APPENDIX 3-1

CONSTRUCTION AND ENVIRONMENTAL MANAGEMENT PLAN

Planning and Environmental Consultants

Construction and Environmental Management Plan

Proposed Quarry Extraction and Restoration, Ballyquin Quarry, Co. Clare

DOCUMENT DETAILS

Client:	**Roadstone Ltd**
Project Title:	**Proposed Quarry Extraction and Restoration, Ballyquin Quarry, Co. Clare**
Project Number:	**211137**
Document Title:	**Construction and Environmental Management Plan**
Document File Name:	**Ballyquin CEMP F - 2024.11.15- 211137**
Prepared By:	**MKO** **Tuam Road** **Galway** **Ireland** **H91 VW84**

Planning and Environmental Consultants

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03	Final	15.11.2024	MV	EOS/PG

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1. INTRODUCTION

This Construction & Environmental Management Plan (CEMP) has been prepared by MKO on behalf of Roadstone Ltd. (Roadstone) who intend to apply to Clare County Council (CCC) to further develop the existing quarry at Ballyquin, Co. Clare. The Proposed Development 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 planning application also includes for the infilling and restoration of the existing and future quarry void. A full description of the Proposed Development is included in Section 2 below.

This CEMP has been prepared as part of the planning application for the Proposed Development and will provide the environmental management framework to be adhered to during the pre-commencement and construction phases of the Proposed Development and it incorporates the mitigating principles to ensure that the work is carried out in a way that minimises the potential for environmental impacts to occur. The CEMP has been informed by and takes account of the accompanying documents which have been prepared for the Proposed Development.

All measures identified in this CEMP, which will be finalised subsequent to any permission granted and updated prior to construction will include all mitigation measures identified to be adhered to during the pre-commencement and construction phases of the Proposed Development.

The CEMP to be prepared by the appointed contractor will be a single, amalgamated document that can be used during the construction phase of the project, as a single consolidated point of reference relating to all construction, environmental and drainage requirements for the Planning Authority, developer and contractors alike. The CEMP may evolve over further iterations as the construction works progress, but at all times must meet or exceed the standards and requirements set out in this document. It will be the contractor's current version of the CEMP, which at any point in time, will guide the construction activities on site and the implementation of which will be audited during construction.

1.1 Scope of the Construction and Environmental Management Plan

This report is presented as a guidance document for the management of construction activities and waste materials generated during the works and following completion. It clearly outlines the mitigation measures that are required to be adhered to in order to manage activities and waste materials in an appropriate manner.

The report is divided into Seven sections as outlined below:

- **Section 1** provides a brief introduction as to the scope of the report detailing the targets and objectives of the CEMP.
- **Section 2** outlines the Site and Project details, along with providing an overview of construction methodologies that will be adopted throughout the project.
- **Section 3** sets out details of the environmental controls on site which looks at noise and dust controls. Site drainage measures and a waste management plan are also included in this section.
- **Section 4** sets out a fully detailed implementation plan for the environmental management of the project outlining the roles and responsibilities of the project team. The Emergency Response Plan to be adopted in the event of an emergency in terms of site health and safety and environmental protection is also included in this section.
- **Section 5** consists of summary tables of all mitigation and monitoring proposals to be adhered to during the project.

- **Section 6** sets out a programme for the timing of the works.
- **Section 7** outlines the proposals for reviewing compliance with the provisions of this report.

1.2 Targets and Objectives

The following key targets and objectives will inform the final detailed design including consideration of the buildability of the designs that emerge:

- Adopt a sustainable approach to construction and, ensure sustainable sources for materials supply where possible.
- Correct fuel storage and refuelling procedures to be followed.
- Construction Methods and designs will be altered where it is found there is an adverse effect on the environment.
- Good waste management and housekeeping to be implemented.
- Using recycled materials, if possible, e.g., excavated stone, soil and subsoil material.
- Avoidance of vandalism.
- Air and noise pollution prevention to be implemented.
- Monitoring of the works and any adverse effects that it may have on the environment and,
- Provide adequate environmental training and awareness for all project personnel.

The key site objectives are as follows.

- Keep impact of construction to a minimum on the local environment and wildlife.
- Ensure construction works and activities are completed in accordance with any planning conditions for the development.
- Ensure construction works and activities have minimal impact/disturbance to local landowners and the local community.
- Ensure construction works and activities have minimal impact on the Natural Environment.

2. SITE AND PROJECT DETAILS

2.1 Site Location

The Proposed Development site comprises land in the townlands of Ballyquin More, Leitrim, Woodpark and Fahy More North, Co. Clare. It 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 Grid Reference co-ordinates for the approximate centre of the site are X 562651, Y 669425 in Irish Transverse Mercator (ITM).

The site location of the Proposed Development is shown in Figure 2-1.

2.2 Site Description

The Proposed Development site comprises a quarry void area which has been used for sand and gravel extraction since c. 1954. Land-use in the wider landscape comprises agriculture, forestry, quarrying and one-off housing. The site is bounded by agricultural land to the south and the west. A local road called 'Fahymore' runs along the eastern boundary of the site. This local road provides access to 4 No. farms adjacent to the site. In the southeast, the site is adjacent to another quarry, Jim Bolton Sand & Gravel.

The site is accessed from an existing high quality vehicular entrance on the R466 Regional Road which runs southeast-northwest from the R445 at Birdhill, County Tipperary to the R352 in East Clare.

The closest National Heritage Area (NHA) to the Proposed Development is Gortacullin Bog NHA [002401] which is c. 5.4km northwest from the site. The closest proposed National Heritage Area (pNHA) is Glenomra Wood pNHA [001013] and is located c. 1.3km southwest of the Proposed Development site. The closest Mapped European Designated Site is the Glenomra Wood Special Area of Conservation (SAC) [001013], which is located approximately 1.3km southwest of the Proposed Development site. The closest Special Protection Area (SPA) is the Lough Derg (Shannon) SPA which is located c. 7.8km northeast of the site.

The nearest surface water features to the site are the Broadford River (Environmental Protection Agency (EPA) Code 27B02) which is located at the northern boundary of the site and the Fahy More Stream (EPA Code 25F17) which is located at the southeastern boundary of the site.

No habitats listed under Annex I of the EU Habitats Directive were recorded within or adjacent to the Proposed Development site and no evidence of Annex II species associated with any SAC or Special Conservation Interest (SCI) bird species associated with any SPA was recorded within the site boundaries. Himalayan Knotweed, which is a species listed on the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations (S.I. 477 of 2011), was recorded within or adjacent to the Proposed Development. Consequently, an Invasive Management Plan has been prepared by MKO, and is included in Appendix 5-3 of this EIAR.

2.3 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 34 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.

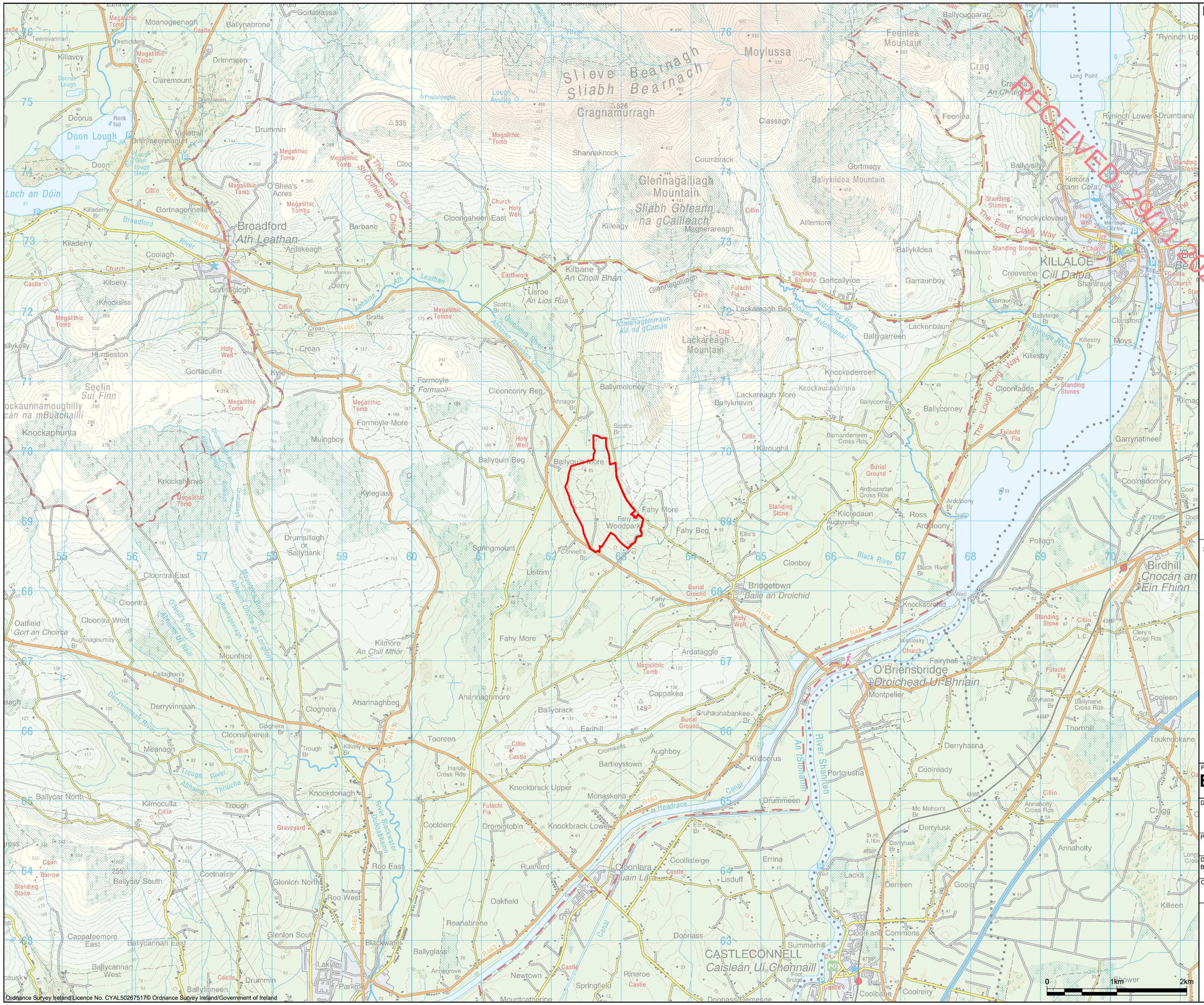
It is proposed to import approximately 4,471,200 tonnes of inert soil and stone material for the infilling of the quarry void. It is considered that the rate of infilling and restoration will be subject to market conditions and therefore planning permission is being sought for a 20-year operation.

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) which will be notified to the EPA as an Article 27 by-product.

The Proposed Development will continue to use the existing quarry infrastructure including internal roads, site office, weighbridge, wheelwash, welfare facilities and other ancillaries to complete the works. The weighbridge will be upgraded as part of the development proposals. A portable toilet will be provided for staff.

