PURSER

Volume 2:

22

Mitigation and Monitoring Proposals

22.0 Mitigation and Monitoring Measures

22.1 Introduction

This chapter of the EIAR includes all of the mitigation and monitoring measures identified in the EIAR. The mitigation and monitoring measures listed below are those contained in the EIAR topic-specific chapters (Chapters 7 to 19) included in Volume 2 of the EIAR.

As noted in Chapter 2: EIA Process and Methodology, embedded mitigation measures are those that are identified and adopted as part of the evolution of the proposed development's design and operation of the project. Such measures are considered in the significance of effect assessment (i.e. they are assumed to form part of the design of the proposed development prior to any assessment). Embedded measures also include industry best practice.

As also noted in Chapter 2: EIA Process and Methodology additional mitigation measures are those that are identified during the impact assessment process specifically to reduce or eliminate any predicted significant adverse effects.

The EPA's 2022 Guidelines state that an EIAR should include the following:

> "*A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases*."

In accordance with the EPA's 2022 Guidelines, this chapter:

- collates and reproduces/ lists the relevant measures that have been prescribed in each of the specialist environmental Chapters to avoid, prevent, reduce or, if necessary, offset any potential significant adverse effects on the environment associated with the construction and operational stages of the proposed project; and
- does not seek to elaborate on the reasoning or expected effectiveness of those measures, as this is provided within the main body of each specialist Chapter.

22.2 Mitigation

Figure 3.5 of the EPA's 2022 Guidelines sets out a recommended strategy for identifying appropriate mitigation or offsetting measures for a proposed project. This strategy is reproduced below at **Figure 22.1** for completeness.

The strategy contained in the EPA's 2022 Guidelines has been considered in, and has informed, each of the specialist environmental factor Chapters within this EIAR as well as the measures prescribed to address any potential significant effects associated with the construction and operation stages of the proposed project.

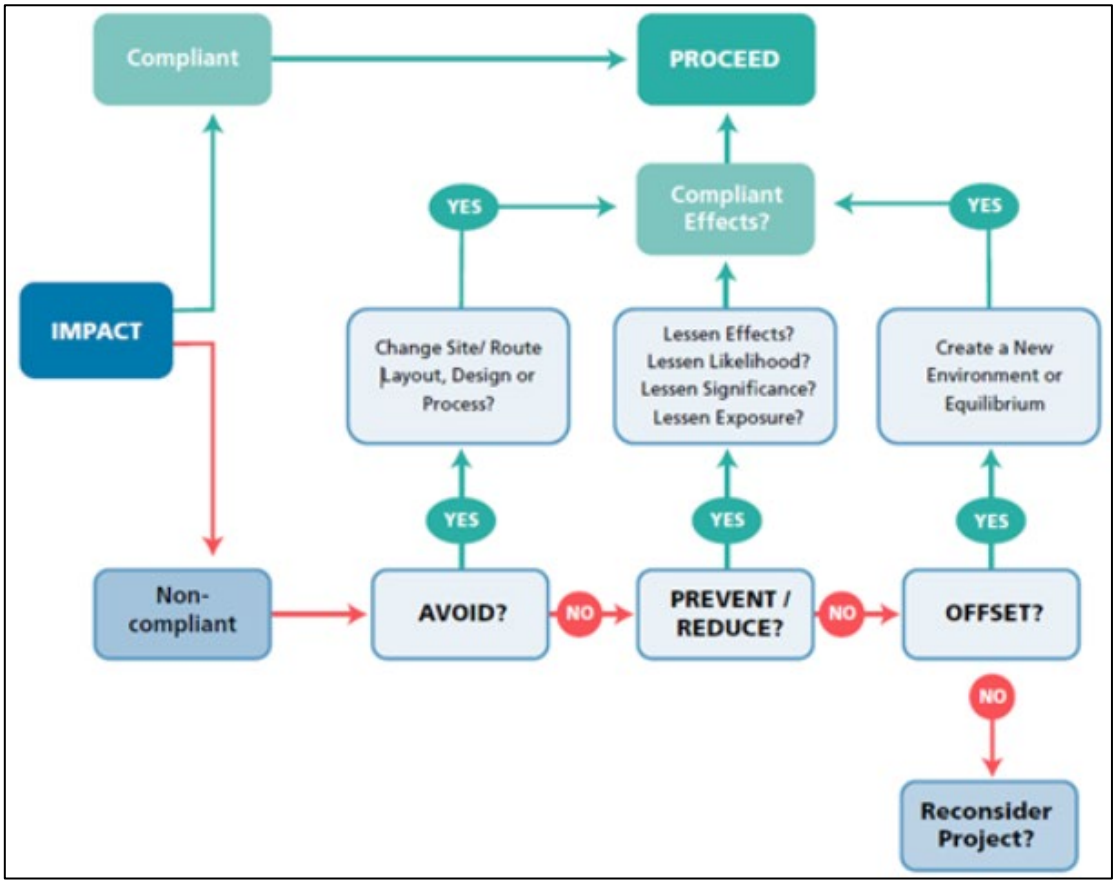

Figure 22.1: Strategies for identification of Appropriate Mitigation or Offsetting Measures Leading to a Decision to Proceed with the Project. (Source: EPA 2022 Guidelines).

22.3 Monitoring

The EPA's 2022 Guidelines advise that

> "*It may be appropriate, where relevant, to propose monitoring takes place after consent is granted in order to check that the project in practice conforms to the predictions made during the EIA and to record any unforeseen effects in order to undertake appropriate remedial action*".

The EPA's 2022 Guidelines further advise that

"*Monitoring checks that proposed systems are operating as intended. This allows adjustments of operations to be made to ensure compliance with consent conditions such as emission limit values, conditions of operation, performance criteria indicators and detection of unexpected mitigation failures*".

22.4 Mitigation and Monitoring Measures

Table 22.1 identifies separate technical documents which accompany and have informed the environmental assessment of the proposed project and the identification of relevant mitigation and monitoring measures.

In preparing the EIAR Chapters for each specialist environmental factor, the authors have reviewed and had regard to the information contained within these technical documents, and similarly, the authors of each of the technical documents have reviewed and had regard to the information contained in each of the specialist EIAR chapters.

As a result, both the specialist EIAR chapters and the technical documents have been informed by each other to ensure that relevant mitigation and monitoring measures are identified which will reduce the potential for any significant effects associated with the construction and operation stages of the proposed project.

Appendix	Title
Appendix 1.1	List of Competent Experts
Appendix 3.1	Planning History of the Site (as a Mine)
Appendix 9.1	Ground Investigation & Geotechnical Report and Waste Characterisation Assessment
Appendix 9.2	Lisheen Mine Closure, Restoration and Aftercare Management Plan 2016
Appendix 10.1	Ground Investigation & Geotechnical Report and Waste Characterisation Assessment
Appendix 11.1	Description of the AERMOD Model
Appendix 11.2	Meteorological Data – AERMET
Appendix 13.1	RAW Unattended Measurement Results
Appendix 14.1	Transport Assessment
Appendix 14.2	Traffic Survey Results
Appendix 14.3	Mobility Management Plan
Appendix 17.1	SMR/RMP Sites within study area
Appendix 17.2	Legislation Protecting the Archaeological Resource
Appendix 17.3	Legislation Protecting the Architectural Resource
Appendix 17.4	Impact Assessment and the Cultural Heritage Resource
Appendix 17.5	Mitigation Measures and Cultural Heritage Resource
Appendix 18.1	Verified Photomontages and CGIs
Appendix 21.1	Long list of "other existing and/or approved projects" which are potentially relevant

Table 22.1: Technical Documents supporting the EIAR and contained in Volume 3 – Appendices of this EIAR. (Source: Purser).

It is important that this chapter, and the wider EIAR document, is read in conjunction with the accompanying technical documents identified in **Table 21.1** as well as the other technical documents which form part of the wider planning application package, but which are not appended in Volume 3 of this EIAR.

Each specialist chapter in this EIAR makes reference to the technical documents that are relevant to, and have informed the assessment of, each respective environmental factor, and also identify/reproduce relevant mitigation and monitoring measures.

The following tables provide a record of the mitigation and monitoring measures prescribed for each environmental factor in the specialist chapters of this EIAR with respect to the construction and operation stages of the proposed project.

22.4.1 Population and Human Health

Construction Stage – Mitigation Measures
A Construction Management Plan (CMP) has been prepared in respect of the proposed project by DOBA Ltd (Appendix . The CMP contains best practice mitigation measures to be implemented during the construction phase of the proposed project to avoid/minimise any potential impacts with respect to 'Population and Human Health', such as measures in relation to site hoarding and security, site management, pollution control, traffic management, and etc.
Operation Stage – Mitigation Measures
No specific mitigation measures are proposed with respect to 'Population and Human Health' during the operation stage of the proposed project noting the measures already specified in each of the specialist EIAR chapters and the technical documents accompanying this EIAR/planning application package. Measures such as Pest Control will be carried out on an on-going process during the operation stage of the development. Safety measures such as the storage of dangerous chemicals, release of emissions will be closely monitored and best practice procedures will be carried out. This will ensure there will be no impact on Human Health during this stage.

Table 22.2: Mitigation Measures – Population & Human Health

Construction and Operation Stages – Mitigation Measures
No specific monitoring measures are proposed with respect to 'Population and Human Health' during the construction and operation stages of the proposed project noting the measures already specified in each of the specialist EIAR chapters and the technical documents accompanying this EIAR/planning application package.

Table 22.3: Monitoring Measures – Population and Human Health

22.4.2 Biodiversity

Construction Stage – Mitigation Measures

Protection of Habitats

To prevent incidental damage to trees and habitats designated for retention during the site clearance stage, these areas will be securely fenced early in the construction phase. The fencing will be made clearly visible to machine operators to ensure effective protection.

To mitigate the risk of Japanese Knotweed (*Fallopia japonica*) being inadvertently introduced to the site, the contractor will be required to inspect vehicles before they are used on-site, with particular attention to caterpillar tracks and areas where trucks and dumpers are stored. The supplier of any fill material will need to provide a guarantee that the fill does not contain invasive alien species. Additionally, the fill will be inspected for signs of invasive alien species before being imported to the site.

