# Contents



## Tables



## Figures

# Introduction

17.1 This chapter of the Environmental Impact Assessment Report (EIAR) provides a summary of mitigation and monitoring commitments set out within the technical chapters, as recommended by Section 3.8.4 of the Environmental Protection Agency (2022) Guidelines on the Information to be contained in Environmental Impact Assessment Reports.

# Mitigation Measures

## Inherent and 'Designed-In' Mitigation Measures

17.2 The application site, by its nature, offers a number of advantages in terms of natural mitigation. The proposed development maximises the potential of an existing established quarry site. The proposed design aims to utilise the existing industry landuse setting with the development sited on existing disturbed ground within a long established and operational quarry site.

17.3 The scheme will benefit from existing screening berms and native tree planting along the southern and western boundaries to enhance the natural topographical screening from external views from these directions.

17.4 Overburden and topsoil material previously stripped as part of the quarry operations and planted with trees/ vegetation provides a mature screening berm between the application site and views from the south and west.

17.5 The scheme design is arranged so that unloading processes are located furthest away far from the site boundary and close to the air handling unit for odour control, and similarly processes with larger motors and noise are farthest from the site boundary. The water storage ponds are located at the lowest part of the site to assist with drainage flow, and firewater is stored in silo tanks at the highest part of the site and in close proximity to the concrete plant (within the quarry site) which will utilise it. Traffic will use an internal ring road system which reduces the need for reversing and removes traffic from the access road. All buildings and tanks are to be fully enclosed to reduce odour with the addition of an odour abatement system inbuilt into the design.

## Legislation and Best Practice Mitigation Measures

17.6 The operation of the site is covered by legislation and industry best practice that is followed by Roadstone in all of its operations.

17.7 Best practice construction techniques will be ensured through adherence to industry standards and control mechanisms such as a Construction Environmental Management Plan (CEMP) and Construction Traffic Plan (CTP). An Environmental Management System (EMS) will be put in place for the facility, as will be required by the IE Licence. The operator shall develop the EMS in accordance with ISO14001:2015, applying for accreditation when operational. The purpose of the EMS is to control and mitigate the environmental impacts of each of their sites.

17.8 All agricultural wastes entering the facility will be required to meet strict feedstock acceptance procedures and complying with Environmental Protection Agency (EPA) and Department of Agriculture, Food & Marine (DAFM) license conditions and will be strictly monitored.

17.9 Under the IE licence that will be required following the grant of planning permission, there will be strict requirements on management and recording of all waste streams (including general, domestic and recycling) generated by the development on an annual basis.



## Specific Mitigation Measures

17.10 The Proposed Development will be constructed and operated in a manner that will ensure that the potential impacts on the receiving environment are avoided where possible. Where impacts or potential impacts have been identified, mitigation measures have been proposed to reduce the significance. This Chapter of the EIAR collates and summarises the mitigation and monitoring measures detailed previously in the EIAR.

17.11 **Table 17-1** below sets out the specific mitigation measures that are proposed to be implemented through the proposed construction stage of the development and **Table 17-2** sets out the mitigation measures proposed during the operational stage.