A quarantine area and refuelling area will also be provided as part of the development of the site. The quarantine area will comprise of a concrete foundation slab and inspection shed. Drainage from the refuelling areas will be routed through a full hydrocarbon interceptor, a wetland, and then a soakaway for final discharge to ground.

The subject site layout of the Proposed Development is shown in Figure 2-2.

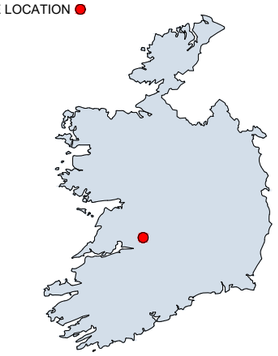


RECEIVED: 29/11/2024

Drawing Legend

Planning Application Boundary

SITE LOCATION



SITE LOCATION - N.T.S

PROJECT TITLE:

Ballyquin Quarry, Co. Clare

DRAWING TITLE:

Location Context Map

PROJECT No.:	DRAWING No.:	SCALE:
211137	Figure 2-1	1:50,000 @ A3

DRAWN BY:	CHECKED BY:	DATE:	REVISION.:
JOB	EOS	13.11.2024	D04

OS SHEET No.: OS1416, OS1616

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Map Legend

- Site Boundary
- Extraction Boundary
- Restoration Area
- Washplant Location
- Settlement Pond Area
- Inspection Shed & Refuelling Area

Drawing Title
Site Layout

Project Title
Proposed Ballyquin Quarry

Drawn By	Checked By
CJ	EOS
Project No. 211137	Drawing No. Figure 2-2
Scale 1:9,000	Date 2024-11-15

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2.4 Construction Management

2.4.1 Introduction

The appointed contractors for the construction of the Proposed Development will be required to comply with this CEMP and any revisions made to this document throughout the construction phase. An overview of the anticipated Construction Methodologies is provided below.

2.4.2 Overview of Proposed Construction Methodology

It is estimated that the construction phase of the proposed works required will take approximately 1 month. The proposed anticipated construction methodology is summarised under the following main headings:

- Site Establishment
  - Preparation of site for construction;
  - Construction of a new chain-link perimeter fence on the eastern and northern boundaries of the extraction area.
- Soil Stripping, Vegetation Removal, and Temporary Stockpiling
  - Stripping of overburden soils under archaeological supervision for use in construction of environmental berms and ongoing site restoration works;
  - Removal of existing internal hedgerows in greenfield extraction area,
- Construction of new drainage network and fuel/oil interceptor at refuelling area;
- Establishment of Quarantine Area and Refuelling Area
  - Pouring of concrete for soil inspection area/refuelling area foundation;
  - Erection of quarantine inspection shed;
- Road paving/Improvements
- Construction of settlement ponds
- Construction of a fixed processing plant including water management system and ponds for the washing of aggregates.

Minor excavations will be required for the installation of drainage pipework. It is proposed that excavated soil material will be reused onsite.

2.4.2.1 Site Establishment

The site is accessed from existing high quality vehicular entrance on the R466 Regional Road which runs southeast-northwest from the R445 at Birdhill, County Tipperary to the R352 in East Clare. All vehicular traffic accessing the sites will be controlled by a security barrier at the site office before gaining access to the site.

The site is surrounded by vegetation, secure boundary fencing and lockable access gates to prevent unauthorized access. The Proposed Development will not alter any of the existing site boundary fences or gates. A new chain-link perimeter fence will be constructed on the eastern and northern boundaries of the extraction area within the site. The site gates will be locked and secured outside operating hours. Warning signs are placed and will be maintained at the quarry entrance and perimeter fencing. It is also proposed to install closed-circuit television (CCTV) security cameras (subject to planning permission) at the site, to monitor site operations.

The contractor will be required to undertake the following.

- Operate a Site Induction Process for all site staff.
- Ensure all site staff shall have current ‘Safe Pass’ cards.

- Maintain Site Security staff at all times.

A parking area for construction workers vehicles will be provided within the site. There will be no parking permitted for any vehicles associated with the project on the public road during the construction phase of the development unless agreed with Clare County Council.

2.4.2.2 Soil Stripping, Vegetation Removal & Temporary Stockpiling

Prior to extracting the underlying sand material, internal hedgerows and vegetation in the extraction area will be removed and overburden will be stripped. The overburden removed will be used in the construction of environmental berms and ongoing site restoration works. The removal of vegetation will typically be carried out by means of mechanical excavator. Where required, silt fences will be used to ensure sediment-laden run-off does not occur.

Where these works occur, the following will apply:

- As far as is practically possible, any temporary stockpile areas will be located in areas that are not exposed to high winds and at a minimum 50m away from any water bodies / watercourses.
- All stockpiles will be damped down or covered in a sheet of polythene, as required, which will prevent the creation of nuisance dust, and will also prevent sediment runoff in times of heavy precipitation.
- The area where excavations are planned will be surveyed and all existing services will be identified.
- All plant operators and general operatives will be inducted and informed as to the location of any services.
- All plant operators and general operatives will be inducted and informed as to the identification of invasive species if present.
- A tracked 360-degree excavator will be used to strip the topsoil, and a dumper will be used to move the excavated materials to the temporary stockpile location.
- All excavated material which is not required for future works (i.e. berms) or for site restoration works will be removed to an authorised waste recovery facility. This will also apply to material which is not suitable for reuse on site.
- A silt filtration system will be used as appropriate to prevent contamination of any watercourse.

2.4.2.3 Drainage Works

Drainage from the refuelling area will be routed through a full hydrocarbon interceptor, a wetland, and then a soakaway for final discharge to ground. There will be an inspection chamber between the wetland and the soakaway to all for inspection/sampling.

Minor excavations will be required for the installation of drainage pipework. The material will be stockpiled on site for reuse or removal to a licenced facility, if it is surplus. The pipes can then be installed and backfilled with suitable quarried stone. Manholes will be formed also where required using precast concrete rings and in-situ concrete.

2.4.2.4 Establishment of Quarantine Area and Refuelling Area

A quarantine area for any imported material suspected of being contaminated or unsuitable for acceptance at the facility will be provided as part of the Proposed Development. This will comprise of a concrete hardstand area and inspection/storage shed, located to the southeast of the existing site office. The proposed inspection shed will be approximately 1,875m^2 in area and 10m in height.

The proposed dedicated refuelling area will be constructed on the new concrete hardstanding, adjacent to the soil inspection area.

For the construction of the quarantine inspection shed and refuelling area, the following methodology will apply:

- The required level platform will be established and finished with well-graded granular fill, compacted in layers and finished with a suitable capping layer to the desired level;
- The foundations will be excavated down to the level indicated by the designer and appropriately shuttered reinforced concrete will be laid over it.;
- Steel frame will be erected;
- The walls will be constructed and works will be completed as per design drawings in the planning pack.

2.4.2.5 Road Improvements

If the Proposed Development proceeds, junction improvements will form part of the development. It is proposed to improve the existing quarry access approach arm to the junction by introducing the following measures, which are illustrated in Figure A13-2-1 included as Appendix 13-2.

- Junction delineated with edge of carriageway markings including radii of 13m and 1:10 tapers for 25m for left in and left out movements in accordance with Section 5.5.5(a) and (b) of DN –GEO-03060 Geometric Design of Junction, Transport Infrastructure Ireland (TII), for junctions (TII, 2017) providing for HGV's,
- STOP junction markings and STOP signs in accordance with Figure 7.35 of the Traffic Signs Manual.

2.4.2.6 Settlement Ponds

New silt lagoons and settlement ponds will be constructed at the proposed washing plant location for management of fines/sediments and water from the washing process. Settlement lagoons will be of sufficient size to cope with flooding and periods of heavy rain and will be constructed as per drawings in the planning pack.

2.4.2.7 Construction of Fixed Processing Plant

A fixed processing plant will be constructed as per drawings in the planning pack, including a water management system and ponds for the washing of aggregates.

3. ENVIRONMENTAL MANAGEMENT

3.1 Environmental Management System

Roadstone Ltd operates an Environmental Management System (EMS) which meets the requirements of ISO 14001:2015.

The key objectives of the EMS are:

- Compliance with all relevant legislation, regulations and operation to the International Standard ISO 14001:2015.
- The continuous improvement of our environmental performance.
- Maintaining good relationships with our neighbours at each of our locations.
- Management of visual impact of our operations on the surrounding landscape.
- Managing efficiently the generation and disposal of waste and ensuring the prevention of pollution on all our sites.

The Proposed Development will be carried out in accordance with the requirements of the EMS. The EMS includes an 'Environmental Monitoring Programme (EMS 11)' for the monitoring of dust, noise and groundwater and will be revised subject to compliance with any conditions attached to any decision to grant planning permission and a Waste Management Licence for the Proposed Development. A copy of Roadstone EMS 11 is included in Appendix 3-2. The monitoring programme results will be submitted to Clare County Council on a regular basis, and therefore made available at the council offices for inspection by interested parties. Monitoring results will also be issued to the EPA as per licence requirements.

3.1.1 Protecting Water Quality

The nearest surface water features to the site are the Broadford River (EPA Code 27B02) which flows across the northern boundary of the site in a north-western direction ultimately flowing into Doon Lough west of the town of Broadford. To the south-east of the site is the Fahy More Stream (EPA Code 25F17), which flows through Bridgetown village and ultimately flows into the River Shannon.

Prior to the commencement of any subsequent construction activities, the necessary mitigation measures will be put in place to ensure that no silt laden water runoff generated at the site will flow to nearby watercourses thus ensuring the protection of surface water during the works. Surface waters will be managed to ensure the prevention of runoff from the site work areas. Stockpiled material will be located a minimum of 50m from drains/watercourses, sealed with the back of an excavator bucket and, if deemed necessary, will be surrounded by silt fencing where there is a risk of run-off during prolonged periods of rainfall.

Particular emphasis will also be placed on hazardous materials entering the surface water management system as well as spill or leaks of fuel oils. Section 4 provides an Emergency Response Plan for dealing with spillages which may result in adverse environmental effects.

Excavation and construction works have the potential to cause the release of suspended solids to local surface watercourses or overland flow arising on site following heavy rainfall. However, due to the presence of permeable subsoils across most of the Proposed Development, runoff rates to local watercourses will be low. 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. There will be an inspection chamber between the oil interceptor and lagoons for inspection/sampling

3.1.2 Prevention Pollution Control Measures

The following measures will be put in place to prevent the transportation of silt laden water or pollutants from entering the wider environments.