The inspection of topsoil and fill material will follow the guidelines set out in the British Standard Specification for topsoil, as detailed in BS 3882:2015, which provides requirements for the inspection and use of topsoil. Guidance from the Invasive Non-Native Specialists Association (INNSA) Code of Practice for Managing Japanese Knotweed (INNSA, 2017) should also be adhered to. In Ireland, the procedures for managing invasive species, are also informed by Ireland's Invasive Alien Species Soil and Stone Pathway Action Plan 2023–2027. This plan outlines specific actions to prevent the spread of invasive species through soil and stone movements and should be adhered to ensure compliance with national regulations and best practices.

Protection of Soil, Surface Waters and Groundwater

Storm water will be managed carefully during construction. In general, stormwater will be infiltrated into the ground via silt traps and managed soakaways. Laydown areas will be suitably drained, and any areas involving the storage of fuel and refuelling will be paved and bunded. Hydrocarbon interceptors will be installed to ensure that no spillages will get into groundwater. The employment of good construction management practices will minimise the risk of pollution to soil, stormwater run-off, surface water, or groundwater.

Pollution management measures will be implemented to prevent contamination by machinery pollutants, such as fuels, oils and lubricants during construction and operation activities. These measures will be informed by guidance provided in relevant documents, such as the CIRIA guides to environmental good practice on site.

To prevent any pollution incidents that might potentially cause deterioration of the aquatic environment it is proposed that a series of best practice measures are introduced throughout the construction works, in accordance with CIRIA's guideline documents C532 (CIRIA, 2001) and C741 (CIRIA, 2015), and C649 (CIRIA, 2006).

The following measures will protect soil, surface waters and groundwater during the construction phase of the proposed development as per the CEMP:

- Earthworks operations shall be carried out such that surfaces shall be designed with adequate falls, profiling and drainage to promote safe run-off and prevent ponding and flooding;
- Run-off will be controlled to minimise the water effects in outfall areas;
- All concrete mixing and batching activities will be located in areas away from watercourses and drains;
- Good housekeeping (site clean-ups, use of disposal bins, etc.) will be implemented on the site.

Dust Control

Dust control measures are outlined below:

- During the construction process, water suppression shall be used, preferably with a hand-held spray. Only the use of cutting, grinding or sawing equipment fitted or used in conjunction with a suitable dust suppression technique such as water sprays / local extraction should be used.
- Drop heights from conveyors, loading shovels, hoppers and other loading equipment shall be minimised, if necessary fine water sprays will be employed.
- Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic.
- Any road that has the potential to give rise to fugitive dust will be regularly watered, as appropriate, during dry and / or windy conditions.
- Vehicles exiting the site shall make use of a wheel wash facility prior to entering public roads.
- Vehicles using site roads will have their speed restricted, and this speed restriction will be enforced rigidly. A speed limit of 20 kmph will be enforced on site roads.
- Public roads and footpaths outside the site will be regularly inspected for cleanliness and cleaned, as necessary. If sweeping using a road sweeper is not possible due to the nature of the surrounding area, then a suitable smaller scale street cleaning vacuum will be used.
- Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used, as required, if particularly dusty activities are necessary during dry or windy periods.
- During movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions.
- Hoarding or screens shall be erected around works areas to reduce visual impact. This will also have an added benefit of preventing larger particles of dust from travelling off-site and impacting receptors.

Noise Control

During the construction works, the Main Contractor will adhere to current regulations, codes of practice, and guidelines for noise and vibration monitoring. Risk assessments will be undertaken to assess the potential noise levels for building operatives. Noise arising from activities on site will be controlled in accordance with the requirements of British Standard BS5228.

Noise Control at Source:

All items of plant should be subject to regular maintenance. This maintenance can prevent unnecessary increases in plant noise and help prolong the effectiveness of noise control measures. Construction activities related to the proposed development are expected to occur during normal working hours.

Wherever possible, noise should be controlled at source:

- Avoid unnecessary revving of engines and switch off equipment when not required.
- Minimise drop height of materials.
- Start-up plant and vehicles sequentially rather than all together.

Considerate Construction

Prior to construction commencing, the pollution preventative measures outlined above will be inspected and certified by the site Environmental Manager or an appropriately qualified person appointed by the client. This person shall have overall responsibility for implementation of environmental protection measures. On appointment and prior to commencement of construction works the name and contact details for this person shall be supplied to Tipperary Council.

A site Liaison Officer (LO) should be appointed for the project as part of the site management team. The LO will act as a single point of contact to engage with the local community and respond to concerns, while keeping local residents informed via email of progress and timing of particular construction activities that may impact them. The Project Manager will be charged with the responsibility of keeping people informed of progress and by setting down procedures for dealing with complaints.

The Main Contractor should promote and encourage a safe, considerate, clean and responsible construction site.

Waste Management

The Main Contractor will effectively manage, and control waste generated by the project in line with the *Best Practice Guidelines on the Preparation of Waste Management Plans for Construction and Demolition Projects* (DEHLG, 2006). The site-specific Waste Management Plan will detail the exact nature of the procedures.

No material, other than inert material, will be removed from the site.

A register for all trucks entering and leaving the site, including time, date, and other relevant details, will be maintained and updated daily from waste docket records submitted by each truck.

Waste collection dockets will detail:

- Customer
- Site address
- Name of waste carrier
- Waste collection permit

- Vehicle registration number
- Excavation reference
- Time of departure
- Waste classification
- Composition and nature of waste
- Weight of waste (to be completed by waste facility)

In addition to the inherent design measures during the construction phase, the following mitigation measures are proposed:

- The Contractor will minimise waste disposal, so far as is reasonably practicable.
- Waste from the proposed project will be transported by authorised waste collectors, in accordance with the Waste Management (Collection Permit) Regulations, 2007 (as amended).
- Waste from the proposed project will be delivered to authorised waste facilities, in accordance with the Waste Management Acts 1996 (as amended).
- Where possible, metal, timber, glass and other recyclable materials will be segregated during construction works and removed off-site to a permitted/licensed facility for recycling. Colour coding and photographs of wastes to be placed in each container, as required, will be used to facilitate segregation. Where waste generation cannot be avoided, this will maximise the quantity and quality of waste delivered for recycling, facilitate its movement up the waste hierarchy away from landfill disposal, and reduce its environmental impact.
- Where reasonably practicable, materials will be delivered on a 'just-in-time' basis to minimise wastage by ensuring that materials arrive at the construction site only when they are needed, rather than being stored on-site for extended periods.
- Where reasonably practicable, the Contractor will engage with the supply chain to provide products and materials that use minimal packaging, and segregate packaging for reuse.
- The Main Contractor will record the quantity and types of waste and materials leaving site during the construction phase.

<u>Refuelling</u>

- Construction plant and equipment shall only be parked over-night within the construction compound. Construction plant and equipment shall be checked daily for any visual signs of oil or fuel leakage, as well as wear and tear.
- Fuels stored on-site will be minimised. Any storage areas will be bunded appropriately for the fuel storage volume for the duration of the construction phase.
- For any liquid other than water, this shall include storage in suitable tanks and containers which shall be housed in the designated area surrounded by bund walls of sufficient height and construction so as to contain 110 per cent (110%) of the total contents of all containers and associated pipework. The floor and walls of the bunded areas shall be impervious to both water and oil.
- All liquids, solids and powder containers will be clearly labelled and stored in sealable containers.
- Where contractors are required to refuel vehicles on-site, this will be carried out at the designated refuelling location by competent personnel. All refuelling areas will be on areas of hard standing at

designated areas agreed by an appropriately qualified person. Spill kits will be provided in all areas where liquids are stored and at any refuelling areas.

- The local authority shall be informed immediately of any spillage or pollution incident that occurs on-site during the construction phase.
- All small plant, such as generators and pumps, will be stood in drip trays capable of holding 110% of their tank contents.
- All small plant will be positioned as far as practicable from the relevant watercourses.
- Waste oils, empty oil containers, and other hazardous wastes will be disposed of in accordance with requirements of the Waste Management Act, 1996.

Site Tidiness and Housekeeping

A 'good housekeeping' policy will be employed by the Main Contractor at all times. The site induction will communicate the importance of site housekeeping and tidiness. In addition to measures outlined in the previous sections, the following measures shall be implemented to maintain site tidiness.

- Construction works will be carried out according to a defined schedule agreed upon with the client and the relevant contractors, with regard to the specified hours of work. Any delays or extensions required will be communicated to the client and contractors at the earliest opportunity.
- Contractors will ensure that road edges and footpaths are swept on a regular basis, this includes the local roadways adjacent to the proposed development site. A road sweeper will be deployed if required.
- All contractors shall be responsible for the clearance of their plant, equipment and any temporary buildings upon completion of construction. The site will be left in a safe condition.
- All mobile equipment brought to the site shall be thoroughly power washed and cleaned prior to arrival at site, to avoid transport of alien invasive species.
- Ensure general maintenance of working areas and cleanliness of welfare facilities and storage areas.
- Provide a site layout map showing key areas such as first aid posts, material storage, spill kits, material and waste storage, welfare facilities, etc.
- Display details of site managers, contact numbers (including out of hours contacts), and public information signs (including warning signs) at the boundaries of the working areas.
- Keep the construction compound, access routes and designated parking areas free of excess dirt, rubbish piles, scrap wood, etc. at all times.
- Ensure provision of adequate welfare facilities for site personnel.
- Provide appropriate waste management facilities and arrange regular collections.
- Implement effective measures to prevent infestation from pests or vermin, including arrangements for regular disposal of food and materials that may attract pests.
- Maintain public rights of way, diversions, and entry/exit areas around working sites for car users, pedestrians and cyclists where practicable, and to ensure inclusive access, as necessary.
- Material handling and/or stockpiling of materials, where permitted, will be appropriately located to minimise exposure to wind.
- Maintain self-contained wheel washing facilities at the construction compound and other contaminant measures as required.

- Open fires will be prohibited at all times.
- All flammable waste materials, such as timber, should be removed regularly to reduce risk of fire.

Protection of Flora and Fauna

The contractor will appoint a suitably qualified person to act as Ecological Clerk of Works (ECoW) to oversee the implementation of measures for the prevention of pollution to the receiving environment.

Excavated inert material may be temporarily stockpiled in a designated area for later reuse within the development. This material will be reused where possible within the development site. Stockpiled material is to be located a minimum of 50m from any drainage route off-site.