**Table 17-1 Construction Stage Schedule of Commitments and Mitigation Measures**

| Mitigation Measure Proposed | |
|---|---|
| General | Methods of working will comply with relevant legislation and best practice to minimise potential environmental impacts. |
| | Construction works will be restricted to normal working hours of between 0800 and 1800 Monday to Saturday with no construction works carried out on Sundays or Bank Holidays. Works outside these hours will only take place by exception. |
| | A Construction Environmental Management Plan (CEMP) will form part of the preconstruction preparation. To ensure the CEMP is tailored to the project and the current environment at the time of construction, it will be prepared by the appointed contractor in advance of any construction works commencing and in accordance with any conditions imposed by the Planning Authority.<br>The CEMP, in a single document, will outline the procedures and practices for monitoring the effectiveness of the proposed environmental protection measures, and will include at the very least:<br>• List of all relevant environmental legislation requirements.<br>• State methods by which the construction works will be managed to avoid, reduce or remedy potential adverse environmental impacts.<br>• Incorporate environmental mitigation measures and controls in the construction contract documents which will incorporate the mitigation measures as outline in the various EIAR chapters; in any conditions attached to a grant of planning permission or any further requirements of statutory bodies.<br>• Provide a method statement outlining how compliance with the environmental commitments / mitigation measures will be carried out.<br>• Take account of best practice guidance such as CIRIA C741 Environmental Good Practice on Site (4th edition) and CIRIA C532 Control of Water Pollution for Construction Sites. |
| Population and Human Health - **General** | The main potential for disturbance to the local population and human health is through the potential for environmental emissions associated with the topic areas that are assessed within other chapters of the EIAR, therefore the mitigation measures proposed in relation to those are considered appropriate to address population and human health issues. |
| Population and Human Health - **Radon** | Radon testing can be undertaken at on-site structures and, should elevated radon gas levels be detected, remedial measures such as enhanced ventilation or installation of a radon sump can be implemented in agreement with an EPA registered radon tester. |
| Biodiversity – **Protection of Bird Species** | Clearance of the trees within the Site must be carried out outside of the bird nesting season (1st March – 31st August inclusive). |

| Mitigation Measure Proposed | |
|---|---|
| Land, Soils and Geology – **Rock Removal** | Some limited bedrock excavation will be required for building foundations and water pond construction for the development. Standard best practice construction mitigation measures will be implemented at the site to manage any accidental fuel or oil leaks during construction. A comprehensive Construction and Environmental Management Plan will be prepared prior to construction. |
| Hydrology and Hydrogeology - **Protection of Water Quality** | • There will be no off-site discharge from the proposed development to any surface watercourse in the locality.<br>• Fuel and oils will be stored in existing covered bunded fuel tanks. There is no refuelling onsite and smaller items will use a bunded tray.<br>• Several storage tanks and silos located throughout the site including a water storage tanks, silage feed soil / mixing tanks, fire water supply tanks, treated water storage tanks, bio-rest tanks, cattle manure / slurry silo, pot ale and spent grain material tank / silo, maize silo and a chicken litter silo.<br>• A number of spill kits will be available on-site to stop the migration of any minor accidental leakages or spillages should they arise.<br>• All HGVs exiting the site will be routed through the proposed wheelwash. This will minimise the transport of fines by HGVs over the access / egress road and the public road network.<br>• All roads will be paved.<br>• Periodic sweeping of the internal paved site access road and surrounding public roads will be carried out as required by a mechanical road sweeper.<br>• Environmental audits at the site will be undertaken to ensure that compliance with all planning consents, licences and site environmental management system, which is accredited to ISO 14 001 standard, is both maintained and enhanced. |
| Air – **Dust Management** | **Communications**<br>• Develop and implement a stakeholder communications plan that includes community engagement before work commences on site and during the works.<br>• Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager.<br>• Develop and implement a Dust Management Plan (DMP), which may include measures to control emissions, approved by the Local Authority.<br>• Provide training to Site personnel on dust mitigation measures to be implemented at the Site. Complete regular inspections of Site works to ensure compliance with the DMP. The frequency of these inspections should be increased to coincide with activities where the risk of impact is higher during dry and/or windy conditions.<br>**Construction**<br>• Speed restrictions within and around the quarry (25 km/hr) and maintenance of existing road surfaces. |

| Mitigation Measure Proposed | |
|---|---|
| | • During dry and/or windy conditions, dampening of surfaces, as required.<br>• For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust.<br>**Monitoring**<br>• Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked.<br>• Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions.<br>• Agree dust deposition and $PM_{10}$ monitoring locations (and duration) with the Local Authority. Commence baseline monitoring before work commences on site.<br>**Operating Vehicle / Machinery and Sustainable Travel**<br>• Ensure all vehicles switch off engines when stationary - no idling vehicles.<br>• Avoid the use of diesel or petrol powered generators and use mains electricity or battery powered equipment where practicable.<br>**Operations**<br>• Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems.<br>• Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate.<br>• Use covered skips.<br>• Minimise drop heights excavators, loading shovels and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.<br>**Preparing and Maintaining the Site**<br>• Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.<br>**Site Management**<br>• Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.<br>• Make the complaints log available to the local authority when asked. An electronic complaints log will be maintained at the Site, available for review as required.<br>• Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the electronic recording system.<br>**Trackout** |