- Prior to the commencement of earthworks, silt fencing will be placed down-gradient of the construction areas where surface water may drain towards local watercourses. These will be embedded into the local soils to ensure all site water is captured and filtered;
- Daily monitoring and inspections of any constructed site drainage channels during the construction phase will be completed;
- Any requirement for temporary fills or stockpiles will be sealed with the back of an excavator bucket, damped down or covered with polyethylene sheeting as required to avoid sediment release associated with heavy rainfall;
- The majority of excavated spoil will be reused on site for the construction of berms and restoration works;
- All excavated material which is not required for future restoration or berm works will be removed to an authorised waste recovery facility;
- Drainage from the development reception area will be directed towards the existing lagoons on the west of the Proposed Development site;
- Earthworks will not take place during periods of high rainfall to reduce run-off and potential siltation of watercourses. 'High rainfall' is defined as follows:
    - >10 mm/hr (i.e. high intensity local rainfall events); or
    - >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or,
    - Rainfall total greater than monthly average recorded in 7 consecutive days (prolonged heavy rainfall over a week).

Plate 3-1 below displays an example of an embedded silt fence which may be utilised to prevent sediment from stockpiles etc. from entering watercourses.

Plate 3-1 Embedded Silt Fence

3.1.3 Cement Based Products Control Measures

The complete washing out of concrete trucks will not be permitted at the site. Suppliers will be directed back to their own facility to complete the washout process.

The following mitigation measures are proposed to avoid release of cement leachate from the site:

- No batching of wet-cement products will occur on site;
- Ready-mixed supply of wet concrete products will be used;
- Where concrete is used on site, only the chute will be cleaned, using the smallest volume of water practicable. Washout will be into a skip;
- No discharge of cement contaminated waters to the site phase drainage system or directly onto bare ground;
- The pour site (i.e. soil inspection shed floor slab) will be kept free of standing water and plastic covers will be ready in case of a sudden rainfall event; and
- Weather forecasting will be used to plan dry days for pouring concrete.

3.1.4 Refuelling, Fuel and Hazardous Materials Storage

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 lifetime of the Proposed Development.

Drainage from the refuelling area will be routed through a full hydrocarbon interceptor, a wetland, and then a soakaway for final discharge to ground. There will be an inspection chamber between the wetland and the soakaway to all for inspection/sampling. .

Mitigation measures proposed to avoid the release of hydrocarbons at the Proposed Development site are as follows:

- No plant maintenance will be completed on site. Any broken-down plant will be removed from the site to be fixed;
- All plant and machinery will be serviced before being mobilised to site;
- Refuelling will be completed in a controlled manner within the proposed refuelling area which will be served by an oil interceptor;
- Mobile double skinned bowser will be used outside the refuelling area;
- A spill kit with absorbent material and pads in the event of any accidental spillages will be kept in the bowser. Drip trays and fuel absorbent mats will be used during all refuelling operations;
- Refuelling will be carried out by trained personnel only;
- Fuels stored on site during construction phase will be minimised.
- Fuel storage areas will be served by an oil interceptor; and,
- The plant used during construction will be regularly inspected for leaks and fitness for purpose.

3.2 Dust Control

In periods of extended dry weather, dust suppression may be necessary during the construction and operational phases and along access roads to ensure dust does not cause a nuisance.

Proposed measures to control dust include:

- The hardstanding/roads adjacent to the site will continue to be regularly inspected by the Site 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).
- If necessary, sporadic wetting of loose stone and soil surface will be carried out during the construction phase to minimise movement of dust particles to the air.
- The transport of material, which has significant potential to cause dust, will be undertaken in tarpaulin-covered vehicles.
- Water spraying of stockpiles will be carried out when necessary to reduce the production of dust.
- Water sprays will be used as required during transfer and loading activities, during dry and/or windy conditions.
- All vehicles required to pass through the wheel wash on exiting the site.
- All plant and machinery will be maintained in good operational order while onsite.
- All plant and shall be stored in the dedicated compound area.
- It is proposed that dust deposition monitoring using the Bergerhoff Method, be carried out in line with the existing monitoring requirements.
- Following reinstatement, the area will be reseeded to facilitate immediate revegetation of the site and prevent dust generation.

3.3 General Air Quality

The construction of the inspection shed, berms, refuelling area, settlement ponds, weighbridge upgrades and drainage network will require the operation of construction vehicles and plant on site. Exhaust emissions associated with vehicles and plant will arise as a result of construction activities.

Mitigation measures to reduce this effect are presented below.

- All on-site plant and vehicles will be maintained in good operational order, thereby minimising any emissions that arise.
- When stationary, delivery and on-site vehicles will be required to turn off engines.
- Users of the site will be required to ensure that all plant and vehicles are suitably maintained to ensure that emissions of engine generated pollutants is kept to a minimum.

3.4 Noise Control

The operation of plant and machinery, including construction vehicles, is a source of potential noise impacts. Construction phase noise is typically assessed in light of guidance set out in British Standard BS 5228-1:2009+A1:2014 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise (2014), as well as EPA Environmental Management Guidelines (2006): Environmental Management in the Extractive Industry (Non-Scheduled Activities).

As set out in Chapter 10: Noise of this EIAR, the predicted noise levels are within the criteria; therefore, no specific mitigation measures are required. Notwithstanding this, the following, best-practice measures will form part of site management practices to ensure noise from on-site operations do not cause a noise nuisance at the nearest noise sensitive locations (NSLs):

- 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;
- Orienting directional noise away from sensitive areas where possible; and
- All mobile equipment is throttled down or switched off when not in use.
- Monitoring of noise will continue at the existing and proposed locations (as set out in Chapter 10)

3.5 Traffic Management Proposals

The proposed traffic management measures to be adopted during the construction works are summarised below. Please note that this is not an exhaustive list, and it will be updated accordingly by the appointed contractor in consultation with the local authority.

- Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction site access locations.
- Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds.
- Existing quarry traffic construction management plan to be followed.
- Construction and delivery vehicles will be instructed to use only the approved and agreed means of access; and movement of construction vehicles will be restricted to these designated routes.
- Appropriate vehicles will be used to minimise environmental impacts from transporting construction material, for example the use of dust covers on HGVs carrying dust producing material.
- Parking of vehicles will be in the existing designated area on site.
- Deliveries of construction materials will be planned to ensure that the materials are delivered only as they are required and will avoid peak hours when possible.
- Checking public roads in the vicinity of the site for signs of spillages. A road sweeper is also available for use on site and adjacent sections of the R466 Regional Road at least on a weekly basis and/or if a spillage occurs.
- On site wheel washing will be undertaken for construction vehicles to remove any debris prior to leaving the site,
- Traffic on site will be controlled by the Facility Manager.
- The weighbridge operator will provide the primary means of marshalling traffic.

3.6 Invasive Species Management

During the multidisciplinary surveys carried out by MKO, a search for Invasive Alien Species (IAS), with a focus on those listed under the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) was conducted by a suitably qualified ecologist. During the walkover surveys of the Proposed Development site, Himalayan Knotweed (*Persicaria wallichii*) was found growing in the north and northwest of the site in a number of stands and single plant growths. Buddleia (*Buddleja davidii*) was also recorded in the northwest of the site growing among gorse scrub and existing gravel piles. Himalayan Knotweed is an invasive species listed on the Third Schedule of the European Communities; therefore, a management plan has been prepared.

The infill stage of the Proposed Development has the potential to result in disturbance and potential spread of invasive species that were recorded on the site. The treatment and control of invasive alien species during the operational stage will follow the guidelines set out in the Invasive Species Management Plan (ISMP), included as part of this EIAR. These control methods are summarised in Section 5.1 below.

The following measures have been drawn up to avoid potential impacts associated with the introduction and spread of invasive alien plant species during the construction stage:

- Good construction site hygiene will be employed to prevent the introduction and spread of problematic invasive alien plant species (e.g., Himalayan Balsam, Japanese Knotweed etc.) by thoroughly washing vehicles prior to leaving any site.
- All plant and equipment employed on the construction site (e.g., excavator, footwear, etc.) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of invasive plant species. Wheel washing facilities will be provided at the site entrance. All washing must be undertaken in areas with no potential to result in the spread of invasive species.
- All infill material required at the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present.
- Should despite these measures any invasive alien species be introduced to site, these shall be dealt with in accordance with guidelines issued by the National Roads Authority - The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads (NRA, 2010).

3.7 Resource Waste Management Plan

The generation of waste as a result of construction related activity will provide the majority of on-site wastes which will need to be managed under guidelines set out in this document. This section of the CEMP provides a Waste Management Plan (WMP) which outlines the best practice procedures during the construction phase of the project. This plan has been compiled based on The Department of the Environment document entitled, '*Best Practice Guidelines for the preparation of resource & waste management plans for construction & demolition projects' (2021).*

The plan is based on the European waste hierarchy which sets out the most to least preferred options for waste management. Waste prevention and re-use are viewed as the most desirable options for managing wastes with the least desirable option considered being disposal to a licensed landfill.

This plan has a number of key objectives as outlined below:

- To set out management prescriptions that adhere to the waste management hierarchy.
- To outline the roles and responsibilities of the appointed Waste Manager.

3.7.1.1 Legislation

The Waste Management Acts 1996 (Act) as amended provide for measures to improve performance in relation to waste management, recycling and recovery. The Act also provides a regulatory framework for meeting higher environmental standards set out by other national and EU legislation.

The Act requires that any waste related activity has to have all necessary licenses and authorisations. It will be the duty of the Waste Manager on the site of the Proposed Development to ensure that all contractors hired to remove waste from the site have valid Waste Collection Permits. It will then be necessary to ensure that the waste is delivered to a licensed or permitted waste facility. The hired waste contractors and subsequent receiving facilities must adhere to the conditions set out in their respective permits and authorisations.

3.7.1.2 Waste Management Hierarchy

The waste management hierarchy sets out the most efficient way of managing in the following order:

Prevention and Minimisation:

The primary aim of the WMP will be to prevent and thereby reduce the amount of waste generated at each stage of the project. The prevention and minimisation of waste of this development will be developed by implementing effective on-site materials management in terms of both material acquisition and storage on site.

Reuse of Waste:

Reusing as much of the waste generated on site as possible will reduce the quantities of waste that will have to be transported off site to waste recovery facilities or landfill. Site management will be required to encourage the appropriate reuse of materials where possible as well as identify re-use opportunities to achieve ultimate goal of waste reduction.

Recycling of Waste:

There are a number of established markets available for the beneficial use of construction waste such as using waste concrete as fill for new roads. A designated Waste Storage Area (WSA) will be maintained on site which will cater for segregation and recycling of various waste streams.

At all times during the implementation of the WMP, disposal of waste to landfill will be considered only as a last resort.

