

Parkway Valley LRD

**Construction Environmental Management
Plan**

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1 Introduction

This Construction Environmental Management Plan (CEMP) has been prepared in support of a planning application by Kirkland Investments Ltd (the applicant) for a development on lands in Singland, Limerick. This CEMP should be read in conjunction with the EIAR prepared by AWN Consulting Ltd and the Schedule of Mitigation Measures included in Appendix A of this document. The overall site (red line boundary) measures 6.18 hectares. The site is located on the south side of the Dublin Road, adjacent to Parkway Retail Park, approximately 4km from Limerick City Centre.

The measures described below are standard best practice site construction measures, which are applied in accordance with best practice guidelines; *Environmental Good Practice on site guide (5th edition) CIRIA 2023* and incorporate the construction phase environmental mitigation and management measures identified during the environmental assessment of the development, as set out in the EIAR.

The CEMP will be finalised following grant of planning permission and prior to construction to provide for any revisions or additions required by condition of permission.

The Contractor shall comply with the measures and requirements set out in this CEMP, all Statutory Regulations, all Statutory Regulations governing the works, and any additional measures or modifications that may be imposed on the proposed development by the local authority.

1.1 Proposed Development

The proposed LRD development comprises 5 no. blocks with a total of 403 no. residential units, ranging from 5 to 8 storeys in height; a medical centre located at the western edge of the site; a creche located at ground level within Block B; and all associated site works and development.

The current LRD development proposals also extend to the R445 to accommodate a proposed entrance from the R445. They will also include a proposed nature based surface water drainage solution within the neighbouring Groody Valley green wedge.

Specifically, the proposed uses for the LRD development are:

Medical Centre

A c. 3,082sq. m, 4-storey over podium level medical centre is proposed to be located at the western extent of the application site.

Creche

A c. 306 sq. m creche is proposed on the lower ground floor level of Block B.

Residential Development

The subject proposals will provide a total of 403 no. units comprising of 246 No. 1 Bed units, 29 No. 2 Bed (3 person) units and 128 No. 2 Bed (4 person) units.

1.1.1 Topography

A topographical survey of the site and its environs was completed by Control Surveys on the 10th of March 2023. The site is bounded by the Dublin Road to the north, Parkway Retail Park to the northeast and greenfield to the south and west.

The survey shows that, while there are some localised raised areas surrounding the site, existing ground levels on the site are generally flat and range from 8.4 to 9.64mAOD.

The site has a gravel ramp in the northeast corner which connects the low-level ground to the level of the surrounding roads. The survey also shows some low-level ponding which is retained by a short retaining wall roughly a metre in height.

Refer to image below for an indication of the site topography along the Dublin Road boundary.



Figure 1-1: Image showing existing site topography of northern side of the site

1.1.2 Boundary Treatments

Boundary treatments are detailed within the landscape report and drawing and are summarised below.

A number of boundary treatments are proposed throughout the development including 900mm high steel railing to the playground, 1800mm net fencing to the basketball court and 1200mm railing on top of the retaining walls.

1.1.3 Construction Access

The proposed development will be accessed during construction via the Parkway Retail Park roundabout to the west of the proposed site.

1.1.4 Site Development Works

A new surface water sewer network shall be provided for the proposed development which will be entirely separate from the foul water sewer network. Surface water run-off from roof areas and hardstanding areas are designed to be collected by a gravity pipe network. Surface water will be collected and discharged via a mixture of traditional and Sustainable urban Drainage System (SuDS) including a class 1 bypass separator and detention pond to the existing drainage ditch within the adjacent lands that ultimately connects to the Groody River.

It is proposed that the foul sewer will discharge by gravity to a proposed pumping station within the site. A rising main will be brought through the site and discharge into a proposed surge manhole in the northwest corner of the site before connecting by gravity to the existing foul sewer on the Dublin Road.

It is proposed to provide a new 300mm diameter (ID) watermain to serve the proposed development. The proposed watermain will connect to an existing 300mm diameter (ID) watermain on the Dublin Road.

1.1.5 Landscape Areas

Green spaces and landscaped areas are provided within the development, refer to the Landscape Design Report and drawings for details.

