Transport Infrastructure Ireland in October 2021. The number of additional trips likely to access the Proposed Development site during this period was determined to be 4 truckloads to/from the site per hour, or 41 truckloads per day. This information was used to test the capacity of the R466 Regional Road and the quarry access junction off the R466.

It is forecast that traffic flows on the R466 will increase by a maximum of 11.5% during AM and PM peak hours, and by 12.2% during the 12 hour period from 07:00 to 19:00.

It is forecast that the effects of the Proposed Development will be slight for general traffic driving past the site on the R466, and slight for existing traffic turning into and out of the existing Ballyquin Roadstone access. These effects will be long term, lasting for 20 years. The negative effects on existing traffic turning into and out of the existing site access will however be mitigated by safety improvements provided by the proposed improved R466 / Ballyquin Quarry access junction layout.

It is concluded from this assessment that the Proposed Development will be adequately accommodated by the existing road network.

Built Services and Waste Management

There are both overhead and underground electricity cables on the site of the Proposed Development. Damage of overhead and underground electricity cables during site operations could potentially result in serious injury or death. There are other services such as water supply and telecommunications present at the site of the Proposed Development and in the vicinity of the site.

The construction phase will have the potential to produce municipal waste (site office, canteen) and construction/demolition waste (wood, rubble, metal, etc.) which will need to be processed at local waste processing facilities. These are largely composed of metal and other recyclable materials which would be brought to specialised facilities for processing/recycling such items.

Waste materials will be required to be temporarily stored on site pending collection by a waste contractor. Dedicated areas for waste skips and bins will be identified across the site. These areas will need to be easily accessible to waste collection vehicles. If waste material is not managed and stored correctly, it is likely to lead to litter or pollution issues at the site.

A Construction and Environmental Management Plan (CEMP) has been prepared for the Proposed Development and is included in Appendix 3-1 of this EIAR. The CEMP includes details of material management and outlines clearly the mitigation measures and monitoring proposals that are required to be adhered to in order to complete the works in an appropriate manner.

Interactions of the Foregoing

Chapters 4 to 13 of this EIAR identify the potential significant environmental effects that may occur in terms of Population and Human Health, Biodiversity, Land, Soils and Geology, Hydrology and Hydrogeology, Air, Climate, Noise and Vibration, Landscape and Visual, Cultural Heritage (Archaeological, Architectural and Cultural Heritage) and Material Assets (Traffic and Transport, Built Services and Waste Management), as a result of the Proposed Development. All of the potential significant effects of the Proposed Development and the measures proposed to mitigate them have been outlined in the main EIAR. However, for any development with the potential for significant environmental effects there is also the potential for interaction between these potential significant effects. The result of interactive effects may exacerbate the magnitude of the effects or ameliorate them or have a neutral effect.

A matrix is presented in Chapter 14 of the EIAR to identify interactions between the various aspects of the environment already discussed in the EIAR. The matrix highlights the occurrence of potential positive or negative impacts during both the construction/decommissioning and operational phases of the Proposed Development. Where any potential interactive effects have been identified, appropriate mitigation is included in the relevant sections (Chapters 4 to 13) of the EIAR.