3.7.2 Construction Waste Management

Waste generated post excavation on site will be managed in the WSA where the various waste components will be segregated into a number of waste categories in accordance with a general waste segregation policy and placed into individual skips. The categories for segregation will include timber, metal, cardboard and plastics. This material will be removed by authorised waste collection contractors for recycling and recovery at appropriately licensed facilities. The remaining volume of waste material which cannot be allocated to any of these four waste streams will be disposed of in a general waste skip. This waste material will be transferred to a MRF by a fully licensed waste contractor where the waste will be further sorted into individual waste streams for recycling, recovery or disposal. This general waste will be subject to constant monitoring by site management to ensure that potential reusable and recyclable material is not being disposed of therein. Other waste mitigation measures which will be implemented at the site are as follows;

- All waste will be collected in skips and the site will be kept tidy and free of debris at all times.
- Waste oils and hydraulic fluids will be collected in leak proof containers and removed from the site for disposal or recycling. It is also essential that all empty oil containers and other hazardous wastes should be disposed of in accordance with the requirements of the Waste Management Act, 1996 as amended.
- All construction waste materials will be stored within the confines of the site, prior to removal from the site to an appropriately licensed waste facility.
- No wastewater will be discharged on-site during the construction phase.

The expected wastes arising from the works including the individual European List of Waste codes are outlined in Table 3-1.

Table 3-1 Expected waste types arising from the Construction Phase

Materials	Example	LoW Code
Cables	Electrical wiring	17 04 11
Concrete	Surfacing, flooring material	17 01 01
Metals	Rebar, reinforced steel joists, lead flashing, powder coated aluminium, copper water service pipes	17 04 07
Mixture of inert material	Sand, stones, plaster, brick, rock	17 01 07
Plastic	PVC frames, electrical fittings	17 02 03
Soil & Stones	Overburden, soil, subsoil	17 05 04
Wood	Frames and doors, MDF	17 02 01
Paint	Interior paint finish	08 01 11
Canteen Waste	Miscellaneous waste from site staff	20 01 08

It is proposed that excavated soil material will be reused onsite for the construction of berms and restoration works.

It is also essential that all waste oils, empty oil containers and other hazardous wastes should be disposed of in accordance with the requirements of the Waste Management act, 1996 as amended.

3.7.2.1 Waste Arisings and Proposals for Minimisation, Reuse and Recycling of Construction Waste

Construction waste will arise on the project mainly from excavation and unavoidable construction waste including material surpluses and damaged materials and packaging waste.

Appropriate measures should be taken to ensure excess waste is not generated during construction, including;

- Ordering of materials will be on an 'as needed' basis to prevent over supply to site. Co-ordination is required with suppliers enabling them to take/buy back surplus stock.
- Purchase of materials pre-cut to length to avoid excess scrap waste generated on site.
- Request that suppliers use least amount of packaging possible on materials delivered to the site.
- Ensuring correct storage and handling of goods to avoid unnecessary damage that would result in their disposal.
- Ensuring correct sequencing of operations.
- Use reclaimed materials in the construction works.

Hazardous waste will be kept separate from all other construction waste to prevent contamination and removed appropriately.

3.7.2.2 Wastes Arising from Construction Activities

All waste generated on site will be contained in waste skips at a waste storage area on site. This waste storage area will be kept tidy with skips clearly labelled to indicate the allowable material to be disposed of therein.

Any packaging waste generated from the delivery of materials will be deposited into the on-site skips and subsequently transferred to the MRF.

Site personnel will be instructed at induction that, under no circumstances, can waste be brought to site for disposal in the on-site waste skip. It will also be made clear that the burning of waste material on site is forbidden.

3.7.3 Implementation

3.7.3.1 Roles and Responsibilities for Waste Management

Prior to the commencement of the Proposed Development, a Waste Manager will be appointed by the project team. The role of Waste Manager is likely to be fulfilled by the Environmental Manager given the scale of the development and will be responsible for the implementation of the objectives of this plan, ensuring that all hired waste contractors have the necessary authorisations and that the waste management hierarchy is adhered to. The person nominated must have sufficient authority so that they can ensure everyone working on the Proposed Development adheres to the management plan. The waste manager will also be required to conduct regular waste audits in the WSA and throughout the site to ensure that the waste management plan is operating effectively.

3.7.3.2 Training

It is important for the Waste Manager to communicate effectively with colleagues in relation to the aims and objectives of the waste management plan. All employees working on site during the construction phase of the project will be trained in materials management and thereby, should be able to:

- Distinguish reusable materials from those suitable for recycling.
- Ensure maximum segregation at source.
- Co-operate with site manager on the best locations for stockpiling reusable materials.
- Separate materials for recovery.
- Identify and liaise with waste contractors and waste facility operators.

3.7.3.3 Record Keeping

The WMP will provide systems that will enable all arisings, movements and treatments of waste to be recorded. This system will enable the contractor to measure and record the quantity of waste being generated. It will highlight the areas from which most waste occurs and allows the measurement of arisings against performance targets. The WMP can then be adapted with changes that are seen through record keeping.

The fully licensed waste contractor employed to remove waste from the site will be required to provide documented records for all waste dispatches leaving the site. Each record will contain the following:

- Consignment Reference Number
- Material Type(s) and List of Waste (LOW) Code(s)
- Company Name and Address of Site of Origin
- Trade Name and Collection Permit Ref. of Waste Carrier
- Trade Name and Licence Ref. of Destination Facility

- Date and Time of Waste Dispatch
- Registration no. of waste transport vehicle
- Weight of Material
- Signature of Confirmation of Dispatch detail
- Date and Time of Waste Arrival at Destination
- Site Address of Destination Facility

3.7.4 Waste Management Plan Conclusion

The WMP will be correctly implemented and adhered to by all staff involved in the project which will be outlined within the induction process for all site personnel. The waste hierarchy will always be employed to ensure that the least possible amount of waste is produced during the construction phase. Reuse of certain types of construction wastes will cut down on the cost and requirement of raw materials therefore further minimising waste levels.

4. ENVIRONMENTAL MANAGEMENT IMPLEMENTATION AND EMERGENCY RESPONSE

4.1 Environmental Manager

The main contractor appointed to carry out the works on site will be required to provide a level of supervision on site in the form of an Environmental Manager who will also fulfil the role of Waste Manager. Due to the scale of activity proposed for the site, this role can be adopted by a Site Manager/Foreman as part of their duties. In general, this Environmental Manager will maintain responsibility for monitoring the works and Contractors/Sub-contractors from an environmental perspective. The Environmental Manager will act as the regulatory interface on environmental matters by reporting directly to the client and liaising with Clare County Council and other statutory bodies as required. The duties of the appointed Environmental Manager are summarised as follows:

- Maintain and update as required the CEMP and supporting environmental documentation and review/approval of contractor method statements.
- Undertake inspections and reviews to ensure the works are carried out in compliance with the CEMP.
- Monitor the implementation of the CEMP, particularly all proposed/required environmental mitigation measures.
- Ensure proper mitigation measures are initiated and adhered to during the construction phase.
- Ensure adequate arrangements are in place for site personnel to identify potential environmental incidents.
- Ensure that details of environmental incidents are communicated in a timely manner to the relevant regulatory authorities, initially by phone and followed up as soon as is practicable by email.
- Support the investigation of incidents of significant, potential or actual environmental damage, and ensure corrective actions are carried out, recommend means to prevent recurrence and communicate incident findings to relevant parties.
- Identify environmental training requirements and arrange relevant training for all levels of site-based staff/workers; and
- Fulfil the role of Waste Manager and implement the objectives of the Waste Management Plan as set out in Section 3.8 above.

4.2 Project Ecologist

The main contractor will be required to engage a qualified Project Ecologist to ensure that methodologies and mitigation are followed throughout construction to avoid negatively impacting on the receiving environment.

The Project Ecologist will visit the site at the start of the project to assess site set-up before works commence to ensure all mitigation is in place and to give a Toolbox Talk to all staff. Project Ecologist site inspections will be carried out during the project as follows:

- Prior to works commencing
- Whilst works are being carried out
- Prior to completion of works and decommissioning of site
- Post completion of the project

The Project Ecologist will report to the Site Manager. The responsibilities and duties of the Project Ecologist will include the following:

- The Project Ecologist will ensure that the measures outlined in the Invasive Species Management Plan are properly implemented.
- All excavation works within the exclusion zone will be supervised by the contractor's ecologist.
- Any material imported to the site should be screened for invasive species by the Project Ecologist before transportation to the site.
- Prior to the commencement of any works, a pre-commencement survey for Himalayan knotweed will be undertaken by the Project Ecologist to determine the locations and extent of the species within the development site and to determine whether there have been any changes in the extent of the infestation since the undertaking of surveys in 2023 & 2024.

4.3 Emergency Response Plan

4.3.1 Emergency Response

The Emergency Response Plan (ERP) is presented in this section of the CEMP. It provides details of procedures to be adopted in the event of an emergency in terms of site health and safety and environmental protection. The site ERP includes details on the response required and the responsibilities of all personnel in the event of an emergency. The ERP will require updating and submissions from the contractor/ Project Supervisor Construction Stage (PSCS) and suppliers as the proposed project progresses. Where sub-contractors that are contracted on site are governed by their own emergency response procedure a bridging arrangement will be adopted to allow for inclusion of the sub-contractor's ERP within this document.

This is a working document that requires updating throughout the various stages of the project.

4.3.2 Roles and Responsibilities

The chain of command during an emergency response sets out who is responsible for coordinating the response. The Site Manager will lead the emergency response which makes him responsible for activating and coordinating the emergency response procedure. The other site personnel who can be identified at this time who will be delegated responsibilities during the emergency response are presented in Figure 4-1. In a situation where the Site Manager is unavailable or incapable of coordinating the emergency response, the responsibility will be transferred to the next person in the chain of command outlined in Figure 4-1. This will be updated throughout the various stages of the project.

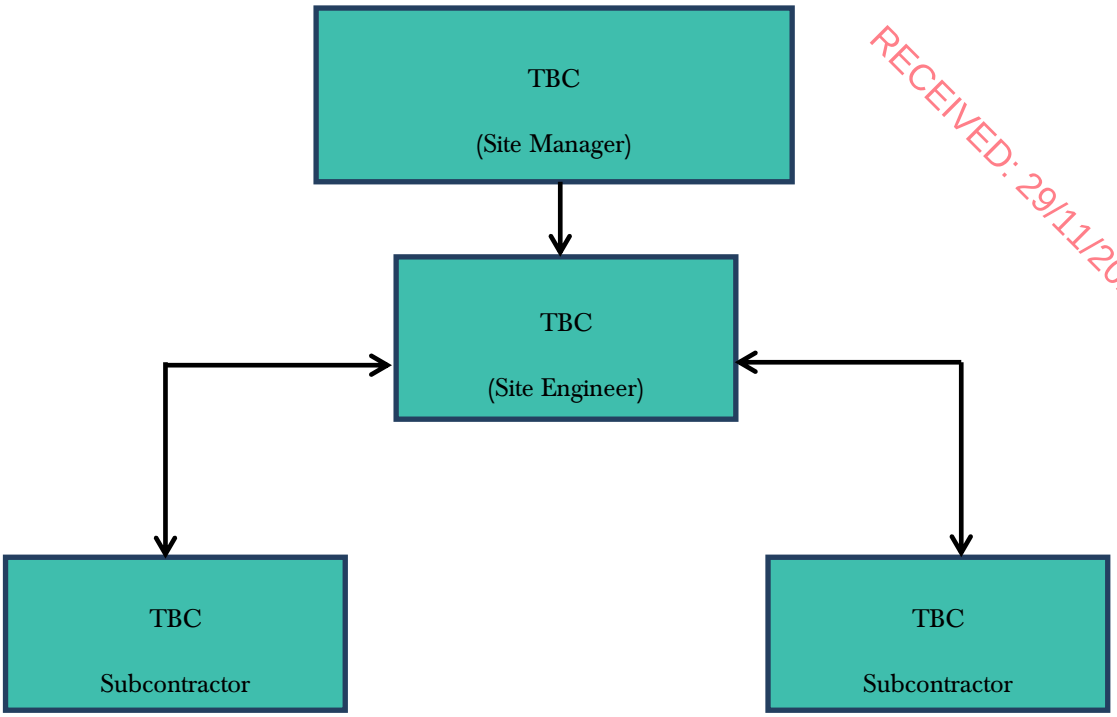

Figure 4-1 Emergency Response Procedure Chain of Command.