2 Responsibilities

2.1 Key Contact's and Roles

The final CEMP will need to confirm and add to the following minimum information:

Description	Name	Address	Name and Contact
Developer/Applicant			
Contract Manager			
Site Manager			
Environmental Compliance Officer			
Consulting Engineer			

The key responsibilities of those persons listed in the table above are as follows:

Description	Responsibility
Developer/Applicant	To provide that all planning condition requirements are implemented in full
Contract Manager	To be responsible for finalising the CEMP to include any revisions or additional requirements arising from conditions of the permission
Site Manager	To advise site personnel on all requirements at the site and areas where improvements may be made on-site and off-site
Environmental Compliance Officer	To be responsible for undertaking environmental audits to check compliance with the environmental measures set out in the CEMP
Consulting Engineer	To be responsible for implementation of detailed design including design compliance with all planning conditions

The CEMP will form part of the site induction for all employees who shall be required to comply with the requirements set out in the plan.

2.2 Relevant Legislation and Reference Documents

It is proposed that all works will be carried out using best practice and in conformance with the requirements of the relevant regulatory authorities and legislation. A non-exhaustive summary of key legislative documents and guidance is provided below.

2.2.1 Legislation

Current legislation as well as published guidance documents to cover all relevant areas, including water pollution, fisheries protection, wildlife species protection, waste and noise have been taken into account in preparing this CEMP.

2.2.2 Key Guidance

The Environmental Protection Agency (EPA) has produced Pollution Prevention Guidelines. Some of these are of particular note with regard to the drafting of this CEMP which include:

- a) IPC Guidance Note - Guidance Note on Storage and Transfer of Materials for Scheduled Activities
- b) National Hazardous Waste Management Plan 2008-2012 (EPA 2008)

Key Guidance pertinent to this CEMP from other bodies include:

- a) Environmental Good Practice on site guide (5th edition) (C811), 2023
- b) Best Practice Guide BPGCS005 - Oil Storage Guidelines.
- c) Construction and Demolition Waste Management - A handbook for Contractors & Site Managers.
- d) Best Practice Guidelines in the Preparation of Waste Management Plans for construction and demolition projects - Department of the Environment, Heritage & Local Government.
- e) Guidelines on the Protection of Fisheries During Construction Works in and Adjacent to Waters, Inland Fisheries Ireland.
- f) Use Chemicals Safely, Health and Safety Authority (HSA).
- g) Risk Assessment of Chemical Hazards (HSA).
- h) Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006 (S.I. No. 386 of 2006) and the Safety, Health and Welfare at Work (Exposure to Asbestos) (Amendment) Regulations 2010 (S.I. No. 589 of 2010).
- i) PHSA publication “Asbestos Containing Materials (ACM’s) in Workplaces - Practical Guidelines on ACM Management and Abatement”.

3 Construction of the Development

3.1 Works Description

3.1.1 Site Access

The proposed development will be accessed via the Parkway Retail Park roundabout to the west of the proposed site.

3.1.2 Hoarding

Erection of perimeter hoarding will take place at the start of the project alongside site establishment and security works. Gates will be provided at the access point and will be locked outside of working hours. Hoarding will be properly designed to be secure and durable and will be maintained until it can be dismantled on completion of the development.

3.1.3 Site Security

The Main Contractor will be responsible for the security of the site for the duration of the works. The Main Contractor will be required to implement the following which is a non-exhaustive list:

- a) Install and maintain adequate site hoarding to a height of 2.4m to the site boundary with adequate controlled access and egress points.
- b) Maintain site security staff at all times.
- c) Install access security in the form of turn-styles and gates for staff.
- d) Ensure restricted access is maintained to the works.
- e) Operate a Site Induction Process for all site staff.
- f) Ensure all staff have current 'Safe Pass' & Construction Skills Cards.
- g) Monitor and record all deliveries to site and all materials/waste taken off site for disposal to appropriate licensed facility.

The perimeter hoarding will be provided around the site to provide a barrier against unauthorized access from the public and as a protection of public areas from construction activities.

3.1.4 Site Accommodation

The site office, welfare facilities, materials drop off and storage area will be located in the compound within the application site. The compound shall not be located within Flood Zone A or B.