| Mitigation Measure Proposed | |
|---|---|
| | • Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site.<br>• Avoid dry sweeping of large areas.<br>• Ensure vehicles carrying materials with a potential for dust entering and leaving sites are covered to prevent escape of materials during transport.<br>• Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.<br>• Record all inspections of haul routes and any subsequent action in the site log book, or electronically.<br>• Paved haul road to be regularly damped down (with fixed or mobile sprinkler systems, or mobile water bowsers) as required, and regularly cleaned.<br>• Vehicles leaving the site will use the existing wheel wash.<br>**Waste Management**<br>• Avoid bonfires and burning of waste materials. |
| Climate Change - **Resilience** | • It is recommended to use UV resistant sealings to protect concrete surfaces and expand time to failure.<br>• Structure will be insulated.<br>• Use waterproof materials/coatings and veneers to prevent water ingress/erosion.<br>• Use building designs that optimize thermal performance and use low-carbon concrete. |
| Noise – **Management Measures** | • The Applicant intends to implement best practice construction noise and vibration management techniques throughout the construction phase in order to further reduce the noise and vibration impact to nearby noise sensitive receptors.<br>• Prior to commencement of works, the Applicant (and any appointed Contractors) will compile and submit to Tipperary County Council a Construction Noise and Vibration Management Plan (NVMP). The plan shall:<br>  ○ Outline management processes and mitigation measures to be utilised to remove or reduce significant noise impacts from the intended construction works.<br>  ○ Define noise and vibration monitoring and reporting.<br>  ○ Include method statements for each phase of the works including associated specific measures to minimise noise and vibration in so far as is reasonably practicable for the specific works covered by the plan and a detailed appraisal of the resultant construction noise and vibration generated.<br>• The Applicant will also proactively engage with the local community and notify the public and potential noise / vibration sensitive premises before the commencement of any works which would be likely to generate any appreciable levels of noise or vibration, explaining the nature and duration of the works. |

| Mitigation Measure Proposed | |
|---|---|
| | • The Applicant will also distribute information circulars informing the local community of the progress of site-based construction works which will also highlight any likely periods of significant noise and vibration.<br>• BS5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Noise and BS5228-2:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Vibration are the best practice standard for management of noise and vibration on construction sites and due regard will be had to these when planning and undertaking the construction phase works.<br>• The standards include guidance on several aspects of construction site mitigation measures, including, but not limited to:<br>o Selection of quiet and or low vibration emitting plant.<br>o Control of noise sources.<br>o Screening.<br>o Hours of work.<br>o Liaison with the public.<br>o Monitoring. |
| Material Assets - **Waste** | • All waste generated at the site will be appropriately stored and removed by licenced contractors. |
| Traffic – **Safety and Operation of Local Roads** | HGV traffic can be of particular concern to both local residents and highway users, and the mitigation measures outlined below are implemented currently at the existing quarry to alleviate any adverse impacts:<br>• Roadstone Ltd implement a routing policy to ensure all movements are made via the strategic road network to avoid HGV's passing though residential areas as far as is practical.<br>• Roadstone Ltd employ a policy of safety and environmental awareness for all HGV drivers accessing the site.<br>• Roadstone maintains hedgerows and vegetation to ensure that access junction visibility is maximised. |