4.3.3 Initial Steps

In order to establish the type and scale of potential emergencies that may occur, the following hazards have been identified as being potential situations that may require an emergency response in the event of an occurrence.

Table 4-1 Hazard Associated with Potential Emergency Situations

Hazard	Emergency Situation
Construction Vehicles: Dump trucks, tractors, excavators, cranes etc.	Collision or overturn which has resulted in operator or third-party injury.
Abrasive wheels/Portable Tools.	Entanglement, amputation or electrical shock associated with portable tools.
Contact with services.	Electrical shock or gas leak associated with an accidental breach of underground services.
Fire	Injury to operative through exposure to fire.
Falls from heights including falls from scaffold towers, scissor lifts, ladders and roofs.	Injury to operative after a fall from a height.
Sickness	Illness unrelated to site activities of an operative e.g., heart attack, loss of consciousness, seizure.

In the event of an emergency situation associated with, but not restricted to, the hazards outlined in Table 4-1 the Site Manager will carry out the following:

- Establish the scale of the emergency situation and identify the number of personnel, if any, have been injured or are at risk of injury.
- Where necessary, sound the emergency siren/foghorn that activates an emergency evacuation on the site.
- Make safe the area if possible and ensure that there no identifiable risk exists with regard to dealing with the situation e.g., if a machine has turned over, ensure that it is in a safe position so as not to endanger others before assisting the injured.
- Contact the required emergency services or delegate the task to someone if he is unable to do so. If delegating the task, ensure that they follow the procedures for contacting the emergency services as set out in Section 4.3.6.
- Take any further steps that are deemed necessary to make safe or contain the emergency incident e.g., cordon off an area where an incident associated with electrical issues has occurred.
- Contact any regulatory body or service provider as required e.g., ESB Networks the numbers for which as provided in Section 4.3.6.
- Contact the next of kin of any injured personnel where appropriate. The procedure for this is outlined in Section 4.3.6.

4.3.4 Site Evacuation/Fire Drill

A site evacuation/fire drill procedure will provide basis for carrying out the immediate evacuation of all site personnel in the event of an emergency. The following steps will be taken:

- Notification of the emergency situation. Provision of a siren or foghorn to notify all personnel of an emergency situation.
- An assembly point will be designated in the construction compound area and will be marked with a sign. All site personnel will assemble at this point.
- A roll call will be carried out by the Site Manager to account for all personnel on site.
- At this time the Site Manager will decide the next course of action which will be determined by the situation that exists at that time. The Site Manager will advise all personnel accordingly.

All personnel will be made aware of the evacuation procedure during site induction. The Fire Services Acts of 1981 and 2003 require the holding of fire safety evacuation drills at specified intervals and the keeping of records of such drills.

4.3.5 Environmental Emergency Response Procedure

4.3.5.1 Spill Control Measures

Every effort will be made to prevent an environmental incident during the construction phase of the proposed project. Oil/Fuel spillages are one of the main environmental risks that will exist on the proposed site which will require an emergency response procedure. The importance of a swift and effective response in the event of such an incident occurring cannot be over emphasised. The following steps provide the procedure to be followed in the event of such an incident.

- Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers.
- If applicable, eliminate any sources of ignition in the immediate vicinity of the incident.

- Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill.
- If possible, cover or bund off any vulnerable areas where appropriate such as drains, watercourses or sensitive habitats.
- If possible, clean up as much as possible using the spill control materials.
- Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited.
- Notify the Environmental Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action.
- The Environmental Manager will inspect the site and will assist by providing any advice possible to ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.
- The Construction Manager will notify the appropriate regulatory body such as Clare County Council and EPA etc. if deemed necessary.

4.3.5.2 Environmental Incident Response Procedures

Environmental incidents are not limited to just fuel spillages. Therefore, any environmental incident must be investigated in accordance with the following steps.

- The Environmental Manager must be immediately notified.
- If necessary, the Environmental Manager will inform the appropriate regulatory authority. The appropriate regulatory authority will depend on the nature of the incident.
- The details of the incident will be recorded on an Environmental Incident Form which will provide information such as the cause, extent, actions and remedial measures that were used following the incident. The form will also include any recommendations made to avoid reoccurrence of the incident.
- If the incident has impacted on an ecologically sensitive receptor, such as a sensitive habitat, protected species or designated conservation site, (SPA or SAC), the Environmental Manager will liaise with an Ecologist.
- A record of all environmental incidents will be kept on file by the Environmental Manager and the Main Contractor. These records will be made available to the relevant authorities such as Clare County Council and the EPA if required.

The Environmental Manager will be responsible for any corrective actions required as a result of the incident e.g., an investigative report, formulation of alternative construction methods or environmental sampling, and will advise the Main Contractor as appropriate.

4.3.6 Contacting the Emergency Services

4.3.6.1 Emergency Communication Procedure

In the event of requiring the assistance of the emergency services the following steps should be taken:

- Stay calm. It is important to take a deep breath and not get excited. Any situation that requires 999/112 is, by definition, an emergency. The dispatcher or call-taker knows that and will try to move things along quickly, but under control.
- Know the location of the emergency and the number you are calling from. This may be asked and answered a couple of times but do not get frustrated. Even though many emergencies call centres have enhanced capabilities meaning they are able to see your location on the computer screen they are still required to confirm the information. If for some reason you are disconnected, at least emergency crews will know where to go and how to call you back.

- Wait for the call-taker to ask questions, then answer clearly and calmly. If you are in danger of assault, the dispatcher or call-taker will still need you to answer quietly, mostly "yes" and "no" questions.
- If you reach a recording, listen to what it says. If the recording says your call cannot be completed, hang up and try again. If the recording says all call takers are busy, WAIT. When the next call-taker or dispatcher is available to take the call, it will transfer you.
- Let the call-taker guide the conversation. He or she is typing the information into a computer and may seem to be taking forever. There is a good chance, however, that emergency services are already being sent while you are still on the line.
- Follow all directions. In some cases, the call-taker will give you directions. Listen carefully, follow each step exactly, and ask for clarification if you do not understand.
- Keep your eyes open. You may be asked to describe victims, suspects, vehicles, or other parts of the scene.
- Do not hang up the call until directed to do so by the call taker.

All staff members will know the address and location of the site as it may be necessary to liaise with the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services.

4.3.6.2 Contact Details

A list of emergency contacts is presented below in Table 4-2.

Table 4-2 Emergency Contacts

Hazard	Emergency Situation
Emergency Services – Ambulance, Fire, Gardaí	999/112
Doctor – Castleconnell Medical Practice	061 377 656
Hospital – St. John's Hospital	061 462 222
ESB Emergency Services	1850 372 999
Bórd Gais Emergency	1850 20 50 50
Gardaí – Castleconnell Garda Station	061377105
Health and Safety Coordinator - Health & Safety Services	TBC
Health and Safety Authority	1890 289 389
Project Supervisor Construction Stage (PSCS): TBC	TBC
Project Supervisor Design Stage (PSDS): TBC	TBC
Client – Roadstone Ltd.	TBC

5.1.1.1 Procedure for Personnel Tracking

All operatives on site without any exception will have to undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.

In the event of a site operative becoming involved in an emergency situation where serious injury has occurred, and hospitalisation has taken place, it will be the responsibility of the Site Manager or next in command if unavailable to contact the next of kin to inform them of the situation that exists.

5.1.1.2 Induction Checklist

Table 4-3 provides a list of items highlighted in this ERP which must be included or obtained during the mandatory site induction of all personnel that will work on the site. This will be updated throughout the various stages of the project.

Table 4-3 Emergency Response Plan Items Applicable to the Site Induction Process

ERP Items to be included in Site Induction	Status
All personnel will be made aware of the evacuation procedure during site induction.	
Due to the location of the site, it may be necessary to liaise with and assist the emergency services on the ground in terms of locating the site. This may involve providing an escort from a designated meeting point that may be located more easily by the emergency services. This should form part of the site induction to make new personnel and sub-contractors aware of any such arrangement or requirement if applicable.	
All operatives on site without any exception will have undergo a site induction where they will be required to provide personal contact details which will include contact information for the next of kin.	

5. MITIGATION AND MONITORING PROPOSALS

5.1 Mitigation Proposals

The Mitigation Measures which will be implemented are presented in this section of the CEMP. The CEMP will be finalised subsequent to any permission granted by Clare County Council and will be updated prior to construction to include, inter alia, any additional requirements pursuant to relevant planning conditions imposed.

By presenting the mitigation proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the future phases of the project.