There will be on-going monitoring of wildlife in the vicinity of the construction site. Any unusual species, dead species or damaged habitats should be reported immediately to the Construction Manager and/or Environmental Officer. This will be co-ordinated with the appointed Ecologist for the project.

Good working practices concerning environmental factors affecting ecology will be maintained during the construction phase. For example, construction noise and construction phase lighting will be kept to a minimum.

The spread and introduction of invasive species and noxious weeds will be prevented by adopting mitigation measures as per guidance issued by the NRA (2010).

If unexpected ecological habitats are uncovered, site contractors must adhere to the habitat protection protocol. This protocol is designed to ensure that ALL personnel working on the construction site are fully aware of their legal obligations under the Wildlife Act 1976, as amended. This Act affords protection to a range of wildlife in Ireland, including wild birds, animals, and plants. Where a project has received permission to proceed, this does not override certain laws that prevent wilful harm to protected species.

The following measures are applicable to the proposed development site:

- Should the removal of scrub, hedgerow, tree felling, or delimbing be required, this will be carried out outside of the bird breeding season (1st March to 31st August inclusive). A pre-works check by a qualified ecologist should be undertaken to ensure nesting birds are absent.
- All birds, along with their eggs, nests and young - with the exception of certain species - are protected under the Wildlife Acts. Any areas of the site found to contain nests will be cordoned off to a distance of 20m from the nests, and all plant and construction activities will remain outside of this cordon until the young have fledged (left the nest entirely). The 20m radius will be centred on the nest site, and each nest would be protected by an equivalent circle. All other areas are safe for operations.
- Sufficient on-site cleaning of vehicles prior to arrival and upon leaving the site, as well as on nearby roads, will be carried out, particularly during groundworks. Contractor's vehicles and equipment will be thoroughly cleaned and then dried using high-pressure steam cleaning, with water >65 °C, in addition to the removal of all vegetative material.

- Following cleaning, all equipment and vehicles will be visually inspected to ensure that all adherent material and debris have been removed manually.
- No removed material or run-off will be allowed to enter a waterbody of any sort.
- For any material entering the Site, the supplier must provide an assurance that it is free of invasive species.
- Ensure all site users are aware of invasive species management, biosecurity and treatment methodologies. This can be achieved through 'toolbox talks' before works begin on the Site.
- Adequate site signage, hoarding and fencing will be erected in relation to the management of non-native invasive species as required.
- Plant and equipment to be used during works, will be in good working order, fit for purpose, regularly serviced/maintained, and have no evidence of leaks or drips.
- Any recommendations laid out by Inland Fisheries, shall be implemented to ensure the protection of the relevant watercourses, associated aquatic fauna, and any fisheries hydrologically connected to the site.
- Weather conditions shall be considered during all construction operations, and no plant will enter within 100 metres of the relevant watercourses during or following heavy rain or other conditions likely to lead to large-scale or additional water flow that would carry soil or silt into the watercourses.
- Recent surveys did not identify any bat roosts within the site footprint. Contractors may discover bat roosts and if any bats are found, the Construction Manager and/or Environmental Officer are to be contacted immediately.

Mammals (non-volant)

The following measures shall be implemented to prevent impacts on non-volant mammals:

- Stringent and robust mitigation measures are proposed for the avoidance of impacts affecting water quality.
- A site speed limit of 20 km/h will be strictly enforced to prevent vehicular traffic fatalities.
- Monitoring will continue throughout the construction phase.
- It is recommended that a pre-construction survey be undertaken no later than 6 months prior to construction and ideally immediately prior to the commencement of works within the study area to reconfirm the existing environment and survey results.
- Implement any mitigation and monitoring identified as being required following pre-construction mammal survey (if carried out).
- In general, works close to badger setts may only be conducted under the supervision of a qualified expert and under licence from the NPWS.
- No heavy machinery will be used within 30m of badger setts (unless carried out under licence); lighter machinery (generally wheeled vehicles) should not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance should not take place within 10m of sett entrances. During the breeding season (December to June inclusive), none of the above works should be undertaken within 50m of active setts.
- Fencing will be maintained and regularly checked to ensure effectiveness throughout the construction phase.

- As best-practice, all construction-related rubbish on site (e.g., plastic sheeting, netting, etc.) should be kept in a designated area on-site and off the ground level to protect Hedgehogs and other small mammals (e.g., Pygmy Shrew) from entrapment and death.
- Works likely to cause disturbance during Hedgehog hibernation – for example removal of hibernation habitats such as log piles and dense scrub –should not take place from November to March.
- Vegetation will be removed in sections, working in a consistent direction to prevent entrapment of protected fauna that may be present.
- An ecologist will supervise areas where vegetation, scrub and hedgerow removal will occur prior to and during construction as appropriate (e.g., an ecologist may be required during some clearance works of areas where vegetation is too dense to check beforehand).
- Construction operations will take place during the hours of daylight to minimise disturbances to faunal species at night.
- Vehicular traffic during the construction phase along the site access roads may result in fatalities, however, this is not expected to be significant due to the mainly diurnal requirement for access and speed restrictions which will be in place.
- During construction, open trenches/excavations must incorporate facilities for badgers (and other wildlife, such as otters, foxes, hedgehogs etc.) to escape, by means of gently sloping earth inclines to be left at the end of each workday at each end of any open trenches/excavations.
- An emergency response procedure must be implemented if signs of otter are discovered. All works must cease if animals or their shelters are found until appropriate measures are taken.
- In the event that an issue arises, the NPWS will be updated and consulted with, relevant guidelines shall be followed and any licences/amendments to licences will be sought from NPWS.

<u>Bats</u>

External lighting should be kept to a minimum at locations where it is likely to disturb bats, and where possible will follow the Bat Conservation Ireland's *Guidance Notes for: Planners, engineers, architects and developers* on bats and lighting (BCI, 2010).

Lighting for Bats

Lighting should only be installed where it is needed, illuminated during the required time period, and set to levels that enhance visibility. In order to preserve the commuting/foraging potential of all treelines and hedgerows to be retained and to minimise disturbance to bats utilising the surrounding landscape, the lighting and layout of the proposed development will be designed to minimise light-spill onto habitats potentially used by the local bat population, foraging or commuting. This will be achieved by ensuring that the design of lighting is in accordance with the guidelines presented in the Bat Conservation Trust and Institute of Lighting Professionals 'Bats and Lighting in the UK'[7].

Bat activity within the site was absent, and any bats observed were primarily recorded along the hedgerow to the northwest of the site. These areas should not be illuminated; however, where lighting is unavoidable, the design strategy should aim to reduce the potential impact of lighting on bats by incorporating the following measures:

- The avoidance of direct lighting of existing trees or proposed areas of habitat creation/landscape planting.
- Do not provide excessive lighting. Use only the minimum amount of light needed for safety.
- Minimise light spill. Eliminate any bare bulbs and any upward pointing light. The spread of light should be kept near to or below the horizontal. Flat cut-off lanterns are best.
- Use narrow spectrum bulbs to lower the range of species affected by lighting. Use light sources that emit minimal ultra-violet light and avoid the white and blue wavelengths of the light spectrum to avoid attracting lots of insects. Lighting regimes that attract lots of insects result in a reduction of insects in other areas, like parks and gardens, that bats may use for foraging.
- Lights should peak higher than 550 nm[9] or use glass lantern covers to filter UV light. White LED lights do not emit UV but have still been shown to disturb slow-flying bat species.
- Reduce the height of lighting columns. Light at a low level reduces impact. However, higher mounting heights allow lower main beam angles, which can assist in reducing glare.
- For pedestrian lighting, use low level lighting that is as directional as possible and below 3 lux at ground level, but preferably below 1 lux.
- Increase the spacing of lanterns.
- Use embedded lights to illuminate paths.
- Limit the times that lights are on to provide some dark periods.
- Use lighting design software and professional lighting designers to predict where light spill will occur.
- Avoid using reflective surfaces under lights.

Avifauna

The following measures shall be implemented to prevent impacts on birds:

- Any clearance of vegetation should be carried out outside the main breeding season, i.e., 1st March to 31st August, in compliance with the Wildlife Act 2000. Should any vegetation removal be required during this period, the NPWS will be consulted, and instruction taken from them.

To mitigate daytime noise disturbance, the following measures will be implemented:

- Select plant with low inherent potential for generating noise.
- Site plant as far away from sensitive receptors as permitted by site constraints.
- Avoid unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Properly balance plant items with rotating parts.
- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies.
- Use alternative reversing alarm systems on plant machinery.
- Where noise originates from resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.
- Limit the hours during which site activities likely to create high levels of noise are permitted.

- Appointing a site representative responsible for matters relating to noise.
- Monitor typical noise levels during critical periods and at sensitive locations.

Dust Control

The following general dust control measures will be followed for the duration of the construction phase of the proposed development to ensure no significant dust related impacts occur to nearby sensitive receptors, including local faunal species:

- In situations where the source of dust is within 25m of sensitive receptors, screens (permeable or semi-permeable) will be erected.
- Haulage vehicles transporting gravel and other similar materials to the site will be covered by a tarpaulin or similar.
- Access and exit of vehicles will be restricted to certain access/exit points.
- Vehicle speed restrictions of 20km/h will be in place.
- Bowsers will be available during periods of dry weather throughout the construction period.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowser will operate to ensure moisture content is high enough to increase the soil stability, thereby reducing the amount of dust.
- Stockpiles will be stored in sheltered areas of the site, covered, and watered regularly, or as needed if exposed during dry weather.
- Gravel should be used at site exit points to remove caked-on dirt from tyre tracks.
- Equipment will be washed at the end of each workday.
- Hard surfaced roads will be wet swept to remove any deposited materials.
- Unsurfaced roads will be restricted to essential traffic only.
- If practical, wheel-washing facilities should be located at all exits from the construction site.
- Dust production as a result of site activity will be minimised by regular cleaning of the Site access roads using vacuum road sweepers and washers. Access roads should be cleaned at least 0.5km on either side of the approach roads to the access points.
- Public roads outside the site will be regularly inspected for cleanliness, at a minimum daily, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.
- The frequency of cleaning will be determined by the site agent and is weather and activity dependent.
- The height of stockpiles will be kept to a minimum, and slopes should be gentle to avoid windblown soil dust.