**Table 17-2 Operational Stage Schedule of Commitments and Mitigation Measures**

| Mitigation Measure Proposed | |
|---|---|
| General | The site will be operated under Environmental Management System (EMS) which is accredited to ISO 14001 standard. The EMS contains procedures and work instructions which include specific measures in relation to the protection of air quality and control of dust at operational sites. All personnel will undergo EMS training regularly. A site-specific EMS will be developed for the facility. |
| | The proposed development will be subject to an Industrial Emissions (IE) Licence under the 1st Schedule of the EPA Act, 1992 (as amended). |
| | The facility will be categorised as a 'Lower Tier Seveso' site, being an establishment that holds a quantity of dangerous substance above the lower threshold contained in the Seveso Directive.<br>Given its status as a Lower Tier Seveso site, the facility will need to comply with the lower tier requirements including to notify the competent authority of their existence, provide specified details in relation to the operations, substances, inventories, and immediate environment of the establishment. It will also need to establish a safety management system (detailed in a Major Accident Prevention Policy).<br>The facility will be strictly regulated under the COMAH regulations, as well as the 2005 Safety, Health & Welfare at Work Act.<br>The facility will operate under a Category 2 animal by-products permit administered by the Department of Agriculture Food and the Marine (DAFM). |
| | All feedstock / digestate pipes will be located above ground so that any leakages in the piping system will not lead to contamination of the receiving environment, that leaks can be readily identified and repaired. |
| | A flare will be utilised, if required, to control the operational capacity of the gas storage balloon. The flare is incorporated for emergency use only and is not anticipated to function during normal operating procedures. |
| | The perimeter of the site will be secured by a paladin fencing and security gates (c. 2.3m in height). |
| Population and Human Health - **General** | The main potential for disturbance to the local population and human health is through the potential for environmental emissions associated with the topic areas that are assessed within other chapters of the EIAR, therefore the mitigation measures proposed in relation to those are considered appropriate to address population and human health issues. |
| Population and Human Health - **Radon** | Radon testing can be undertaken at on-site structures and, should elevated radon gas levels be detected, remedial measures such as enhanced ventilation or installation of a radon sump can be implemented in agreement with an EPA registered radon tester. |

| Mitigation Measure Proposed | |
|---|---|
| Biodiversity – **Protection of pNHA and Woodland/Trees** | In addition to the implementation of the site EMS, the following measures will be taken:<br>• Chicken litter and brewery residue silos, cattle slurry tanks, pretreatment and equalization building, bio rest tanks and digestate handling building will be enclosed structures, with air extracted to the odour abatement system.<br>• The odour abatement system will treat the air extracted from these areas prior to discharge to atmosphere via a dispersion stack at a height of 17.5m.<br>• The anaerobic digestion process will be undertaken within sealed reactors located within the bioconversion building. These sealed reactors will be connected to the gas capture system, ensuring complete containment.<br>• A site management system would be in place to ensure routine cleaning measures are undertaken (i.e. spillages cleared and not left in situ). |
| Land, Soils and Geology – **Limestone Karst** | In order to protect the underlying limestone karst geology, the following measures will be implemented:<br>• All activities are carried out under cover in the shed with no emissions to the karst geology.<br>• Use of sealed drainage systems to prevent infiltration to ground. Treat wastewater and runoff on-site using best practice wastewater treatment.<br>• Ponds at the site will be lined to prevent any infiltration or potential contamination to the underlying geology.<br>• Conduct regular inspections of infrastructure for leaks or failures. |
| Hydrology and Hydrogeology - **Protection of Water Quality** | • There will be no off-site discharge from the proposed development to any surface watercourse in the locality.<br>• Fuel and oils will be stored in existing covered bunded fuel tanks. There is no refuelling onsite and smaller items will use a bunded tray.<br>• Several storage tanks and silos located throughout the site including a water storage tanks, silage feed soil / mixing tanks, fire water supply tanks, treated water storage tanks, bio-rest tanks, cattle manure / slurry silo, pot ale and spent grain material tank / silo, maize silo and a chicken litter silo.<br>• A number of spill kits will be available on-site to stop the migration of any minor accidental leakages or spillages should they arise.<br>• All HGVs exiting the site will be routed through the proposed wheelwash. This will minimise the transport of fines by HGVs over the access / egress road and the public road network.<br>• All roads will be paved.<br>• Periodic sweeping of the internal paved site access road and surrounding public roads will be carried out as required by a mechanical road sweeper. |