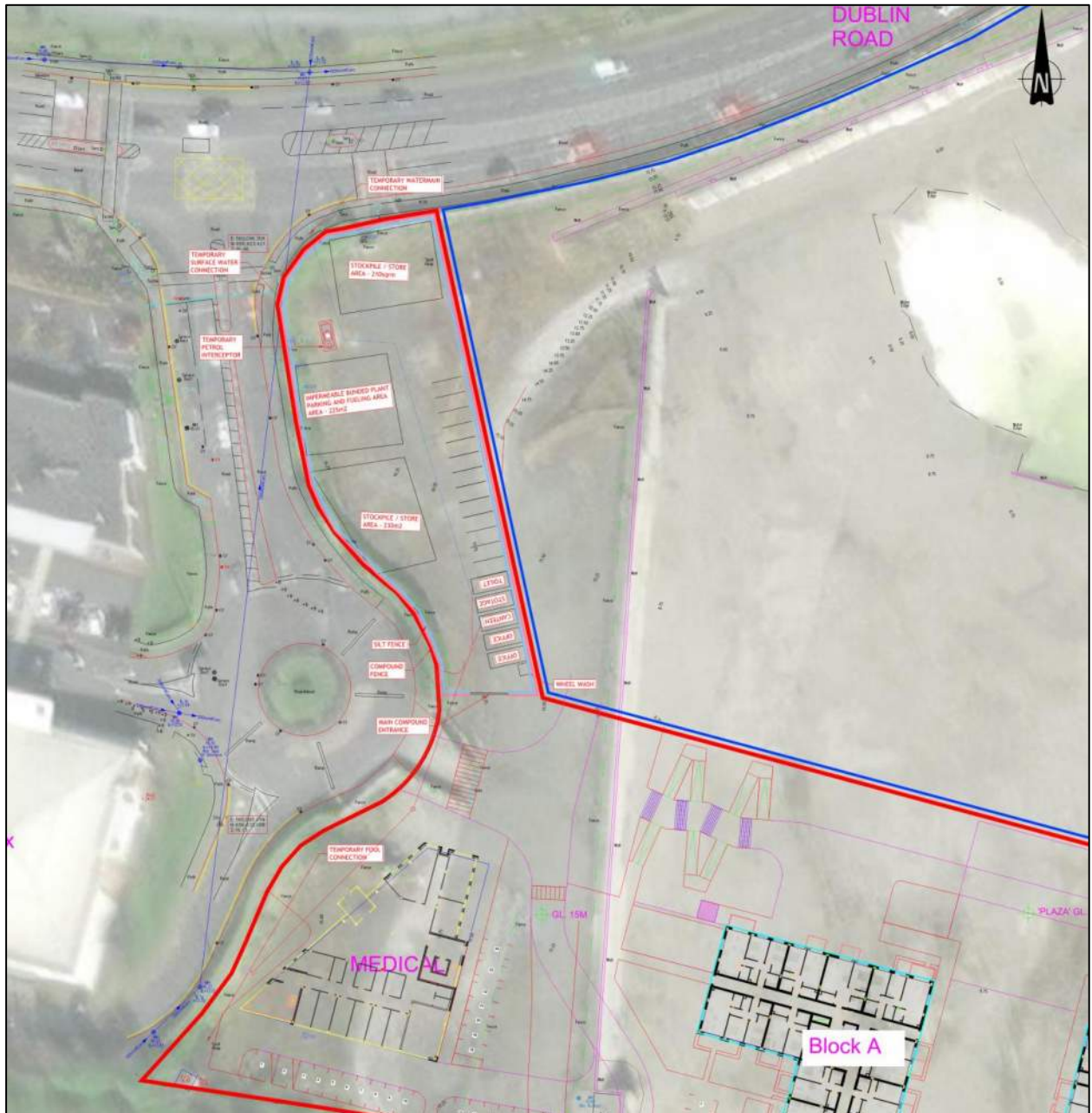


Figure 3-1: Construction Compound

3.1.5 Lighting

Lighting will be provided as necessary at the construction compound. This lighting will be controlled by occupancy/motion sensors so that it will remain at a low output unless activated.

Construction work will generally be confined to daylight hours and lighting will generally not be required for the construction phase. There will however be occasions where the provision of portable lighting will be required such as evening work during later winter/early spring. Construction stage lighting will be designed to minimise the broadcast of light to surrounding areas.