The following will be dampened during dry weather:

- Unpaved areas subject to traffic and wind
- Stockpiles
- Areas where there will be loading and unloading of dust-generating materials

Under no circumstances will wastewater from equipment, wheel, or surface cleaning be allowed enter the surface water drainage network.

Biosecurity

There is a potential risk that terrestrial and/or aquatic invasive species (e.g., Japanese knotweed or Giant hogweed) or pathogens (e.g., crayfish plague) could be accidentally introduced to a location via contaminated vehicles and/or equipment, in particular tracked vehicles, which have previously been used in areas containing invasive species.

Biosecurity measures will be strictly adhered to throughout the proposed works. Measures will be in accordance with IFI (2010) Biosecurity Protocol for Field Survey Work.

The following best practice avoidance measures will help contain and/or prevent the introduction of invasive species:

- Prior to arrival on site, the contractors' vehicles and equipment will be thoroughly cleaned and then dried using high-pressure steam cleaning, with water >65°C, in addition to the removal of all vegetative material. Items that are difficult to soak/spray will be wiped down with a suitable disinfectant (e.g., solution of 1% Virkon® Aquatic).
- Evidence that all machinery has been cleaned must be maintained and available for review by the statutory authorities. The level of evidence required of the contractor will be registration plates of vehicles on-site and a register detailing when, how, and where each of these were cleaned before they arrived on site.
- Visual inspections will be carried out on all machinery and equipment to check for attached plant or animal material, or adherent mud or debris. Any attached or adherent material will be removed before entering or leaving the site and securely stored (away from traffic) for removal to an appropriate waste storage area at the end of the workday.
- No removed material or run-off will be allowed to enter a waterbody of any sort.
- Following cleaning, all equipment and vehicles will be visually inspected to ensure that all adherent material and debris has been removed manually.
- Each field vehicle must carry a 'disinfection box' as appropriate. This will contain Virkon Aquatic or another proprietary disinfectant, a spraying mechanism, cloths or sponges, a scrubbing brush and protective gloves. Protective gloves must be worn when using any disinfectant solution.
- Spot checks on the adequacy of cleaning will be carried out by the ECoW.
- Disinfectants must be used strictly in accordance with the manufacturer's instructions. They must be disposed of safely and never close to open waters such as drains etc.
- For any material entering the site, the supplier must provide an assurance that it is free of invasive species.
- Ensure all site users are aware of the invasive species management plan, biosecurity and treatment methodologies (as appropriate). This can be achieved through 'toolbox talks' before works begin on site.

- Ensure that all operatives are familiar with the relevant non-native invasive species. A comprehensive list and details can be found on the Inland Fisheries Ireland website at: https://www.fisheriesireland.ie.
- Adequate site signage, hoarding and fencing will be erected in relation to the management of non-native invasive species.

Operation Stage – Mitigation Measures

The operational phase of the project is anticipated to generate minimal waste. Any debris resulting from maintenance or cleaning activities will be promptly removed from the site by the contractor. Waste disposal will be conducted in strict adherence to the Waste Management Act, 1996, ensuring proper handling and processing of all waste materials.

The primary types of waste anticipated at the proposed development include general packaging, office waste, and municipal waste from on-site canteen facilities. All waste will be segregated appropriately and collected by a qualified waste contractor for disposal or recycling.

The new lighting proposed for the project will be carefully managed to prevent any adverse impacts on local wildlife, in particular bats.

The proposed surface water drainage strategy incorporates a new internal drainage network with sustainable drainage systems (SuDS) features to collect runoff from relevant hardstanding areas where feasible. Since infiltration of surface water runoff to the ground is not viable, SuDS components will channel excess runoff into a dedicated surface water collection network. This network will discharge to a nearby field boundary drain located approximately 90 meters south of the site. Runoff will be released at a controlled Qbar rate, with temporary storage for excess volumes provided in an aboveground basin to manage flow and prevent flooding.

The design of the proposed development incorporates limited sources of contamination during the operational phase. Surface water will be managed without infiltration to the ground, utilising an attenuation design in line with SuDS and GDSDS (Greater Dublin Strategic Drainage Study) standards to treat and control water before offsite discharge. Regular monitoring and maintenance of the drainage system and SuDS features will be part of the site's comprehensive management plan, ensuring stable water quality and maintaining flow conditions during the operational phase, without adverse impacts on water quality or flow regime.

A bund system will ensure any contaminated water is prevented from discharging from process areas into the surface water drainage network.

The only wastewater generated on-site will come from the office and administrative building. This wastewater will be directed to a domestic pump station located east of the office, where it will be pumped via a fully enclosed rising main to the primary digester within the bund for integration into the biomethane production process.

The proposed pumping station will be a custom-designed package plant sized to handle daily wastewater loads for six staff, with a total estimated load of 360 liters per day. The system will also include a sump or tank providing 24-hour emergency storage of 0.36 m^3. With the biomethane process reusing all wastewater produced, no external wastewater discharge is required. The site will adhere to Environmental Management System (EMS) procedures and IE Licence conditions. Emergency protocols developed per the IE Licence and EMS will be implemented, with spill kits available throughout the site and all staff trained in emergency response to accidental fuel spills. The landscaped areas around the facility are designed with ecological enhancement in mind, featuring native species like willows (*Salix* spp.) to promote local biodiversity. The approach focuses on natural recolonisation, with minimal soil disturbance to encourage habitat connectivity across the site. Maintenance requirements are kept low to reduce operational upkeep while maximising the site's ecological value. With minimal upkeep requirements, this design not only supports native biodiversity but also enhances the natural environment, providing long-term ecological value while ensuring efficient, sustainable maintenance.

Table 22.4: Mitigation Measures – Biodiversity

Construction Stage – Monitoring Measures
Any monitoring carried out during the construction stage will be related to air quality, noise and vibration, traffic and transport and waste. Theses topics are subject to various mitigation measures and should therefore not cause any impacts to sensitive habitats.
Operation Stage – Monitoring Measures
There will be no monitoring required for the surrounding habitats associated with the operational phase of the proposed development.

Table 22.5: Monitoring Measures – Biodiversity

22.4.3 Land, Soils and Geology

Construction Stage – Mitigation Measures
During the Construction Phase, all works will be undertaken in accordance with the Construction Management Plan (CMP) (DOBA, 2024). Following appointment, the contractor will be required to further develop the CMP to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground and surface water with regard to the relevant industry standards (e.g., C532 Control of Water Pollution from Construction Sites, C692 Environmental Good Practice on Site, ICE Earthworks and TII Specification for Road Works Series 600 - Earthworks). The CMP identifies the minimum requirements with regard to the appropriate mitigation, monitoring, inspection and reporting mechanisms that need to be implemented throughout construction. Compliance with the CMP

does not absolve the appointed contractor or its sub-contractors from compliance with all legislation and bylaws relating to their construction activities. The CMP will be implemented for the duration of the construction phase, covering construction and waste management activities that will take place during the construction phase of the Proposed Development.

Construction of the Proposed Development:
Unavoidable and no mitigation. The Proposed Development aligns with the climate actions of the Decarbonising Zone as outlined in Tipperary County Council's Climate Action Plan and the goals and objectives of the Tipperary County Development Plan 2022-2028.

Use of Cementitious Materials:
Where cast-in-place concrete is required, all work will be carried out to avoid any contamination of the receiving land, soil and geological environment through the use of appropriate design and methods implemented by the appointed Contractor and in accordance with the CMP and relevant industry standards. , Imperceptible.

Accidental Release of Deleterious Materials (e.g., Fuels or Other Hazardous Materials Being Used Onsite):
Refuelling of plant and storage of any deleterious materials including fuels will be undertaken in accordance with the requirements and procedures outlined in the CMP.

Important of Aggregates and Materials
Contract and procurement procedures will ensure that all imported aggregates and materials required for the construction phase of the Proposed Development will be sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity/compliance standards and statutory obligations. The importation of aggregates and materials will be subject to management and control procedures which will include testing for contaminants, invasive species and other anthropogenic inclusions and assessment of the suitability for use in accordance with engineering and environmental specifications for the Proposed Development. Therefore, any unsuitable material will be identified prior to unloading / placement onsite.

Airborne Dust
Excavated soils will be carefully managed and maintained in order to minimise potential effect on soil quality and soil structure. Handling of soils will be undertaken in accordance with the documented procedures outlined in the CMP (DOBA, 2024) in order to protect ground and minimise airborne dust. The measures required to prevent airborne dust emissions and associated nuisance arising from site work will be in place including measures to prevent uncovered soil drying out leading to wind pick up of dust and mud being spread onto the local road network and adjoining properties. This may require additional wetting at the point of dust release, dampening down during dry weather and wheel cleaning for any vehicles leaving the site. Potential effects and avoidance and mitigation measures associated with generation of dust are addressed in Chapter 8 of this volume.

Reuse of Soil

Soil and subsoil materials to be reused within the Proposed Development (i.e., for landscaping on site) will be subject assessment of the suitability of for use in accordance with engineering and environmental specification for the Proposed Development.

Soil Structure

The extent of the required work area and the bulk excavation at the site will be minimised where appropriate to prevent unnecessary excavation of soil and tracking over soil and subsoil outside of the excavation work areas as a result of compaction and rutting from construction traffic.

Dedicated internal haul routes will be established and maintained by the contractor to prevent tracking over unprotected soils. The following criteria for the siting of haul routes must be adhered to:

- The length of haul routes on the site shall be minimised.
- The contour of the natural ground shall be followed as much as possible.
- The slope of haul routes shall not exceed 15%.
- Haul routes shall be constructed using permeable material, laid on geotextile.
- Trenchless gravel banks shall be used to filter runoff, and where possible existing vegetation along the perimeter of the haul routes shall be retained to provide an effective buffer against sediment leaving the area.
- Haul routes shall be at least 10m from a watercourse and shall be isolated from any watercourses with silt fencing.
- Exclusion zones will be established where soft landscaping is proposed in particular along site boundaries which are outside of the excavation areas to ensure soil structure is maintained

Export of Resource (Soil and Subsoil) and Waste

It is intended to retain all excavated soil onsite and incorporate it into the landscape design for the Proposed Development. However, where required, surplus materials or materials not suitable for reuse will require removal offsite in accordance with the procedures outlined in the CMP (DOBA, 2024) and all statutory legislation. It will be the contractor's responsibility to either; obtain a waste collection permit or, to engage specialist waste service contractors who will possess the requisite authorisations, for the collection and movement of waste off-site.