| Mitigation Measure Proposed | |
|---|---|
| | • Environmental audits at the site will be undertaken to ensure that compliance with all planning consents, licences and site environmental management system, which is accredited to ISO 14 001 standard, is both maintained and enhanced. |
| Air – **Protection of Air Quality** | • The chicken litter and brewery residue siloes, cattle slurry tanks, pretreatment and equalization building, bio rest tanks and digestate handling building will be enclosed structures, with air extracted to the odour abatement system.<br>• The odour abatement system will treat the air extracted from these areas prior to discharge to atmosphere via a dispersion stack at a height of 17.5m.<br>• The anaerobic digestion process will be undertaken within sealed reactors located within the bioconversion building. These sealed reactors will be connected to the gas capture system, ensuring complete containment.<br>• A site management system will be in place to ensure routine cleaning measures are undertaken.<br>• A speed restriction (25 km/hr) will be implemented within and around the site.<br>• The existing road surfaces will be maintained.<br>• Water-assisted dust sweeper(s) will be utilised on the access road and local roads, as necessary, to remove material tracked out of the site.<br>• Vehicles leaving the site will use the existing wheel wash.<br>• Monitoring of dust as per a Dust Management Plan (DMP) which may include measures to control emissions, approved by the Local Authority or/and the EPA licence; carry out regular site inspections; display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager; provide training to Site personnel on dust mitigation measures to be implemented at the Site; and make the complaints log available to the local authority when requested with an electronic complaints log to be maintained at the Site, and available for review at any reasonable time. |
| Climate Change - **Mitigation** | • Key mitigation measures adopted by the Proposed Development to minimise GHG emissions are inherent in the design. The Proposed Development has been designed using best available techniques. This seeks to maximise biomethane output whilst limiting the requirement for fossil fuels and consumption of grid electricity with the use of onsite self-generated electricity. The design will accord with Best Available Technology (BAT) regulations and will apply the Circular Economy Action Programme (CEAP) recommendations. |
| Climate Change - **Resilience** | **Buildings**<br>• Overheating – due to warmer summers and more frequent severe weather events:<br>  ○ The Proposed Development is to be developed using the best available techniques. This will minimize the impacts of increased temperatures on the AD plant and various auxiliary buildings. |

| Mitigation Measure Proposed | |
|---|---|
| | ○ It is recommended to monitor concrete structures for cracking and signs of weakness to ensure sufficient repair regimes to limit the reduction of time to critical failure.<br>○ It is recommended to use UV resistant sealings to protect concrete surfaces and expand time to failure.<br>• High winds – due to increased storm intensity and frequency:<br>○ Structure will be insulated and protected with regular inspections and maintenance.<br>• Increased precipitation (rain/snow) – due to wetter winters or increased storm intensity and frequency:<br>○ Use waterproof materials/coatings and veneers to prevent water ingress/erosion.<br>• Decreased precipitation due to warmer summers and increased heatwave events (drought):<br>○ Use building designs that optimize thermal performance, such as those incorporating Trombe walls or water walls, which can absorb and release heat, reducing internal temperature fluctuations.<br>○ Incorporate sustainable materials that can mitigate the urban heat island (UHI) effect. For example, thermochromic materials can be impregnated into concrete to maintain a cooler temperature in hot conditions.<br>○ Use high thermal-mass materials and ensure buildings have adequate insulation and glazing.<br>**Building occupiers, visitors and workforce**<br>• Overheating – due to warmer summers and more frequent severe weather events:<br>○ Health and safety procedures ensuring access to cool rest areas, drinking water and exposure limitations.<br>• Decreased precipitation due to warmer summers and increased heatwave events (drought):<br>○ Engage in efficient water-use practices, such as installing water-saving devices and promoting water conservation awareness campaigns to reduce overall water demand.<br>○ Use advanced monitoring systems, such as data loggers and buoys, to gather real-time data on water quality and quantity.<br>○ This can serve as an early warning system for droughts and help in making informed decisions about water management<br>**Site Access, Infrastructure and supply chain**<br>• During the operations of the Proposed Development, it is recommended to diversify supply chains, including dual sourcing strategies, shorter supply chains and working with local suppliers with continually monitor supply chains.<br>• The use of best available techniques allows the Proposed Development to store and generate heat and electricity reducing the risk of loss of energy supply. |