In keeping with bat-friendly lighting guidance, the design of lighting on the inner site area will follow the Bat Conservation Trust in partnership with the Institution for Lighting Professionals (ILP) Best Practice Guidance (BTC & ILP, 2018) on considering the impact on bats when designing lighting schemes. The following best practice measures will be included in the lighting design:

- Incorporate specialist bollard or low-level downward directional luminaires; Where low-level downward directional luminaires are not appropriate, installation of luminaires with warm white spectrum LEDs (<2700 Kelvin) to reduce blue light, with peak wavelengths higher than 550nm will be included.
- Mounted luminaires will not tilt upward, with an upward light ratio of 0% and with good optical control;
- Incorporate cowls to lighting throughout the proposed development site to spill away from the site boundaries;
- Maximise the separation distance between light mast locations and vegetated features at the boundary of the site.

3.1.6 Site Clearance and Demolition

A Pre-Construction Resource & Waste Management Plan has been undertaken by AWN Consulting which accompanies this planning submission. This shall be updated by the main contractor and will be in compliance with the requirements of the Best Practice Guideline for the Preparation of Resource & Waste Management Plans for Construction & Demolition Projects published by the Environmental Protection Agency (November 2021), which will identify and categorise any waste arising from the development.

Site clearance will have to be carried out to remove vegetation. Removal of scrub vegetation shall only take place outside the bird breeding season (1st March to 31st August). Existing trees shall be retained where possible. Temporary surface water management measures will be put in place prior to stripping the site and will remain in place until the completion of the development. Refer to Section 4.2 below for details of surface water management.

Please refer to Section 1.1 of the EIAR Schedule of Mitigation Measures included in Appendix A for further mitigation measures.

3.1.7 Earthworks

Once surface water management measures are in place and the site has been stripped, earthworks operations can commence. This will consist of excavation and installation of the main site drainage, roads, site levelling and the excavation of foundations.

Site investigations and environmental soil testing has been undertaken by OCB Geotechnical in August 2025. The trial pits show the site is predominantly covered by made ground.

In the event that contaminated material is found on site, this material will need to be segregated from clean/ inert material, tested and classified as either hazardous or non-hazardous in accordance with the EPA publication Waste Classification: List of Waste & Determining if Waste is Hazardous or Non-Hazardous and meets the criteria for the acceptance of waste a landfills.

In the event that Asbestos Containing Materials (ACMs) are found, the removal will only be carried out by a suitably permitted waste contractor, in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010. All asbestos will be taken to a suitably licenced or permitted facility.

Please refer to Section 1.1 of the EIAR Schedule of Mitigation Measures included in Appendix A for further mitigation measures.

3.1.8 Construction of Development

The exact construction sequence has not been determined, but it will be similar to what is described below:

1. Clearance and preparation of site for development
2. Demolition, localised excavation and removal of the existing concrete slab will be required to facilitate pile installation

3. Construction of earthworks including surface water detention pond. Fill will be between 1300mm and 700mm in depth
4. Construction of foundations - piled foundations which will be 450mm in diameter. Piles will be bored displacement pile (CFA) which will have an average depth of 5m below ground level
5. Construction of reinforced concrete floor slab
6. Site services construction including surface/foul water sewers, watermain and M&E services
7. Construction of concrete frame
8. Construction of floors and roof
9. Facades
10. Construction of roads/carpark/retaining elements
11. Fit out
12. Landscaping

3.1.9 Landscaping

Landscaped areas will be brought to a level below the final grading and will be finished with topsoil on completion. Seeding and planting will be in accordance with the landscape plan for the site. Refer to the Landscape Design Report prepared by JBA Consulting Engineers.

4 Environmental Management

4.1 Site Working Hours

The proposed hours of work on site will be stipulated in the planning conditions attached to the planning grant. Any working hours outside the normal construction working hours will be agreed with the planning authority. The planning of such works will take consideration of sensitive receptors.

4.2 Surface Water Management

Run-off into excavations/earthworks cannot be prevented entirely and is largely a function of prevailing weather conditions. Care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. All exposed soil surfaces will be within the main excavation site which limits the potential for any offsite impacts. All run-off will be prevented from directly entering any water courses.

During the construction phase as part of standard practice, appropriate measures to prevent water pollution to any watercourses near the site will be implemented during the construction phases and will include referral to:

- a) Control of Water Pollution from construction Sites, Guidance for consultants and contractors (C532).
- b) Environmental Good Practice on site guide (5th edition) (C811).
- c) Guidelines on Protection of Fisheries During Construction Works in and Adjacent to Waters (2016).