The re-use of soil and subsoil offsite will be undertaken in accordance with all statutory requirements and obligations including where appropriate re-use as by-product in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011 (SI No. 126 of 2011) as amended.

Any surplus material not suitable for re-use as a by-product and other waste materials arising from the construction phase will be removed offsite by an authorised contractor and sent to the appropriately authorised (licensed/permitted) receiving waste facilities. As only authorised facilities will be used, the potential effects at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures.

Any waste soils will be transported under a valid waste collection permit issued under the Waste Management (Collection Permit) Regulations 2007, as amended and will be delivered to an appropriately authorised waste management facility.

Materials and waste will be documented prior to leaving the site. All information will be entered into a waste management register kept on the site.

Vehicles transporting material with potential for dust emissions to an off-site location shall be enclosed or covered with a tarpaulin at all times to restrict the escape of dust.

Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary. The main contractor will carry out road sweeping operations, employing a suction sweeper or similar appropriate method, to remove any project related dirt and/or material deposited on the road by construction/ delivery vehicles. Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.

Management and Control of Stockpiles

Segregation and storage of soils for re-use on-site or removal off-site and waste for disposal off-site will be segregated and temporarily stored on-site pending removal or for reuse on-site.

Where possible, stockpiling of soils and subsoils onsite will be avoided. However, in the event that stockpiling is required, as documented in the CMP (DOBA, 2024), materials to be stored onsite (pending reuse onsite) will be stored in a safe manner and will minimise the risk of any negative environmental effects and will be managed on a 'just-in-time' basis. Stockpiled materials, pending reuse or removal offsite will be managed as follows:

- A suitable temporary storage area shall be identified and designated.
- All stockpiles shall be assigned a stockpile number.
- Material identified for reuse on site, off site and waste materials will be individually segregated and all segregation, storage and stockpiling locations will be clearly delineated on the site drawings.
- Soil stockpiles will be covered to prevent run-off from the stockpiled material generation and/or the generation of dust.
- Where required, silt fencing / bunding will be installed around the stockpile to ensure no soils and sediments are washed out overland to the existing surface water networks, or directly into the Cooleney Stream located approximately 0.02km south of the site. The silt fencing / bunding will be monitored daily by the appointed contractor and silt will be removed as required.
- Material identified for reuse on site, off site and waste materials will be individually segregated.
- Any waste that will be temporarily stored / stockpiled will be stored on impermeable surface high-grade polythene sheeting, hardstand areas or skips to prevent cross-contamination of the soil below or cross contamination with soil.
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust.

- In accordance with Inland Fisheries Ireland guidelines, stockpiles will not be allowed within 30m of the open watercourses or drainage.

Any waste generated from construction activities, including concrete, asphalt and soil stockpiles, will be managed in accordance with the procedures outlined in the CMP (DOBA, 2024) and will be stored onsite in such a manner as to:

- Prevent environmental pollution (bunded and/or covered storage, minimise noise generation and implement dust/odour control measures, as may be required).
- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling and recovery.
- Prevent hazards to Site workers and the general public during Construction Phase (largely noise, vibration and dust.

Concrete Works

The cementitious grout and other concrete works during the Construction Phase, will avoid any contamination of ground through the use of appropriate design and methods implemented by the Contractor and in accordance with the CMP (Enviroguide Consulting, 2024a) and relevant industry standards.

Pre-cast concrete will be used where technically feasible to meet the design requirements for the Proposed Development. Where cast-in-place concrete is required (i.e., building foundations), all work must be carried out in dry conditions and be effectively isolated from any groundwater.

All ready-mixed concrete will be delivered to the Site by truck. Concrete batching will take place offsite, wash down and wash out of concrete trucks will take place into a container located within a controlled bunded area which will then be emptied into a skip for appropriate compliant removal offsite in accordance with all relevant waste management legislation. Any excess concrete is not to be disposed of onsite.

A suitable risk assessment for wet concreting shall be completed prior to works being carried out. Pumped concrete will be monitored to ensure there is no accidental.

Handling of Fuels, Chemicals and Materials

The Contractor's construction compound will be located on site for the duration of the project and shall primarily consist of site offices & associated welfare facilities, car parking facilities, materials drop-off and storage areas and set down areas for HGVs.

Fuel will be transported to the site in dedicated mobile units based on supply requirements. Fuelling and lubrication of equipment will be conducted in accordance with the procedures outlined in the CMP (DOBA, 2024), within a designated area of the compound, clearly marked and situated away from any watercourses and drains. A dedicated fuel filling point will be established onsite within the compound, where all equipment will be brought for refuelling.

Fuel storage areas and refuelling points will be bunded and located away from surface water drainage and features. The bunds will comply with the Environmental Protection Agency guidelines 'Amendment to IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities' (EPA, 2013). All tank and drum storage areas will be bunded to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

As documented in the CMP, the appointed contractor will maintain an emergency response action plan and emergency procedures will be developed by the appointed contractor in advance of any works commencing. Construction staff will be familiar with the emergency response plan.

Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Proposed Development Site. Only emergency breakdown maintenance will be carried out on-site. Drip trays and spill kits will be available on-site to ensure that any spills from vehicles are contained and removed off-site.

Spill kits will be made available onsite and identified with signage for use in the event of an environmental spill or leak. A spill kit will be kept in close proximity to the fuel storage area for use in the event of any incident during refuelling or maintenance works. Heavy machinery used on the Site will also be equipped with its own spill kit.

There may also be the requirement for use of portable generators or similar fuel containing equipment during the construction phase of the Proposed Development, which will be placed on suitable drip trays. Regular monitoring of drip tray content will be undertaken to ensure sufficient capacity is maintained at all times

As documented in the CMP (DOBA, 2024), good housekeeping (e.g., site clean-ups, use of disposal bins, etc.) will be implemented on the site.

<u>Emergency Procedures</u>

As documented in the CMP, in advance of works commencing the emergency response action plan will be developed by the appointed contractor in accordance with the site emergency plan which will cover all foreseeable risks (i.e., fire, spill, flood, etc.). Appropriate site personnel will be trained as first aiders and fire marshals and be trained in environmental issues and spill response procedures. Spillage kits will be available on-site including in vehicles operating onsite. Construction staff will be familiar with emergency procedures in the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential effects in accordance with industry standards and legislative requirements.

- Any required emergency vehicle or equipment maintenance work will take place in a designated impermeable area within the site.
- Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants. Such procedures will include:

- Containment measures.
- Emergency discharge routes.
- List of appropriate equipment and clean-up materials.
- Maintenance schedule for equipment.
- Details of trained staff, location, and provision for 24-hour cover.
- Details of staff responsibilities.
- Notification procedures to inform the EPA or Environmental Department of Tipperary County Council.
- Audit and review schedule.
- Telephone numbers of statutory water consultees.
- List of specialist pollution clean-up companies and their telephone numbers.

- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained.
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the site and compliantly disposed of off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards.
- All construction works staff will be familiar with emergency procedures in the event of accidental fuel spillages.
- All construction works staff on-site will be fully trained on the use of equipment.

These procedures will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to the receiving land, soil and geological environment associated with the construction phase of the Proposed Development.

Welfare Facilities

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. Foul drainage from temporary welfare facilities during the construction phase of the Proposed Development will be discharged to temporary holding tank(s) the contents of which will periodically be tankered off site to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations by tankering of waste offsite by an appropriately authorised contractor.

Any connection to the public foul drainage network during the construction phase of the Proposed Development will be undertaken in accordance with the necessary temporary discharge licences issued by UE.

Operation Stage – Mitigation Measures

During the operational phase of the Proposed Development there is limited to no potential for any effect on the receiving land, soil and geology environment and therefore there is no mitigation required in regard to the Proposed Development.

The procedures set out in the EMS and conditions of the IE Licence will be strictly adhered to for the duration of the operational phase of the Proposed Development. Accident prevention and emergency response procedures developed in accordance with the conditions of the IE Licence and outlined in the EMS, will be strictly implemented during the operational phase of the Proposed Development and spillage kits will be available on-site including in vehicles operating on-site. All staff will be familiar with emergency procedures for in the event of accidental fuel spillages.

Table 22.6: Mitigation Measures – Lands, Soils and Geology

Construction Stage – Monitoring Measures
During the construction phase the following monitoring measures will be considered: • Routine monitoring and inspections during refuelling, concrete works to ensure no impacts and compliance with avoidance, remedial and mitigation measures. • Inspections and monitoring will be undertaken during excavations and other groundworks to ensure that measure that are protective of water quality are fully implemented and effective. • Materials management and waste audits will be carried out at regular intervals to monitor the following: – Management of soils on-site and for removal offsite. – Record keeping. – Traceability of all materials, surplus soil and other waste removed from the site. – Ensure records are maintained of material acceptance at the end destination.
Operation Stage – Monitoring Measures
The Proposed Development will be subject to an IE Licence from the EPA. The operator will comply with any monitoring requirements as per the conditions of the IE Licence. There are no additional monitoring requirements specifically in relation to land, soil and geology during the operational phase of the Proposed Development.

Table 22.7: Monitoring Measures – Lands, Soils and Geology

22.4.4 Hydrology and Hydrogeology

Construction Stage – Mitigation Measures
During the Construction Phase, all works will be undertaken in accordance with the Construction Management Plan (CMP) (DOBA, 2024). Following appointment, the contractor will be required to further develop the CMP

to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground and surface water with regard to the relevant industry standards (e.g., C532 Control of Water Pollution from Construction Sites, C692 Environmental Good Practice on Site, ICE Earthworks and TII Specification for Road Works Series 600 - Earthworks). The CMP will be implemented for the duration of the Construction Phase, covering construction and waste management activities that will take place during the Construction Phase of the Proposed Development.

Mitigation works will be adopted as part of the construction works for the Proposed Development. These measures will address the main activities of potential effect which include:

- Control and Management of surface water runoff.
- Control and management of shallow groundwater during excavation and dewatering.
- Management and control of soil and materials.
- Appropriate fuel and chemical handling, transport and storage.
- Management of accidental release of contaminants at the site.
- Control and handling of cementitious materials.