| Mitigation Measure Proposed | |
|---|---|
| Noise – **Operational Measures** | • The Applicant intends to implement best practice noise and vibration management techniques throughout the operational phase of the proposed development to control, and where possible, further reduce the noise impact to nearby noise sensitive receptors.<br>**Mechanical Plant**<br>• All noise generating mechanical plant will be reviewed for potential tonal and impulsive properties or characteristics and ensure that appropriate noise reduction is fitted at source, where practicable.<br>• Based on the noise emissions of the selected mechanical plant items, the sound insulation performance of all building elements making up the façades, roofs, louvres, roller doors and personnel doors of all process buildings will be designed, specified and constructed in a manner that ensures that applicable noise thresholds can be achieved offsite.<br>• The CHP exhaust stacks will be fitted with suitable acoustics attenuators as standard.<br>**Process Buildings**<br>• In order to minimise noise breakout, doors to all buildings with potentially elevated levels of noise will be installed with auto rollers or segmented personnel and vehicle access doors.<br>• Loader operators will be required to restrict heavy impact of the loader bucket against concrete hardstand or material bunkers.<br>**Vehicle Movement within Site Boundary**<br>• Access / internal haul roads will be kept clean and maintained in a good state of repair, specifically any uneven surfaces will be repaired, potholes filled, and large bumps removed to avoid unwanted rattle and “body-slap” from heavy goods vehicles.<br>• All vehicles delivering and operating on the site will have white noise reversing alarms fitted.<br>• Vehicles waiting within the application site will be prohibited from leaving their engines running and there will be no unnecessary revving of engines.<br>• Care will be taken when unloading vehicles to reduce or minimise potential for noise disturbance to nearby residents.<br>**Vehicle Movements on Public Roads**<br>• HGVs / trucks accessing and egressing the proposed development should adhere to a 60 kmph speed limit travelling along the L1309 to ensure road traffic noise impacts at the nearest noise sensitive receptors are minimised.<br>• All HGVs / trucks travelling to and from the application site will be required to be kept and maintained in good working order.<br>• Any deliveries to the proposed development site will be programmed to arrive during daytime hours only |
| Material Assets - **Waste** | • All waste generated at the site will be appropriately stored and removed by licenced contractors. |

| Mitigation Measure Proposed | |
|---|---|
| Traffic – **Safety and Operation of Local Roads** | HGV traffic can be of particular concern to both local residents and highway users, and the mitigation measures outlined below are implemented currently at the existing quarry to alleviate any adverse impacts:<br>• Roadstone Ltd implement a routing policy to ensure all movements are made via the strategic road network to avoid HGV's passing though residential areas as far as is practical.<br>• Roadstone Ltd employ a policy of safety and environmental awareness for all HGV drivers accessing the site.<br>• Roadstone maintains hedgerows and vegetation to ensure that access junction visibility is maximised. |
| Major Accidents and Disasters - **Site Safety** | Adherence to the COMAH Regulations, IE Licence (to be enforced and monitored by the EPA) will ensure that the potential for safety failures is kept very low.<br>These measures, as well as the operator's own EMS, will also ensure that incoming agricultural wastes are appropriately handled and contained in a suitable manner to ensure that they do not represent a health and safety risk. |

## Monitoring Measures

17.12 A number of environmental monitoring activities will be carried out during the construction and operational stages of the proposed development to confirm the effectiveness of the mitigation measures described above, to establish if there are any trends in environmental parameters and to highlight the need for remedial action if necessary.

17.13 Environmental monitoring requirements have been identified in the specific chapters of the EIAR. **Figure 17-1** indicates the monitoring locations across the application site and wider Quarry landholding. Additional monitoring locations can be provided if deemed necessary by Tipperary County Council should planning permission be granted.

### Population and Human Health

17.14 Monitoring for the protection of population and human health during the proposed development will be carried out in accordance with the wider environmental monitoring programme for the protection of water, air quality and noise.

### Biodiversity

17.15 There is no requirement for biodiversity monitoring given the lack of potential for impacts to valuable habitats or faunal species from the proposed development.

### Land, Soils and Geology

17.16 As the site is within an active working quarry landholding and soils have been previously removed, there are no specific monitoring requirements in respect to Land, Soils and Geology. A Construction Environmental Management Plan (CEMP) will include provision for the monitoring of construction and operational related activities.