4.2.1 Pollution Control

4.2.1.1 Reduction and Prevention of Suspended Solids

Prior to the commencement of earthworks operations, the following site-specific surface water management measures will be put in place:

- a) Silt fencing will be installed along the perimeter of the low lying boundary of the site. The purpose of the silt fencing is to prevent silt laden water leaving the site with the potential to impact nearby watercourses. A typical silt fence detail is shown below in Figure 4-1. It will consist of a double layer of geotextile membrane fixed to wooden stakes approximately 600mm high. The membrane will be anchored into the ground to form a continuous barrier to silt laden water from the works site. Silt fences will be monitored via a silt inspection log to be maintained by the construction manager and periodically maintained during the construction period. Typical maintenance will consist of repairs to damaged sections of membrane and removal of a build-up of silt on the upslope side of the fence. Daily silt fence inspections are recommended as part of their operation ensuring that any necessary repairs can be expedited.
- b) Drainage ditches will be installed to intercept surface water where there is a risk of significant water flow into excavations or on to adjoining lands. All collected surface water will have to be treated prior to discharge. The run-off will be directed through appropriately sized settlement ponds to remove suspended solids.



Figure 4-1: Silt Fencing

- c) The settlement ponds will be designed/constructed in accordance with Ciria Document C532 “Control of water pollution from Construction Sites” (Ciria 2001) and Ciria Document C648 “Control of water pollution from linear construction projects” (Ciria 2006).
- d) Each pond will contain a forebay equivalent to 10% of the overall plan area of the pond. The forebay receives incoming surface water into the pond and provides settlement of the larger sediment material from the runoff. The forebay prevents these larger sediment materials progressing further in the pond. The ponds will contain a permanent water level below the outfall location allowing sediment to settle to the bottom while allowing the clean water at the top of the pond to discharge to the existing surface water sewer. Settlement tanks by Siltbuster or similar may be utilised.
- e) Work involving moving of soil during heavy rainfall will be avoided to minimise potential for entrainment of silt. Where forecasts indicate heavy rainfall events, works should be rescheduled accordingly.
- f) Where stockpiling is required, temporary stockpiles will be located a minimum of 20m from any temporary or permanent surface water drainage features. Three sides will be surrounded with silt fencing with access from the fourth (uphill) side. Sides will be smoothed, and runoff directed toward drainage ditches. Stockpiles shall be stored on level terrain and be covered during heavy rainfall periods. To prevent run off from stripped ground, banks are to be placed on the downstream side of stockpiles.
- g) Emergency contact numbers for the Local Authority Environmental Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.
- h) Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same.
- i) The construction manager will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of the works, and a record of these inspections will be maintained.
- j) Emergency contact numbers for the Local Authority Environmental Section, Inland Fisheries Ireland, the Environmental Protection Agency and the National Parks and Wildlife Service will be

displayed in a prominent position within the site compound. These agencies will be notified immediately in the event of a pollution incident.

- k) Site personnel will be trained in the importance of preventing pollution and the mitigation measures described here to ensure same.
- l) The construction manager will be responsible for the implementation of these measures. They will be inspected on at least a daily basis for the duration of the works, and a record of these inspections will be maintained.

4.2.1.2 Flooding

The site is outside Flood Zone A and B and is therefore at low risk of flooding during the 0.1%AEP or 1 in 1000-year return period fluvial event. Therefore, the statistical likelihood of flooding during the construction period is very low. It is impractical to provide silt management measures that could remain operational during such a flood event, protection of life and critical infrastructure will be the overriding concerns. The following measures will be required:

- a) An Emergency Response plan shall be developed for the site and shall consider the following:
 - i. Flood warning shall be used to determine the probability of the site being flooded.
 - ii. Met Éireann weather warnings alert service which is available on the Met Éireann app or through its website.
 - iii. Emergency evacuation routes will be included in the plan to ensure that flooding does not threaten the safety of construction personnel and/or residents.
 - iv. In the event of a forecasted flood event, all fuels, material stockpiles and construction equipment and materials that may be a cause for pollutants will be stored in areas above a level of 9.5mAOD (MRFS 0.5%AEP flood level with 300mm freeboard).
 - v. No construction works will take place during orange or red rain weather warnings issued by Met Éireann.
- b) Silt fences shall be inspected as part of the daily inspection regime. Trapped silt shall be removed from silt fencing at regular intervals.
- c) Earthworks shall be left exposed for the minimum time possible. Earthworks formations shall be protected by a layer of imported granular fill.
- d) Landscaping and seeding in accordance with the Landscaping Plan shall be carried out as early as possible
- e) Compound shall not be located within Flood Zone A or B.