The construction works will be managed in accordance with all statutory obligations and regulations and with standard international best practice. Good construction management practices will minimise the risk of pollution from construction activities at the Site including but not limited to:

- Construction Industry Research and Information Association (CIRIA), 2001. Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.
- CIRIA, 2015. Environmental Good Practice on Site (C741).
- Enterprise Ireland Oil Storage Guidelines (BPGCS005).
- Environmental Protection Agency (EPA), 2013. IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities.
- CIRIA, 2007. The SuDS Manual (C697.
- UK Environment Agency, 2004. UK Pollution Prevention Guidelines (PPG).
- CIRIA, 2006. Control of Water Pollution from Linear Construction Projects: Technical Guidance (C648).
- National Roads Authority (now Transport Infrastructure Ireland), 2016. Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes.
- Inland Fisheries Ireland (IFI, 2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

<u>Control and Management of Water and Surface Water Runoff</u>

There will be no direct discharge to groundwater or surface water during the Construction Phase of the Proposed Development.

There may be a temporary increase in the exposure of the underlying shallow groundwater during excavation works. Surface water runoff will be prevented from entering open excavations with sandbags or other approved

methods proposed by the appointed contractor. Furthermore, the appointed contractor will ensure that machinery does not enter the groundwater if encountered during construction.

All run-off from the Site or any areas of exposed soil will be managed as required with temporary pumping and following appropriate treatment as required. Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to onsite settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge at a controlled rate.

Given the vulnerability of the underlying groundwater at the site, the shallow groundwater table, and the potential presence of karst landforms, the construction methodology will adhere to the 'Guidance on Pollution Prevention' (EA, 2001) or similar best practices. This approach aims to minimize the risk of creating temporary conduits between potential surface contamination sources and the underlying groundwater. The construction method will include procedures to prevent any potential effect on water quality. This includes measures to stop surface runoff or other piling/drilling fluids from entering open excavations and the surrounding formation. When lubricants, drilling fluids, or additives are required, the contractor will use water-based, biodegradable, and non-hazardous compounds under controlled conditions.

Trenched double silt fencing will be installed along the southern boundary of the site. The silt fencing will act as a temporary sediment control device to protect the Cooleeny Stream from sediment and potential surface water run-off from the site. The fencing will be inspected twice daily based onsite and weather conditions for any signs of contamination or excessive silt deposits and records of these checks will be maintained. Silt laden water within the trenches will be routed to an appropriately sized settlement facility before discharging to the Cooleeny Stream. A buffer zone of 10m will be maintained between the silt trap and the watercourse with natural vegetation left intact.

Where dewatering of shallow groundwater is required or where surface water runoff must be pumped from the excavations, water will be managed in accordance with best practice standards (i.e., CIRIA C750), the CMP, the CEMP and regulatory consents to minimise the potential effect on the local groundwater flow regime of the underlying aquifer.

Where required, standard design and construction measures (i.e., groundwater drainage around impermeable subsurface structures) will ensure that groundwater flow across the site is maintained and that there will be no effect on groundwater levels.

All water leaving the Site during the construction phase will be desilted in onsite settlement ponds to include geotextile liners and riprapped inlets and outlets to prevent scour and erosion. The location of the settlement ponds will be reviewed and moved regularly as required. Additional measures will be implemented as required to capture and treat sediment laden surface water runoff (e.g., sediment retention ponds / tanks, surface water inlet protection, fencing and signage around specific exclusion zones and earth bunding adjacent to open drainage ditches). Where required, the water will also be directed through a hydrocarbon interceptor prior to discharge from the Site.

Unauthorised discharge of water (groundwater / surface water runoff) to ground, drains or watercourses will not be permitted. Where required, all public sewers will be protected to ensure that any untreated wastewater generated onsite does not enter the public sewers. The appointed Contractor will ensure that the discharge of water to ground, drains or watercourses will be in accordance with the necessary discharge licences issued by Tipperary County Council under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990.

A regular review of weather forecast will take place, insofar as possible, ground excavation works will be scheduled during period of dry weather to minimise potential for silt laden runoff.

Control and Management of Stockpiles

Where required, stockpiles of loose materials pending re-use onsite will be protected for the duration of the works and not located in areas where sediment laden runoff may enter existing surface water drains. To help shed rainwater and prevent ponding and infiltration, the sides and top of the stockpiles will be regraded to form a smooth gradient with compacted sides reducing infiltration and silt runoff. Where required, silt fences will be erected at the toe of stockpiles to prevent run-off. The silt fences will be monitored daily by the appointed contractor and silt will be removed as required. In accordance with Inland Fisheries Ireland guidelines, stockpiles will not be allowed within 30m of the open watercourses or drainage.

Concrete Works

The cementitious grout and other concrete works during the Construction Phase, will avoid any contamination of ground through the use of appropriate design and methods implemented by the Contractor and in accordance with the CMP (Enviroguide Consulting, 2024a) and relevant industry standards.

Pre-cast concrete will be used where technically feasible to meet the design requirements for the Proposed Development. Where cast-in-place concrete is required (i.e., building foundations), all work must be carried out in dry conditions and be effectively isolated from any groundwater.

All ready-mixed concrete will be delivered to the Site by truck. Concrete batching will take place offsite, wash down and wash out of concrete trucks will take place into a container located within a controlled bunded area which will then be emptied into a skip for appropriate compliant removal offsite in accordance with all relevant waste management legislation. Any excess concrete is not to be disposed of onsite.

A suitable risk assessment for wet concreting shall be completed prior to works being carried out. Pumped concrete will be monitored to ensure there is no accidental.

Handling of Fuels, Chemicals and Materials

The Contractor’s construction compound will be located on site for the duration of the project and shall primarily consist of site offices & associated welfare facilities, car parking facilities, materials drop-off and storage areas and set down areas for HGVs.

Fuel will be transported to the site in dedicated mobile units based on supply requirements. Fuelling and lubrication of equipment will be conducted in accordance with the procedures outlined in the CMP (DOBA, 2024), within a designated area of the compound, clearly marked and situated away from any watercourses and drains. A dedicated fuel filling point will be established onsite within the compound, where all equipment will be brought for refuelling.

Fuel storage areas and refuelling points will be bunded and located away from surface water drainage and features. The bunds will comply with the Environmental Protection Agency guidelines 'Amendment to IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities' (EPA, 2013). All tank and drum storage areas will be bunded to a volume not less than the greater of the following:

- 110% of the capacity of the largest tank or drum within the bunded area; or
- 25% of the total volume of substance that could be stored within the bunded area.

As documented in the CMP, the appointed contractor will maintain an emergency response action plan and emergency procedures will be developed by the appointed contractor in advance of any works commencing. Construction staff will be familiar with the emergency response plan.

Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Proposed Development Site. Only emergency breakdown maintenance will be carried out on-site. Drip trays and spill kits will be available on-site to ensure that any spills from vehicles are contained and removed off-site.

Spill kits will be made available onsite and identified with signage for use in the event of an environmental spill or leak. A spill kit will be kept in close proximity to the fuel storage area for use in the event of any incident during refuelling or maintenance works. Heavy machinery used on the Site will also be equipped with its own spill kit.

There may also be the requirement for use of portable generators or similar fuel containing equipment during the construction phase of the Proposed Development, which will be placed on suitable drip trays. Regular monitoring of drip tray content will be undertaken to ensure sufficient capacity is maintained at all times

As documented in the CMP (DOBA, 2024), good housekeeping (e.g., site clean-ups, use of disposal bins, etc.) will be implemented on the site.

<u>Emergency Procedures</u>

As documented in the CMP, in advance of works commencing the emergency response action plan will be developed by the appointed contractor in accordance with the site emergency plan which will cover all foreseeable risks (i.e., fire, spill, flood, etc.). Appropriate site personnel will be trained as first aiders and fire marshals and be trained in environmental issues and spill response procedures. Spillage kits will be available on-site including in vehicles operating onsite. Construction staff will be familiar with emergency procedures in

the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential effects in accordance with industry standards and legislative requirements.

- Any required emergency vehicle or equipment maintenance work will take place in a designated impermeable area within the site.
- Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants. Such procedures will include:
  - Containment measures.
  - Emergency discharge routes.
  - List of appropriate equipment and clean-up materials.
  - Maintenance schedule for equipment.
  - Details of trained staff, location, and provision for 24-hour cover.
  - Details of staff responsibilities.
  - Notification procedures to inform the EPA or Environmental Department of Tipperary County Council.
  - Audit and review schedule.
  - Telephone numbers of statutory water consultees.
  - List of specialist pollution clean-up companies and their telephone numbers.
- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained.
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the site and compliantly disposed of off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards.
- All construction works staff will be familiar with emergency procedures in the event of accidental fuel spillages.
- All construction works staff on-site will be fully trained on the use of equipment.

These procedures will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to the receiving land, soil and geological environment associated with the construction phase of the Proposed Development.

<u>Welfare Facilities</u>

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. Foul drainage from temporary welfare facilities during the construction phase of the Proposed Development will be discharged to temporary holding tank(s) the contents of which will periodically be tankered off site to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations by tankering of waste offsite by an appropriately authorised contractor.

Operation Stage – Mitigation Measures
There will be no direct or indirect impact on the receiving hydrological and hydrogeological environment associated with the operational phase of the Proposed Development.

Table 22.8: Mitigation Measures – Hydrology and Hydrogeology

Construction Stage – Monitoring Measures
During the Construction Phase of the Proposed Development the following monitoring measures will be considered: • Inspections will be undertaken during excavations and other groundworks to ensure that measures that are protective of water quality outlined in this EIAR and the CEMP (DOBA, 2024a) are fully implemented and effective. • In advance of construction works commencing the appointed contractor will updated with CEMP to include detailed methodologies for the construction of silt management systems (e.g., settlement ponds, silt traps, silt fences) and detailed procedures for pumping water from excavations. The surface water control measures will be inspected twice daily based onsite and weather conditions for any signs of contamination or excessive silt deposits and records of these checks will be maintained. • Visual inspections of the Cooleeny Stream will be undertaken for siltation and hydrocarbon sheen will also be undertaken twice daily. • Discharges to groundwater or surface water will be monitored where required in accordance with statutory consents (i.e., discharge licence). • Routine monitoring and inspections during refuelling, concrete works to ensure no impacts and compliance with avoidance, remedial and mitigation measures.
Operation Stage – Monitoring Measures
The Proposed Development will be subject to an IE Licence from the EPA. The operator will comply with any monitoring requirements, including monitoring of the surface water discharge, in accordance with the conditions of the IE Licence. Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures will be undertaken throughout the lifetime of the operational phase of the Proposed Development. There are no additional monitoring requirements specifically in relation to hydrology and hydrogeology during the Operational Phase of the Proposed Development.