### Hydrology and Hydrogeology

17.17 The following monitoring activities will be carried out to demonstrate that the development is not having an adverse impact on the surrounding environment and will document any improvements in water quality.

- groundwater levels in boreholes GW01, GW02 and GW03 will be monitored on a quarterly basis;
- groundwater loggers installed in the three boreholes will continue to provide for continuous groundwater level monitoring and logger downloads will be undertaken on a quarterly basis;
- groundwater quality monitoring to be undertaken on an annual basis; and
- surface water quality testing will be carried out. Surface water runoff from trafficked and yard areas will go to the main pond after passing through an interceptor and after testing will be pumped to the Clean Water Pond and then to the tanks that will supply the concrete plant or dust suppression.

### Air Quality

8.64 Ongoing dust deposition monitoring is carried out by Roadstone at the existing quarry site at selected locations along the extent of the site boundary, with the locations shown on

**Figure 17-1**. The German Standard VDI 2119 (Bergerhoff Method) is employed where dust gauges consisting of a collection vessel and dust stand are positioned at representatively important dust locations. The applicable limit value is the TA Luft limit value of 350 mg/m$^2$/day for a 1 month monitoring period. Review of the dust monitoring results from these locations will be used to ensure the mitigation measures are effective for the duration of the construction phase.

8.65 The proposed development will be a licenced facility under the Industrial Emissions Directive and will therefore be required to conduct "sniff surveys" in accordance with AG5 at regular intervals to demonstrate that mitigation measures are sufficient to prevent odour nuisance at sensitive off-site locations. Stack monitoring of the odour abatement system exhaust may also be required at regular intervals under the conditions of the IE Licence.

8.66 Emissions monitoring of selected point sources will also be carried out in accordance with conditions of the future IE license. Typically, this monitoring would be carried out for the linear generator and odour abatement stacks due to their continuous nature and being the primary point sources onsite.

## Climate Change

17.18 A framework and set of indicators shall be developed to assess project preparedness for adaptation against climate change. Provision shall be made for a periodic review of plans and the allocation of reporting responsibilities for a regime to measure and evaluate progress on adaptation. This will be documented in the Environmental Management System (EMS).

17.19 Progress in achieving GHG reductions at the site will be monitored, reported and reviewed. This will be documented in the EMS.

17.20 Regular monitoring of the structures for signs of cracking or other weakness will be carried out to ensure the resilience of same.

17.21 Ongoing monitoring of supply chains will be carried out during operation to ensure continued availability of sustainable input materials.