Table 5-1 Mitigation measures for the Pre-commencement, Construction, and Operational phases

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
Pre-Commencement Phase				
1	CEMP Section 1	All measures identified in this CEMP, which will be finalised subsequent to any permission granted and updated prior to construction will include all mitigation measures identified to be adhered to during the pre-commencement and construction phases of the Proposed Development.		
2	CEMP Section 4.1	Environmental Manager to monitor all site works and to ensure that methodologies and mitigation are followed throughout construction to avoid negatively impacting on the receiving environment.		
3	CEMP Section 4.2	The main contractor will be required to engage a qualified Project Ecologist to ensure that methodologies and mitigation are followed throughout construction to avoid negatively impacting on the receiving environment.		
4	CEMP Section 2.4.2.1	A new chain-link perimeter fence will be constructed on the eastern and northern boundaries of the extraction area within the site. The site gates will be locked and secured outside operating hours. Warning signs are placed and will be maintained at the quarry entrance and perimeter fencing. It is also proposed to install closed-circuit television (CCTV) security cameras (subject to planning permission) at the site, to monitor site operations. The contractor will be required to undertake the following. › Operate a Site Induction Process for all site staff. › Ensure all site staff shall have current 'Safe Pass' cards. › Maintain Site Security staff at all times.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		A parking area for construction workers vehicles will be provided within the site. There will be no parking permitted for any vehicles associated with the project on the public road during the construction phase of the development unless agreed with Clare County Council.		
Construction Phase				
Cement Based Products Control Measures				
5	CEMP Section 3.1.3	› No batching of wet-cement products will occur on site; › Ready-mixed supply of wet concrete products will be used; › Where concrete is used on site, only the chute will be cleaned, using the smallest volume of water practicable. Washout will be into a skip; › No discharge of cement contaminated waters to the site phase drainage system or directly onto bare ground; › The pour site (i.e. soil inspection shed floor slab) will be kept free of standing water and plastic covers will be ready in case of a sudden rainfall event; and › Weather forecasting will be used to plan dry days for pouring concrete.		
Fuel and Oil Control				
6	CEMP Section 3.1.4	› No plant maintenance will be completed on site. Any broken-down plant will be removed from the site to be fixed; › All plant and machinery will be serviced before being mobilised to site; › Refuelling will be completed in a controlled manner within the proposed refuelling area which will be served by an oil interceptor; › Mobile double skinned bowser will be used outside the refuelling area; › A spill kit with absorbent material and pads in the event of any accidental spillages will be kept in the bowser. Drip trays and fuel absorbent mats will be used during all refuelling operations;		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Refuelling will be carried out by trained personnel only; › Fuels stored on site during construction phase will be minimised. › Fuel storage areas will be served by an oil interceptor; and, › The plant used during construction will be regularly inspected for leaks and fitness for purpose.		
7	CEMP Section 4.3.5.1	› Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers. › If applicable, eliminate any sources of ignition in the immediate vicinity of the incident. › Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill. › If possible, cover or bund off any vulnerable areas where appropriate such as drains or watercourses. › If possible, clean up as much as possible using the spill control materials. › Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited. › Notify the applicant immediately giving information on the location, type and extent of the spill so that they can take appropriate action and further investigate the incident to ensure it has been contained adequately. › External consultants will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring. › The applicant will notify the appropriate regulatory body such as Clare County Council if deemed necessary.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		Prevention Pollution Control Measures		
8	CEMP Section 3.1.2	› Prior to the commencement of earthworks, silt fencing will be placed down-gradient of the construction areas where surface water may drain towards local watercourses. These will be embedded into the local soils to ensure all site water is captured and filtered; › Drainage will be routed through a proposed full hydrocarbon interceptor and wetland area before discharging to the existing lagoons on the west of the site for final discharge to ground as permitted under existing discharge licence WP170. › Daily monitoring and inspections of any constructed site drainage channels during the construction phase will be completed; and › Any requirement for temporary fills or stockpiles will be sealed with the back of an excavator bucket, damped down or covered with polyethylene sheeting as required to avoid sediment release associated with heavy rainfall; › The majority of excavated spoil will be reused on site for the construction of berms and restoration works; › All excavated material which is not required for future restoration or berm works will be removed to an authorised waste recovery facility; › Earthworks will not take place during periods of high rainfall to reduce run-off and potential siltation of watercourses. 'High rainfall' is defined as follows: ○ >10 mm/hr (i.e. high intensity local rainfall events); or ○ >25 mm in a 24-hour period (heavy frontal rainfall lasting most of the day); or, ○ Rainfall total greater than monthly average recorded in 7 consecutive days (prolonged heavy rainfall over a week).		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		Dust Control		
9	CEMP Section 3.2	› The hardstanding/roads adjacent to the site will continue to be regularly inspected by the Site 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). › If necessary, sporadic wetting of loose stone and soil surface will be carried out during the construction phase to minimise movement of dust particles to the air. › The transport of material, which has significant potential to cause dust, will be undertaken in tarpaulin-covered vehicles. › Water spraying of stockpiles will be carried out when necessary to reduce the production of dust. › Water sprays will be used as required during transfer and loading activities, during dry and/or windy conditions. › All vehicles required to pass through the wheel wash on exiting the site. › All plant and machinery will be maintained in good operational order while onsite. › All plant and shall be stored in the dedicated compound area. › It is proposed that dust deposition monitoring using the Bergerhoff Method, be carried out in line with the existing monitoring requirements. › Following reinstatement, the area will be reseeded to facilitate immediate revegetation of the site and prevent dust generation.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		General Air Quality		
10	3.3	› All on-site plant and vehicles will be maintained in good operational order, thereby minimising any emissions that arise. › When stationary, delivery and on-site vehicles will be required to turn off engines. › Users of the site will be required to ensure that all plant and vehicles are suitably maintained to ensure that emissions of engine generated pollutants is kept to a minimum.		
		Noise Control		
11	CEMP Section 3.4	› 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; › Orienting directional noise away from sensitive areas where possible; and › Monitoring of noise will continue at the existing and proposed locations (as set out in Chapter 10) › All mobile equipment is throttled down or switched off when not in use.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		Traffic Management		
12	CEMP Section 3.5	› Warning signs / Advanced warning signs will be installed at appropriate locations in advance of the construction site access locations. › Speed limits of construction vehicles to be managed by appropriate signage, to promote low vehicular speeds. › Existing quarry traffic construction management plan to be followed. › Construction and delivery vehicles will be instructed to use only the approved and agreed means of access; and movement of construction vehicles will be restricted to these designated routes. › Appropriate vehicles will be used to minimise environmental impacts from transporting construction material, for example the use of dust covers on HGVs carrying dust producing material. › Parking of vehicles will be in the existing designated area on site. › Deliveries of construction materials will be planned to ensure that the materials are delivered only as they are required and will avoid peak hours when possible. › Checking public roads in the vicinity of the site for signs of spillages. A road sweeper is also available for use on site and adjacent sections of the R466 Regional Road at least on a weekly basis and/or if a spillage occurs. › On site wheel washing will be undertaken for construction vehicles to remove any debris prior to leaving the site, › Traffic on site will be controlled by the Facility Manager. › The weighbridge operator will provide the primary means of marshalling traffic.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
Biodiversity Management				
Otter Protection				
13	Chapter 5 Section 5.5.2.2.2	❯ All plant and equipment for use will comply with Statutory Instrument No 359 of 1996 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996". ❯ Operating machinery will be restricted to the Proposed Development site boundary. ❯ Work will be completed during daylight hours. However, if lighting is needed for construction during certain periods over winter months, this lighting will be limited and will face downwards, with no lighting focussed onto surrounding habitats or watercourses. ❯ Regular maintenance of plant will be carried out in order to minimise noise emissions. Particular attention will be paid to the lubrication of bearings and the integrity of silencers. ❯ All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the works. ❯ Compressors will be of the "sound reduced" models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers. ❯ Machines, which are used intermittently, will be shut down during those periods when they are not in use.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		Bat Protection Measures		
14	Chapter 5 Section 5.5.2.2.4	› Working at night will be avoided. Where unavoidable, the following mitigations will be applied to carry out work in dark conditions: ○ Exterior lighting, during construction, shall be designed to minimize light spillage, thus reducing the effect on remaining foraging and commuting habitats i.e. Lighting will be directed away from linear features around the periphery of the site to minimize disturbance to bats. ○ Directional accessories will be used to direct light away from these features, e.g. through the use of light shields. ○ The luminaries will be of the type that prevent upward spillage of light and minimize horizontal spillage away from the intended lands. › All plant and equipment for use will comply with Statutory Instrument No 359 of 1996 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996". › Plant machinery will be turned off when not in use. › Operating machinery will be restricted to the proposed works site area. › Four no. 2FN Woodcrete bat boxes will be erected on mature trees throughout the site to provide additional roosting opportunities. Bat boxes should have a southerly orientation and be positioned at least 2m from the ground (ideally 3m), away from artificial lighting. They will be placed adjacent to retained vegetation features such as treelines and hedgerows to ensure they are close to existing flight paths and can avoid wide open spaces (Collins, 2023). The exact location of the bat boxes will be determined by a qualified ecologist, however they will be placed within the south-eastern area of the site where tree loss is expected.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› A wildlife tower will be constructed at the north of the site to provide further roosting opportunities for bats, including lesser horseshoe bats		
		Invasive Species Control		
15		› Good construction site hygiene will be employed to prevent the introduction and spread of problematic invasive alien plant species (e.g., Himalayan Balsam, Japanese Knotweed etc.) by thoroughly washing vehicles prior to leaving any site. › All plant and equipment employed on the construction site (e.g., excavator, footwear, etc.) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of invasive plant species. Wheel washing facilities will be provided at the site entrance. All washing must be undertaken in areas with no potential to result in the spread of invasive species. › All infill material required at the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present. › Should despite these measures any invasive alien species be introduced to site, these shall be dealt with in accordance with guidelines issued by the National Roads Authority - The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads (NRA, 2010).		
		Waste Management		
16	CEMP Section 3.7.2	› All waste will be collected in skips and the site will be kept tidy and free of debris at all times. › Waste oils and hydraulic fluids will be collected in leak proof containers and removed from the site for disposal or recycling. It is also essential that all		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		empty oil containers and other hazardous wastes should be disposed of in accordance with the requirements of the Waste Management Act, 1996. › All construction waste materials will be stored within the confines of the site, prior to removal from the site to a licensed waste facility. › No wastewater will be discharged on-site during the construction phase.		
Operational Phase				
Human Health				
17	Chapter 4 Section 4.6.3.1	› A site-specific Health and Safety Plan will be in place for the proposed facility. All site staff will be made aware of and adhere to the company Health and Safety Plan. › Only appropriately qualified and trained personnel will be permitted to operate machinery onsite. › Appropriate barriers and signage will be used. › The Proposed Development site will not be accessible to members of the public. › The site will also be secure to prevent the risk of trespass through signage and provision of barriers.		
General Air Quality				
18	Chapter 8 Section 8.4.4.1	› All on-site plant and vehicles will be maintained in good operational order, thereby minimising any emissions that arise. › When stationary, delivery and on-site vehicles will be required to turn off engines. › Users of the site will be required to ensure that all plant and vehicles are suitably maintained to ensure that emissions of engine generated pollutants is kept to a minimum.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		Dust Emissions		
19	Chapter 8 Section 8.4.4.2	› The hardstanding/roads adjacent the site will continue to be regularly inspected by the Site Manager for cleanliness, and cleaned as necessary. › The site access roads will be checked weekly for damage/potholes and repaired 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. Water bowser movements will be carefully monitored, as the application of too much water may lead to increased runoff. › Water spraying of conveyors and stockpiles will be carried out when necessary to reduce the production of dust. › Water sprays will be used as required during transfer and loading activities, during dry and/or windy conditions. › 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 shall be stored in the dedicated compound area.		
		Land, Soil, and Geology		