Table 22.9: Monitoring Measures – Hydrology and Hydrogeology

22.4.5 Air Quality (including Odour)

Construction Stage – Mitigation Measures
It is not expected that adverse air quality impacts are likely to occur at sensitive receptors as a result of the proposed development. However, appropriate mitigation measures, as outlined within the Construction Management Plan (CMP) will be employed as necessary to further prevent such impacts occurring: • Spraying of exposed earthwork activities and site haul roads during dry weather; • Provision of wheel washes; • Covering of stockpiles; • Control of vehicle speeds, speed restrictions and vehicle access; • Sweeping of hard surface roads. In addition, the following measures will be implemented during the Construction Phase • A minimum 1.8m high hoarding will be provided around the site works to minimise the dispersion of dust from the working areas; • Any fuel based power generators will be located away from sensitive receptors in so far as practicable. Any asbestos discovered during construction will be removed by a Specialist Contractor in accordance with the Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006/20137 and disposed of by specialist contractors to an appropriately licensed facility. Traceable records of this activity, including the disposal licence, will be kept.
Operation Stage – Mitigation Measures
It has been determined that the Operational Phase air quality impact is negligible and therefore no site-specific mitigation measures are proposed.

Table 22.10: Mitigation Measures – Air Quality (including Odour)

Construction Stage – Monitoring Measures
The monitoring of dust during the Construction Phase of the Proposed Development is recommended to ensure that impacts are not experienced beyond the site boundary. Monitoring of dust can be carried out by using the Bergerhoff Method. This involves placing Bergerhoff Dust Deposit Gauges at a strategic locations along the site boundaries for a period of 30 +/- 2 days. The selection of sampling point locations should be carried out in consideration of the requirements of VDI 2119 with respect to the location of the samplers relative to buildings and other obstructions, height above ground, and sample collection and analysis procedures.

After the exposure period is complete, the Gauges should be removed from the site; the dust deposits in each Gauge will then be determined gravimetrically and expressed as a dust deposition rate in mg/m2/day in accordance with the relevant standard.
Operation Stage – Monitoring Measures
Due to the negligible impact on air quality and climate from the Operational Phase of the proposed development, no specific monitoring is recommended.

Table 22.11: Monitoring Measures – Air Quality (including Odour)

22.4.6 Climate

Construction Stage – Mitigation Measures

Embodied carbon of materials and construction activities will be the primary source of climate impacts during the construction phase. Best practice measures to reduce the embodied carbon of the construction works include:

- Appointing a suitably competent contractor who will undertake waste audits detailing resource recovery best practice and identify materials can be reused/recycled;
- Materials will be reused on site where possible;
- Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods;
- Ensure all plant and machinery are well maintained and inspected regularly;
- Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site; and
- Sourcing materials locally where possible to reduce transport related CO_2 emissions.

Specific measures are proposed to reduce GHG emissions during the construction phase:

- A total of approx. 27,000 m^3 of excavated material generated during the construction phase will be reused on site. This material re-use represents an avoidance of GHG emissions of 172 tCO_2e (if avoidance of recycling disposal is assumed), and has been accounted for in the total GHG emissions discussed in Section 16.3.1.1; and
- Lower carbon structural concrete composed of at least 25% ground granulated blast-furnace slag (GGBS), instead of a standard concrete mix, will be utilised in concrete based structures. This represents GHG savings of approximately 0.6 tCO2e (assuming a C32/40 mix).

In terms of impact on the proposed development due to climate change, during construction the Contractor will be required to mitigate against the effects of extreme rainfall/flooding through site risk assessments and method statements. The Contractor will also be required to mitigate against the effects of extreme wind/storms, temperature extremes through site risk assessments and method statements. All materials used during construction will be accompanied by certified datasheets which will set out the limiting operating temperatures. Temperatures can affect the performance of some materials, and this will require consideration

during construction. During construction, the Contractor will be required to mitigate against the effects of fog, lighting and hail through site risk assessments and method statements.

Operation Stage – Mitigation Measures

The proposed development by design will reduce GHG emissions during the operational phase as follows:

- An estimated 3,253,600 tonnes of bio-based fertiliser will be produced over the lifetime of the proposed development and distributed back to the feedstock (crop) suppliers, completing the proposed development's circular economy process. This bio-based fertiliser is the remaining by-product from the anaerobic digestion process and in this state is a product instead of a waste. This avoidance of a waste stream represents a total emissions offset of approx. 1,883,700 tCO_2e (1.9 Mt tCO_2e) over the lifetime of the proposed development (if avoidance of landfill disposal of organic waste is assumed); and
- The same truck which delivers the feedstock will also collect a load of bio-based fertiliser, reducing the number of truck movements. This efficiency results in an emission offset of approx. 20,580 tCO_2e.

Some measures have been incorporated into the of the development to mitigate the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated to avoid potential flooding impacts due to increased rainfall events in future years.

Table 22.12: Mitigation Measures – Climate

Construction Stage – Monitoring Measures
There is no proposed monitoring during the construction phase.
Operational Phase – Monitoring
There is no proposed monitoring during the operational phase.

Table 22.13: Monitoring Measures – Climate

22.4.7 Noise and Vibration

Construction Stage – Mitigation Measures

The Noise Assessment, prepared by Wave Dynamics Ltd. has informed the assessment of potential environmental impacts with respect to 'Noise and Vibration' and outlines the following mitigation measures for the proposed project.

Best practice control measures for noise from construction sites are found within BS 5228 (2009 +A1 2014) part 1. Construction noise impacts are expected to vary during the construction phase of the project, this impact will depend on the distance between the construction activities and noise sensitive receptor. The

contractor will ensure that all best practice noise and control methods will be used, to ensure any negative noise impacts at off-site noise sensitive locations are minimised.
The best practice measures set out in BS 5228 (2009) Part 1 includes guidance on several aspects of construction site mitigation measures, this includes the

- selection of quiet plant and equipment;
- noise control at source of the noise;
- screening, and;
- public liaison.

Operation Stage – Mitigation Measures

A noise policy should be created for the site. The noise policy should include but is not limited to policies on the following:

- Trucks/vans should not be left to idle when loading/unloading or when parked on the site.
- Wheel loading operators should ensure they are not slamming/dropping buckets when loading feed.
- There should be no amplified music or announcements externally in the yard areas.
- Signage should be erected in the yard and in the car park to remind workers to be respectful to the company's neighbours.

Table 22.14: Mitigation Measures – Noise and Vibration

Construction Stage – Monitoring Measures

Noise

Construction noise monitoring will be undertaken at periodic sample periods on the boundary with the nearest noise sensitive receptors by the contractor. In this case NSL1 is the closest sensitive receptor, therefore, continuous noise monitoring should be observed at the boundary of the site in the direction of NSL1 for the during the substructure and superstructure phases of construction.

Vibration

It is not predicted that there will be any negative vibration impact at the sensitive locations.

Operation Stage – Monitoring Measures

Noise

The impact assessment has found that there are no significant noise impacts likely at nearby noise sensitive locations during the operational phase and therefore no remedial or reductive measures are required. The predictions are based on the information available at planning stage and when the actual plant to be used becomes available it should be verified to ensure compliance. General recommendations for the management of noise include:

A noise policy should be created for the site. The noise policy should include but is not limited to policies on the following:

- Trucks/vans should not be left to idle when loading/unloading or when parked on the site.
- Wheel loading operators should ensure they are not slamming/dropping buckets when loading feed.
- There should be no amplified music or announcements externally in the yard areas.
- Signage should be erected in the yard and in the car park to remind workers to be respectful to the company's neighbours.

Vibration

It is not predicted that there will be any negative vibration impact at the sensitive locations.

Table 22.15: Monitoring Measures – Noise and Vibration

22.4.8 Traffic and Transportation

Construction Stage – Mitigation Measures
A planning phase Construction Management Plan (CMP) submitted under separate cover has been developed as part of the planning process. A number of mitigation measures have been identified in the CMP for the construction stage to limit any potential effects. The main contractor will be responsible for planning and managing deliveries and collections from the site to minimise the impact on the surrounding road network. Deliveries will be planned well in advance, and on-site activities will be co-ordinated so that concentrated peaks in traffic movements on and off the site are avoided. Proposed management measures include: • A booking system for deliveries • Bankspeople to manage all deliveries turning into, and within the site • Agreed delivery routes from J4 and J5 of the M8 • Warning signs on the L3201 and private road • Measures to reduce dust and debris, including road sweeping covering loads and wheel washing • Retention of all parking within the site.
Operation Stage – Mitigation Measures
There are a number of measures which have been included from the outset in the design of the development to reduce any potential negative effects on the local transport network arising from additional traffic generated by the development. Chapter 14 concludes that the proposed development will not have a significant effect on the local road network during the operational phase.

Table 22.14: Mitigation Measures – Traffic and Transportation

Construction Stage – Monitoring Measures
The construction phase will be monitored by the appointed site manager and regular progress reports will be prepared. The manager will ensure the mitigation measures outlined will be implemented and adhered to.
Operation Stage – Monitoring Measures
The site will be staffed at all times during the working day when deliveries are expected. The appointed Site Manager will be responsible for programming and managing deliveries, and ensuring that HGV drivers comply with delivery and safety protocols.

Table 22.15: Monitoring Measures – Traffic and Transportation

22.4.9 Material Assets: Waste

Construction Stage – Mitigation Measures

The following mitigation measures are recommended for the construction phase of the Proposed Development regarding Waste Management:

- Waste materials will be separated at source and will follow the CMP.
- Prior to the commencement of the construction phase detailed calculations of the quantities of topsoil, subsoil and green waste will be prepared, and soils will be tested to confirm they are clean, inert or non-hazardous;
- Beneficial use must be identified for the entirety of the excavated soil from the Proposed Development prior to its production for the excavated soil and stone to be considered as a by-product under Article 27 of the European Communities (Waste Directive) Regulations, 2011;
- A suitably competent and fully authorised waste management company will be employed to manage waste arising for the construction phase. The appointed waste contractor must have the relevant authorisations for the collection and transport of waste materials, issued by the National Waste Collection Permit Office (NWCPO);
- All waste materials will be transported to an appropriately authorised facility, which must have the relevant authorisations for the acceptance and treatment of the specific waste streams, i.e., a Certificate of Registration (COR) or a Waste Facility Permit (WFP) as granted by a Local Authority, or a Waste/Industrial Emission Licence as granted by the Environmental Protection Agency; and
- All waste quantities and types will be recorded and quantified, and records will be retained onsite for the duration of the construction phase.