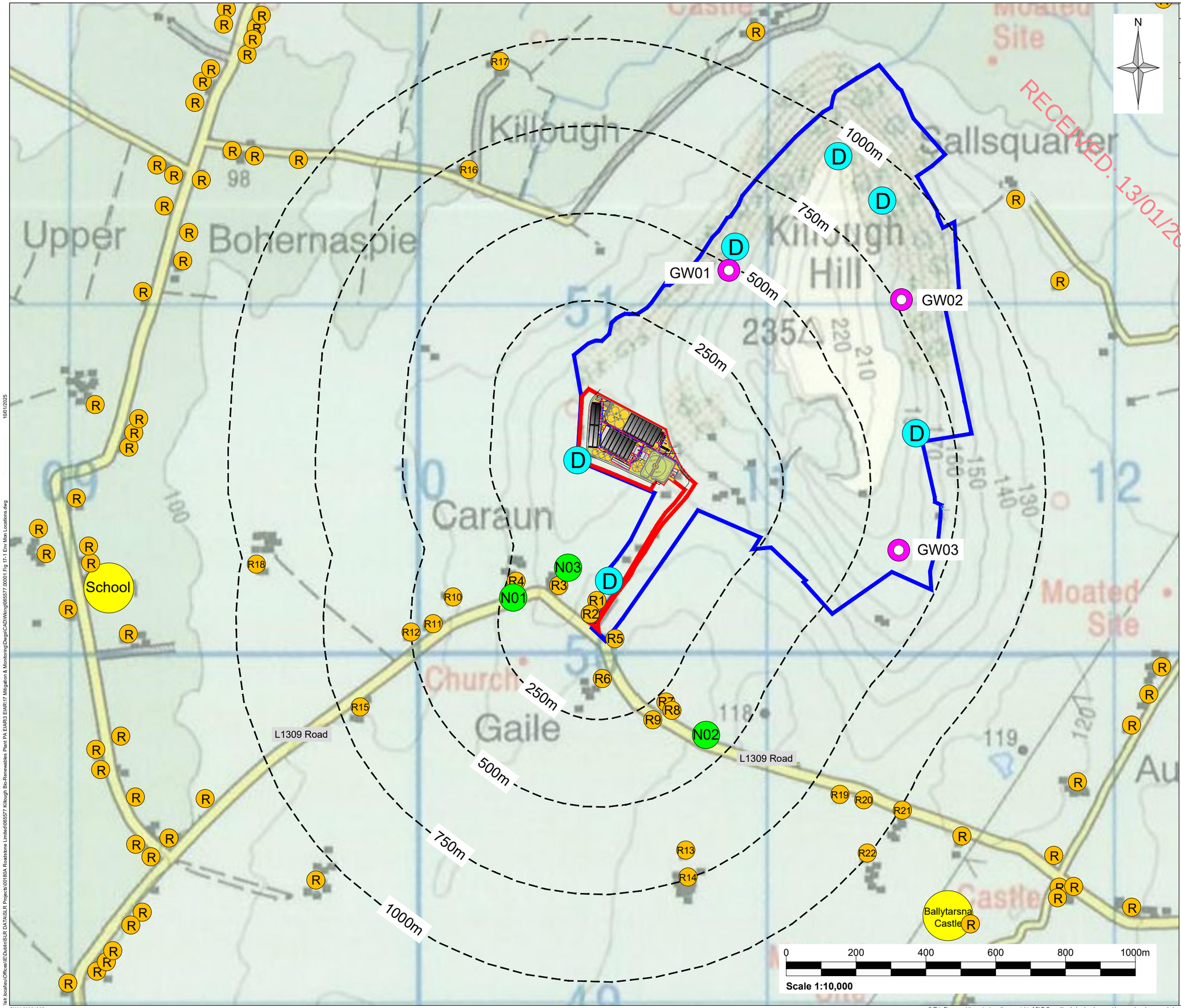
## Noise

17.22 The Applicant will undertake an annual compliance noise survey to establish operational noise emissions arising at the application site and demonstrate compliance with noise emission thresholds set by any grant of planning permission or licence issued by the EPA.

17.23 The survey shall be completed by a Competent Person in accordance with the EPA *Guidance Note for Noise: Licence Applications, Surveys and Assessments in Relation to Scheduled Activities* (NG4) using a Class 1 Sound Level meter.

# Figures

## Figure 17-1: Environmental Monitoring Locations

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**Notes:**

1. Extract from Ordnance Survey Map No. 66

**Legend:**

- Applicants Land Interest Area (c.108.3 hectares)
- Planning Application Area (c. 6.3 hectares)
- Offset distances to application boundary (red line)
- R1 Receptor (Residence) Locations
- Receptor (Other) Locations
- D Existing Quarry Dust Monitoring Locations
- N Baseline Noise Monitoring Locations
- GW Monitoring Locations

roadstone
A CRH COMPANY

| Rev | Amendments | Date | By | Chk | Auth |
|---|---|---|---|---|---|
| | | | | | |

SLR

www.slrconsulting.com

Client: Roadstone Ltd.

Project: Bio-Renewables Production Facility at Killough Quarry, Holycross, Co. Tipperary

Figure Title: Environmental Monitoring Locations Plan

| Scale | SLR Project No. |
|---|---|
| 1:10,000 @ A3 | 501.065577.00001 |

| Designed | Drawn | Checked | Authorised |
|---|---|---|---|
| pmc | pmc | smcd | smcd |

| Date | Date | Date | Date |
|---|---|---|---|
| 09/24 | 09/24 | 12/24 | 12/24 |

Figure Number: **Figure 17-1** Rev.: **0**





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