20	Chapter 6 Section 6.5.3	› Adoption of a suitable landscape and restoration plan which will be undertaken during the extraction phase and on completion of extraction. › The stripped topsoil will be used to form berms along the site boundaries and for the ultimate restoration of the site.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Sourcing material that is proven to be inert prior to transport to the site; › Pre-agreed source sites for inert material ensuring; no pollutants, unauthorised material, invasive species; › Regular checks of incoming loads to ensure the suitability of imported material within the purpose-built inspection shed; › The site will be operated under an Environmental Management System; › All required pollution prevention measures will be implemented at the site; › The operator will prepare and implement an Emergency response procedure; › The operator will complete environmental monitoring, including local groundwater and surface water monitoring; › Phased restoration of the site will be implemented, and end with the closure of site; › The operator will have a documented waste recording procedure for all material entering the site; and, › No unauthorised dumping of waste will be allowed at the site.		
		Water Protection		
21	Chapter 7 7.4.7.2	› The following procedures will be put in place to ensure only suitable material is imported to the Proposed Development site: as per EPA Guidance on Soil Recovery Waste Acceptance Criteria (2020) and the Consultation Paper Regulation 27(7) National By-Product Criteria for Greenfield Soil and Stone used in Developments" (2022); › Pre-agreed source sites for inert material ensuring; no pollutants, unauthorised material, invasive species; › Testing of the imported soil material prior to arriving at site and additional testing if required within a purpose-built soil inspection shed; › The site will operate under a dedicated Environmental Management System; › All required pollution prevention measures will be implemented at the site; › The operator will prepare and implement an Emergency Response procedure;		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› The operator will complete environmental monitoring, including local groundwater monitoring; › Phased restoration of the site will be implemented, and it will end with the closure of site; › The operator will have a documented recording procedure for all material entering the site; and, › No unauthorised dumping of waste will be allowed at the Proposed Development site.		
22	Chapter 7 Section 7.4.7.5	› On site re-fuelling of machinery will be carried out in a dedicated refuelling area, or using a mobile double skinned fuel bowser outside the refuelling area. A dedicated refuelling area will be constructed as part of the Proposed Development. › No plant maintenance will be completed on site. Any broken-down plant will be removed from the site to be fixed; › Mobile double skinned bowser will be stored in the refuelling area › Drainage from the refuelling areas will be routed through a full hydrocarbon interceptor and a new wetland prior to final discharge to ground within the existing lagoons on the west of the site. There will be an inspection chamber between the wetland and the lagoon for inspection/sampling. › Mobile measures such as drip trays and fuel absorbent mats will be used during all refuelling operations; › Onsite refuelling will be carried out by trained personnel only; › The plant used during construction will be regularly inspected for leaks and fitness for purpose; › An emergency plan for the operational phase to deal with accidental spillages will be implemented as follows:		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Procedures and contingency plans will be set up to deal with emergency accidents or spills. The following steps provide the procedure to be followed in the event of oil/fuel spill or leak: › Stop the source of the spill and raise the alarm to alert people working in the vicinity of any potential dangers; › If applicable, eliminate any sources of ignition in the immediate vicinity of the incident; › Contain the spill using the spill control materials, track mats or other material as required. Do not spread or flush away the spill; › If possible, clean up as much as possible using the spill control materials; › Contain any used spill control material and dispose of used materials appropriately using a fully licensed waste contractor with the appropriate permits so that further contamination is limited; › Notify the Site Manager immediately giving information on the location, type and extent of the spill so that they can take appropriate action; and, › The Site Manager will inspect the site and ensure the necessary measures are in place to contain and clean up the spill and prevent further spillage from occurring.		
Noise Control				
23	Chapter 10 Section 6.4.4	› In order to reduce the noise levels at NSR1, an acoustic barrier of 3 metres height is proposed. To serve as an acoustic barrier, the structure shall have a minimum surface mass of 10 kg/m^2.		
Traffic Mitigation				
24	Chapter 3 Section 3.5.4	› Adequate on-site parking is provided for employees and visitors cars; › Provision of on-speed restrictions; › Routing of vehicles with sensitive regard to local communities;		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› Ensuring that HGVs transporting material to the site are not overloaded; and › Checking public roads in the vicinity of the site for signs of spillages. A road sweeper is also available for use on site and adjacent sections of the R466 Regional Road at least on a weekly basis and/or if a spillage occurs.		
Invasive Species Management				
25	CEMP Section 3.6	The treatment and control of invasive alien species will follow the guidelines set out in the Invasive Species Management Plan (ISMP), included as part of this EIAR. These control methods are summarised in the following sections.		
26	Chapter 5 Section 5.5.3.1.2	› Prior to the commencement of any works, a pre-commencement survey for Himalayan Knotweed will be undertaken by a fully qualified ecologist to determine the locations and extent of the species within the development site and to determine whether there have been any changes in the extent of the infestation since the undertaking of surveys in 2023 & 2024. › The locations and extent of Himalayan Knotweed within Proposed Infill Boundary and north of the man-made pond will be clearly marked out using temporary fencing to ensure they are not disturbed. An exclusion zone surrounding each stand will also be identified and they will inform the extent of the area to be treated as potentially contaminated. The exclusion zone will be 7m. › Toolbox talks will be held with all members of the contractor's team responsible for carrying out measures detailed in this management plan. This will detail locations of infested material and how to carry out work on site in a biosecure way. › Areas infested with Invasive Alien Plant Species (IAPS) will be clearly identified and the specific sites of infestation isolated with fencing or warning tape. › 'Biosecure zone' signs will be erected at each contaminated site to alert workers that IAPS are present and to avoid entering or interfering with these		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		sites. Likewise, any stockpiles of soil that are or could be contaminated with IAPS must be clearly marked. › Designated and clearly marked cleaning and/or disinfection stations will be strategically placed within the work site for use by staff, vehicles and machinery. › Where it is necessary to work in contaminated areas, vehicles with caterpillar tracks will be avoided. › As a precautionary measure, machinery will be thoroughly cleaned down before entering the site to prevent potential spread of invasive species from elsewhere. › All vehicles and equipment that have been used in IAPS control operations will be thoroughly pressure-washed in a designated wash-down area each time they leave the works site and once work in that area has been completed. This also includes footwear, personal protective equipment (PPE), tools, and other light equipment. It is important to remove soil that may contain seeds or plant fragments, which otherwise could be transported along the road corridor as works are being undertaken. › Vehicles leaving contaminated area(s) will either be confined to marked haulage routes protected by root barrier membranes, or be pressure-washed before leaving the area. Only vehicles that are deemed to be biosecure (i.e. sealed so that no soil can escape) shall be used to transport contaminated soil and all will be thoroughly pressure-washed in the designated washdown area before exiting the infested area. › The clean-down area will be underlain with an impermeable membrane such as a radon barrier to prevent contamination resulting from this operation. In addition, a boot wash with a stiff brush will be installed at the edge of the exclusion zone for pedestrian use.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
27	Chapter 5 Section 5.5.3.1.2	› Prior to the outset of works, the plant will be sprayed with herbicide that is suitable for use in or near water such as Glyphosate or 2,4-D Amine. This will be undertaken to reduce above ground biomass. This will be undertaken between May - September or before leaves discolour and fall. Spring treatment is also an option but less effective. The majority of herbicides require living foliage to take up the active ingredient, therefore the more foliage the greater the uptake. Spraying will be undertaken twice, once in early summer (May) and again in autumn (September) to achieve maximum results. Spraying will be carried out by a competent person adhering to the specific label instructions. › Note: After the above spraying schedule, it is still possible for regrowth to occur. Additionally, root materials may still be viable within the soil (can remain viable up to 20 years) and any disturbance to the soil is likely to stimulate more growth. For this reason, it is necessary to carry out both chemical and physical treatment in order to obtain full eradication of the plant. Physical removal of the plant is described below in detail and within the Invasive Species Management Plan (which is included as Appendix 5-3 of Chapter 5).		
28	Chapter 5 Section 5.5.3.1.2	› Particular care is required in relation to the disposal of Japanese and other knotweed species. Where burial is being used to dispose of these species, a non-persistent herbicide shall be applied to the infestation prior to excavation. The material shall then be excavated and subsequently buried to a minimum depth of 5m. The waste shall be covered with a proprietary root barrier membrane layer and infilled with a minimum 5m depth of uncontaminated soil. › Any geotextile membranes used for burial must be undamaged, sealed securely, have a manufacturer's guarantee that it will remain intact for at least 50 years, and be Ultraviolet (UV) resistant. Where burial to a depth of 5m is		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		not possible, the infestation shall be treated with a non-persistent herbicide prior to excavation, excavated and then completely encapsulated in a proprietary root barrier membrane cell. The upper surface of the cell shall be buried to a depth of at least 2m with uncontaminated soil. › Clean down will be carried out using brushes and shovels and power washing will be avoided. This is to prevent potentially contaminated run-off spreading outside the Proposed Development site. › Once the machinery has been cleaned down as much as possible in the dry, the machines will be power-washed, or air blasted to remove any remaining material. The machine will track out of the cell over plywood or other suitable material in order to protect the machine from potential contamination while exiting the contaminated cell area. › Material used for tracking machinery out of the cell will be thoroughly cleaned down under supervision of the invasive species specialist prior to removal off site.		
29	Chapter 5 Section 5.5.3.1.2	› Once burial is complete, in order to prevent potential re-growth of rhizomes, infested areas will be overlain with a solid root barrier membrane. The root barrier membrane must stay intact for at least 50 years. A manufacturers' guarantee is required. This will be sized and installed under the supervision of a suitably qualified ecologist and in accordance with the relevant guidelines. › A layer of no sharps sand or equivalent will be placed on the ground beneath the membrane to ensure that there are no opportunities for it to become ripped. The membrane will be inspected for damage prior to it being laid. › Ideally, the membranes would consist of a single sheet with no joints. However, if joints are necessary, they will be sufficiently overlapped and sealed with a solid seam (either glue, heat or tape as per manufacturer's recommendations).		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› The supervising ecologist will oversee the installation of the membrane and determine whether further measures are required to prevent lateral spread of the plant outward from under the excavated area. › Following satisfactory laying of the membrane, it will be covered with a 50mm sand layer and then a solid concrete cap for extra protection. › Once the soil has been removed, the membrane placed and the slab poured, the site will be considered uncontaminated for the purposes of continued works. › A record will be kept of the affected areas and no further excavations or below ground works will be permitted in these areas.		
30	Chapter 5 Section 5.5.3.1.2	› No ground works should take place on site prior to the application of the site-specific Invasive Species Management Plan (ISMP). The ISMP will ensure all measures are taken to avoid the spread of species listed on the Third Schedule. › Ensure all visitors to the site are made aware of the location of the Himalayan Knotweed recorded and are familiar with its characteristics and method of reproduction. › Machinery operatives and all staff will be given a Toolbox Talk on Himalayan Knotweed and the risks associated with the Third Schedule invasive species prior to any works commencing in either of the Knotweed exclusion zones. › Only people familiar with identifying Himalayan Knotweed will be allowed to work in close proximity to the plant species. › A clearly defined bio-secure clean-down area will be established. Additionally, all bio-secure clean-down area associated measures will be carried out. › No works will take place within the Himalayan Knotweed exclusion zone other than those prescribed in the Invasive Species Management Plan. › All excavation works within the exclusion zone will be supervised by the contractor's ecologist.		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		› All measures prescribed in the Himalayan Knotweed management plan will be incorporated into the contractor's respective method statements for works where Third Schedule invasive species occur. › All soil, river dredge and inert materials imported to infill and regrade the Proposed Infill Boundary will be screened for invasive species by a suitably qualified ecologist before transportation to the site. › All machinery should be thoroughly cleaned down prior to arriving on the site to avoid the potential spread of invasive species from elsewhere. › Good construction site hygiene will be employed to prevent the introduction and spread of problematic invasive alien plant species (e.g., Himalayan Balsam, Japanese Knotweed etc.) by thoroughly washing vehicles prior to leaving any site. › All plant and equipment employed on the construction site (e.g., excavator, footwear, etc.) will be thoroughly cleaned down using a power washer unit prior to arrival on site to prevent the spread of invasive plant species. Wheel washing facilities will be provided at the site entrance. All washing must be undertaken in areas with no potential to result in the spread of invasive species. › All infill material required at the site will be sourced from a stock that has been screened for the presence of any invasive species and where it is confirmed that none are present. › Despite these measures, should any invasive alien species be introduced to site, these shall be dealt with in accordance with guidelines issued by the National Roads Authority - The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads (NRA, 2010). › Should despite these measures any invasive alien species be introduced to site, these shall be dealt with in accordance with guidelines issued by the National Roads Authority - The Management of Noxious Weeds and Non-native Invasive Plant Species on National Roads (NRA, 2010).		