These mitigation measures will ensure that the waste arising from the construction phase of the Proposed Development is dealt with in compliance with provisions of the Waste Management Act 1996, as amended, associated Regulations and Litter Pollution Act 1997, and The National Waste Management Plan for a Circular Economy 2024-2030. The mitigation measures will also ensure optimum levels of waste reduction, reuse, recycling and recover are achieved and will promote more sustainable consumption of resources.

Operation Stage – Mitigation Measures
The following mitigation measures are recommended for the operational phase of the Proposed Development regarding Waste Management: • All incoming feedstock quantities and types will be recorded and quantified, and records will be retained onsite; • All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in The National Waste Management Plan for a Circular Economy 2024-2030; and • General waste including day-to-day office waste and municipal waste from staff areas will be segregated • and collected by a suitably licenced contractor. •

Table 22.16: Mitigation Measures – Material Assets: Waste

Construction Stage – Monitoring Measures
Materials and waste generated during the Construction Phase will be carefully monitoring by the Construction Environmental Site Manager, and/or an appointed Waste Officer, to ensure compliance with relevant local authority requirements and effective implementation of the CMP and the CWMP which will be prepared for the Proposed Development, including maintenance of waste documentation.
Operation Stage – Monitoring Measures
No specific monitoring measures are recommended for the Operational Phase of the proposed development, management and residents alike will be responsible for the maintenance of the residential waste bins and storage areas and ensuring they are kept in good condition.

Table 22.17: Monitoring Measures – Material Assets: Waste

22.4.10 Material Assets: Utilities

Construction Stage – Mitigating Measures
<u>Surface Water Drainage</u> In order to mitigate against the potential impacts outlined in the above section, the following measures are proposed for the construction stage of the project: • Groundwater or run-off that collects in excavations or foundation trenches will be drained or pumped to a construction site water treatment arrangement. The water is to be directed into a settlement basin/tank, with a proprietary 'silt bag' to intercept bulk silt volumes. This process entails sediment-laden water being pumped into a filter bag, which traps the solids inside and allows the filtered water to flow freely out through the Geotextile fabric to disperse into the collection point. The proposed

collection point shall be a series of silt trap fences and filter drain arrangements, adjacent to the constructed pond which will act as a temporary settling pond during the construction. The water and silt within the pond are to be emptied into water vacuum tanker and is to be disposed of off-site to a licenced facility.

- To mitigate against unwanted silt discharge, Silt traps in the form of silt fences or hay bale structures will be adopted across lengths of the site to intercept runoff and provide a stage of treatment and runoff filtration.
- Runoff filtered through the silt trap fence shall be then intercepted by a temporary filter drain which will run directly parallel to the downstream side of the silt trap fence. The collected, filtered runoff shall discharge to the constructed ponds which shall act as temporary settlement structures during the construction phase. The use of filter drains and temporary settlement ponds shall further treat any potential contaminated/ polluted runoff prior to discharge to a Silt Bag arrangement which will provide maximum treatment of surface water runoff entering the field boundary drain.

Wastewater Drainage

There is no existing wastewater drainage in close proximity to the subject site. Care will be taken in order to ensure no accidental spillage of wastewater during the emptying of welfare facilities.

Water Supply

The only potable water usage during the operational stage will be the office and administration building. The water usage is anticipated to be minimal and no mitigation is required in this instance.

The biomethane process is proposed to re-use harvested water being stored in above-ground depressions. Both of these will be supplied with a standby pump in the event of failure of the primary pumps.

Electricity Connection

The new network shall be commissioned and subject to a regular operational inspection and maintenance regime, in accordance with the utility providers' procedures and national rules for electrical installations I.S 10101: 2020, to ensure the system keeps operating within the design specifications.

The proposed development will be utilising the ESB National Grid, however, it is noted that the subject site is located in close proximity to various renewable energy sources and it is the client's full intention to rather use these as primary sources of electricity. The subject site has a CHP unit in case of any power outages.

Operation Stage – Mitigating Measures

Surface Water Drainage

Surface water attenuation and retention are included as part of the main surface water drainage system. The surface water management proposals shall serve to significantly reduce the overall impact of the Project on the existing environment and shall reduce the risk of flooding in the receiving public surface water network. The proposed SuDs strategy shall also provide cleansing of all surface water prior to the discharge to the field boundary drain, increasing the sustainability of the design. The following measures have been applied to ensure adequate usage during the operational phase:

- The Process and Non-Process Area has been designed to remain completely separate,
- Utilise spill kits, bunded pallets, and secondary containment units as necessary.

Wastewater Drainage

The wastewater pump station has been designed with 24-hour emergency storage and a standby pump in the event of failure of the primary pump.

In the event of failure of one of the processing tanks, the bunded area is designed with a temporary storage capacity of 110% of the largest tank within it, whereafter it can be pumped back into the processing feed or temporarily stored in the buffer storage tank.

Water Supply

The only potable water usage during the operational stage will be the office and administration building. The water usage is anticipated to be minimal and no mitigation is required in this instance.

The biomethane process is proposed to re-use harvested water being stored in above-ground depressions. Both of these will be supplied with a standby pump in the event of failure of the primary pumps.

ESB Connection

The new network shall be commissioned and subject to a regular operational inspection and maintenance regime, in accordance with the utility providers' procedures and national rules for electrical installations I.S 10101: 2020, to ensure the system keeps operating within the design specifications.

The proposed development will be utilising the ESB National Grid, however, it is noted that the subject site is located in close proximity to various renewable energy sources and it is the client's full intention to rather use these as primary sources of electricity. The subject site has a CHP unit in case of any power outages.

Table 22.18: Mitigating Measures – Material Assets: Utilities

Construction and Operation Stage – Monitoring Measures
Surface Water Drainage Routine inspections to the on-site drainage features such as the pumps, manholes, silt traps and flow control devices, especially after large storm events. The EPA will be invited for regular inspections as required. Waste Water Drainage The Project's facility management shall carry out operational inspection and maintenance regimes to ensure the system keeps operating within the design specifications. Regular inspections and maintenance are to be carried out on the wastewater pump station serving the offices. Water Supply

The Project's management company shall carry out operational inspection and maintenance regimes to ensure the system keeps operating within the design specifications. ESB Utility Services The proposed subject primary energy source will be the ESB Grid or local renewable energy suppliers. However, a standby CHP unit is proposed if the main electricity feed has an outage. The proposed CHP unit will be regularly serviced as required by the manufacturer's guidelines. No additional monitoring will be required in this instance.

Table 22.19: Monitoring Measures – Material Assets: Utilities

22.4.11 Archaeology and Cultural Heritage

Construction Stage – Mitigating Measures
Archaeology All topsoil stripping in the south-western corner of the development area will be subject to archaeological monitoring. If any features of archaeological potential are identified, further mitigation will be required such as preservation in-situ or by record. Any further mitigation will require agreement from the National Monuments Service of the DoHLGH. Cultural Heritage No mitigation is deemed necessary with respect to the construction stage of the proposed project and cultural heritage.
Operation Stage – Mitigating Measures
Archaeology No impacts have been identified and as such no mitigation is required. Cultural Heritage No impacts have been identified and as such no mitigation is required

Table 22.20: Mitigating Measures – Archaeology and Cultural Heritage

Construction and Operation Stage – Monitoring Measures
The mitigation measures detailed above would also function as a monitoring system to allow the further assessment of the scale of any predicted impacts and the effectiveness of the mitigation measures.

Table 22.21: Monitoring Measures – Archaeology and Cultural Heritage

22.4.12 Landscape and Visual

Construction Stage – Mitigating Measures
There are no specific LVIA mitigation measures proposed during the construction phase for the proposed development. However, site hoarding around the Facility, which has a number of functions including safety and security, will also serve as a visual screen within the former Lisheen Mine Site (the proposed construction works will not likely be visible from surrounding public road).
Operation Stage – Mitigating Measures
No specific LVIA mitigation measures are proposed for the operational phase. However, it is important to note that the design of the proposed development incorporates proactive visual considerations. The LVIA team has ensured a recessive colour scheme, particularly for the shed sheeting and structures, to reduce visual prominence and integrate the development harmoniously into the surrounding landscape.

Table 22.22: Mitigating Measures – Landscape and Visual

Construction Stage – Monitoring Measures
There is no proposed monitoring during the construction phase.
Operational Phase – Monitoring
There is no proposed monitoring during the operational phase.

Table 22.23: Monitoring Measures – Landscape and Visual.

22.4.13 Major Accidents and Disasters

Construction Stage – Mitigating Measures
No specific mitigation measure for Construction phase. However, the Applicant will comply with any measures required by the HSA or other relevant authorities.
Operation Stage – Mitigating Measures
A site Major Accident Prevention Policy, including an Emergency Response Plan, will be developed prior to the commencement of operations and will include detailed procedures in the event of a major accident. This plan will follow the framework detailed in Guidance Document 10 of A Framework for Major Emergency Management (DECLG 2015) and will comply with the requirements of the COMAH Regulations. This plan will contain detailed plans for the response to emergencies such as loss of containment from an Anaerobic Digester, release cylinders of compressed natural gas and severe weather events. The proposed development has been designed in line with good industry practice, and, as such, mitigation against the risk of major accidents and/or disasters is embedded through the design and in accordance with planning and legislative requirements. As no likely significant effects were identified, no additional mitigation measures are proposed.

Table 22.24: Mitigating Measures – Major Accidents and Disasters.

Construction Stage – Monitoring Measures
There is no proposed monitoring during the construction phase.
Operational Phase – Monitoring
There is no proposed monitoring during the operational phase.

Table 22.25: Monitoring Measures – Major Accidents and Disasters.