Mitigation Measure	Reference Location	Mitigation Measure	Audit Result	Action Required
		❭ The following management is to be employed when dealing with the medium impact invasive species Buddleia: ❭ As per Transport Infrastructure Ireland (TII) guidelines Buddleia is to be physically removed prior to commencement of construction by excavating all instances of Buddleia from within the site boundary. Care is to be taken to remove all traces of Buddleia from the site as broken branches can root and form new plants.		
Bat Protection Measures				
31	Chapter 5 Section 5.5.3.2.1	❭ Working at night will be avoided. ❭ All plant and equipment for use will comply with Statutory Instrument No 359 of 1996 "European Communities (Construction Plant and Equipment) (Permissible Noise Levels) Regulations 1996". ❭ Plant machinery will be turned off when not in use. ❭ Operating machinery will be restricted to the proposed works site area.		
Waste Management				
32	CEMP Section 3.7.2	❭ All waste will be collected in skips and the site will be kept tidy and free of debris at all times. ❭ Waste oils and hydraulic fluids will be collected in leak proof containers and removed from the site for disposal or recycling. It is also essential that all empty oil containers and other hazardous wastes should be disposed of in accordance with the requirements of the Waste Management Act, 1996. ❭ All construction waste materials will be stored within the confines of the site, prior to removal from the site to a licensed waste facility. ❭ No wastewater will be discharged on-site during the construction phase.		

5.2 Monitoring Proposals

This section of the Construction and Environment Management Plan groups together all of the monitoring proposals presented in the EIAR. The monitoring proposals are presented in the following pages.

By presenting the monitoring proposals in the below format, it is intended to provide an easy to audit list that can be reviewed and reported on during the future phases of the Proposed Development. The tabular format in which the below information is presented, can be further expanded upon during the course of future project phases to provide a reporting template for site compliance audit

Table 5-2 Monitoring measures for the Pre-commencement, Construction, and Operational phases

Monitoring Measure	Reference Location	Monitoring Measure	Audit Result	Action Required
Construction Phase				
1	CEMP Section 4.1	Environmental Manager to monitor all site works and to ensure that methodologies and mitigation are followed throughout construction to avoid negatively impacting on the receiving environment.		
Biodiversity				
Badger Monitoring				
2	Chapter 5 Section 5.5.2.2.1	Prior to the commencement of construction works associated with the Proposed Development, the following measures will be undertaken for the avoidance of disturbance and/or direct mortality to badger and to ensure no setts have been established since the original surveys undertaken. The following measures are in line with *Guidelines For The Treatment Of Badgers Prior To The Construction Of National Road Schemes* (NRA 2009). › From a precautionary basis, a pre-commencement badger survey will be undertaken in accordance with standard best practice guidance prior to the commencement of site works to ensure that no additional setts in close proximity to the site works have been built. In the event that a badger sett is identified within or immediately adjacent to the Proposed Development footprint, mitigations as per the above referenced TII document will be implemented for the new sett.		

Monitoring Measure	Reference Location	Monitoring Measure	Audit Result	Action Required
		Otter Monitoring		
3	Chapter 5 Section 5.5.2.2.2	› No signs of otter were found during the dedicated otter surveys. However, from a precautionary basis, pre-commencement survey for otter will be carried out prior to any works commencing. Should otter holts be recorded within 150m of the proposed works, a derogation license will be obtained from NPWS and works carried out in accordance with National Road Association (NRA) (2006) *Guidelines for the Treatment of Otters prior to the Construction of National Road Schemes*. The otter survey will be carried out no more than 10 months in advance of commencement.		
		Pine Marten Monitoring		
4	Chapter 5 Section 5.5.2.2.3 and Section 5.5.3.2.2	› From a precautionary basis, a pre-commencement pine marten survey will be undertaken in accordance with standard best practice guidance prior to the commencement of site works to ensure that no refuges/dens in close proximity to Proposed Development site works have been built. › A pre-commencement sand martin survey will take place during the breeding season (March-August inclusive), at the locations of the burrowing nests found within the Proposed Extraction Boundary during the 2023 surveys. Dedicated surveys will determine if the previous year's nests are active and if additional nests have formed in the interim. ○ If the tunnelling nests are found to be occupied by sand martin, the excavation works within the proposed excavation boundary will be undertaken in accordance with the provisions of the Wildlife Act 1976, as amended.		

Monitoring Measure	Reference Location	Monitoring Measure	Audit Result	Action Required
		Bat Monitoring		
5	Chapter 5 Section 5.5.2.2.4	A pre-commencement survey will be undertaken on trees proposed to be felled by a qualified ecologist to ensure there are no roosting bats at the time of felling. The requirement for a pre-construction survey does not represent a lacuna in the survey assessment but is fully in line with industry best practice. The function of this survey will be to assess the baseline environment since the time of undertaking the surveys in 2023. If a bat roost is identified within any of the trees to be removed, a bat derogation licence will be obtained from the National Parks and Wildlife Service (NPWS), prior to felling and the felling activity will be supervised by a qualified ecologist. › The pre-commencement survey will involve an inspection and/or dusk emergence survey of potential roosting features on the trees to be felled. Due to the potential for use by roosting bats at any time of the bat activity season, and potential use during winter, the following precautionary measures are also recommended: › Trees will be nudged two or three times prior to limb removal, with a pause of 30 seconds in between, to allow potential bats to wake and move. › Felled trees will be left in-situ for a minimum of 24 hours prior to sawing or mulching, to allow any bats present to escape (National Roads Authority, 2006)[1].		

[1] *National Roads Authority (2006) Guidelines for the treatment of badgers prior to the construction of National Road Schemes.*

Monitoring Measure	Reference Location	Monitoring Measure	Audit Result	Action Required
Construction and Operational Phases				
Groundwater Quality Monitoring				
6	Chapter 7 Section 7.4.9	Groundwater quality monitoring will be completed during the construction and operational phases (extraction & infilling) and for 1 year following the closure of the Proposed Development site. Monitoring will be completed on a quarterly basis at existing wells GW1-GW4		
Dust Monitoring				
7	Chapter 8 Section 6.4.3.2	› Dust monitoring at the existing quarry site is undertaken monthly by BHP Laboratories on behalf of Roadstone. The dust monitoring records are submitted to Clare County Council to ensure compliance with Condition 9 of the planning permission no. P17/552 for the importation of inert materials for the purpose of restoration. › It is proposed that dust deposition monitoring using the Bergerhoff Method, be carried out in line with the existing monitoring requirements.		
Noise Monitoring				
8	Chapter 10 Section 10.3.2	› BHP Ltd has been carrying out annual noise surveys at the Roadstone facility within Ballyquin, Co. Clare. Noise monitoring was carried out for a period of 15 minutes at 4 locations on a biannual basis. › Monitoring of noise will continue at the existing and proposed locations (Chapter 10).		

6. PROGRAMME OF WORKS AND TIMING

6.1 Construction Phase

Construction works at the site will be minimal. It is estimated that the construction phase of the proposed works required will take approximately 1 month. The construction phase will include:

- Preparation of site for construction;
- Stripping of overburden soils under archaeological supervision for use in construction of environmental berms and ongoing site restoration works;
- Removal of existing internal hedgerows in greenfield extraction area,
- Pouring of concrete for soil inspection area/refuelling area foundation;
- Construction of new drainage network and fuel/oil interceptor at refuelling area;
- Erection of quarantine inspection shed;
- Road paving/improvements;
- Construction of settlement ponds;
- Construction of a fixed processing plant including water management system and ponds for the washing of aggregates; and
- Construction of a new chain-link perimeter fence on the eastern and northern boundaries of the extraction area.

It is anticipated that normal construction working hours will be in line with the opening hours for the existing operational quarry where include:

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

7. COMPLIANCE AND REVIEW

7.1 Site Inspections and Environmental Audits

Routine inspections of activities will be carried out on a daily and weekly basis by the Site Environmental Manager/Construction Manager as appointed by the applicant to ensure all controls to prevent environmental impact, relevant to the construction activities taking place at the time, are in place.

Environmental inspections will ensure that the works are undertaken in compliance with this CEMP. Environmental site inspections will be carried out by suitably trained staff.

7.2 Environmental Compliance

The following definitions shall apply in relation to the classification of Environmental Occurrences during the infilling works:

Environmental Near Miss

An occurrence which if not controlled or due to its nature could lead to an Environmental Incident.

Environmental Incident

Any occurrence which has potential, due to its scale and nature, to migrate from source and have an environmental impact beyond the site boundary.

Environmental Non-Compliance

Non-fulfilment of a requirement and includes any deviations from established procedures, programs and other arrangements related to the CEMP.

7.3 Corrective Action Procedure

A corrective action is implemented to rectify an environmental issue on-site. Corrective actions will be implemented by the Construction Manager, as advised by the Site Environmental manager. Corrective actions may be required as a result of the following.

- Environmental Audits.
- Environmental Inspections and Reviews.
- Environmental Incidents; and,
- Environmental Complaints.

A Corrective Action Notice will be used to communicate the details of the action required to the main contractor. A Corrective Action Notice is a form that describes the cause and effect of an environmental problem on site and the recommended corrective action that is required. The Corrective Action Notice, when completed, will include details of close out and follow up actions.

If an environmental problem occurs on site that requires immediate attention direct communications between the Construction Manager and the Site Environmental manager will be conducted. This in turn will be passed down to the site staff involved. A Corrective Action Notice will be completed at a later date.