4.2.1.3 Ground Water Vulnerability

There is a high water table within the site and the site is partially located in an area where the groundwater vulnerability varies from low to moderate.

Control measures are to be implemented on site to minimise the risk of contamination from fuels, chemicals and hazardous materials to prevent accidental spills and leaks.

4.2.1.4 Perched Water Table

During the ground investigation works, it was found that there is a perched water table on the site. Testing is to be carried out in accordance with the relevant guidelines and dewatering will be carried out in line with best practice.

4.2.1.5 Control of cement run-off

Works with concrete shall be done during dry conditions for a period sufficient to cure the concrete (at least 48 hours). Concrete pours shall occur in contained areas.

The washing out of concrete delivery vehicles is a potential source of pollution and shall be carried out in designated wash out areas only.

Wash-out areas on site will be located greater than 50m from any natural watercourse and properly designed with an impermeable liner to contain all cement laden water. No wash-out of ready-mix

concrete vehicles shall be located within 20 metres of any temporary or permanent drainage features. Signage shall be erected to clearly identify the wash-out areas. Sufficient wash-out areas shall be provided to cater for all vehicles at peak delivery times. Wash water shall be disposed of appropriately off site.

4.2.1.6 Accidental Spills and Leaks

No bulk chemicals will be stored within the active construction areas. Temporary oil and fuel storage tanks may be kept in the material storage area (within site compound) in suitable containers and will be stored on appropriately bunded spill pallets as required. Any fuel and oil stored onsite shall be stored on bunded spill pallets approved under BS EN 1992-3:2006. All bunds will be impermeable and capable of retaining a volume of equal to or greater than 1.1 times (>110%) capacity of the containers stored on them. In the event of a spillage, excess oil or fuel will be collected in the bund.

Refuelling of vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in the compound, away from watercourses. Emergency procedures and spill protection equipment such as oil booms, oil soakage pads, socks and sand will be available in clearly marked bins/silos and in construction vehicles to be used in the event of an accidental release during refuelling. This equipment will be checked weekly to ensure there is sufficient supply for the site. Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the site and disposed of in accordance with all relevant waste management legislation. Training will be given to site workers in how to manage a spill event.

Prior to any work commencing on site, all construction equipment will be checked to ensure that it is mechanically sound, to avoid leaks of oil, hydraulic fluids and grease.

The following measures will be put in place to prevent any spillages to ground of fuels during machinery activities and prevent any resulting soil and/or groundwater quality impacts:

- a) Where mobile fuel bowsers are used the following measures will be taken:
 - i. Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use.
 - ii. Any pump or valve will be fitted with a lock and will be secured when not in use.
 - iii. All bowsers to carry a spill kit and operatives must have spill response training; and Portable generators or similar fuel containing equipment will be placed on suitable drip trays.
 - iv. Weekly checks of spill kits will be carried out to ensure they are sufficiently stocked.

4.2.1.7 Monitoring

Daily checks will be carried out and recorded in a Surface Water Management Log to ensure pollution control measures are being adhered to. A daily log of inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.

4.2.1.8 Contingency Plan

- a) The measures will be implemented prior to the relevant works being carried out.
- b) During the construction stage the following procedures will be undertaken in response to any pollution incident at the site:
 - i. The source and/or activities relating to the incident will be stopped immediately.
 - ii. Adequate steps will be taken to filter and/or slow down the rate of discharge/slippage.
 - iii. The relevant authorities will be contacted immediately.

Please refer to Section 1.2 of the EIAR Schedule of Mitigation Measures included in Appendix A for further mitigation measures.

4.3 Management of Contaminated Material/Water

If any contaminated land is encountered during construction, it will be removed off-site and be disposed of at a licensed waste facility.

Contaminated groundwater, if encountered on site will be treated according to best practice, appropriate measures/controls dependent on the nature of the contamination prior to discharge to the surface water network.

If dewatering is required, water will be treated prior to discharge. Please refer to section 4.2.1.1.

4.4 Noise, Vibration and Dust Control

Construction of the development has the potential to create significantly increased noise and dust levels locally unless adequate controls are put in place. Earthwork's operations will involve the use of heavy construction plant. Stockpiles of material and gravel areas could become dusty in dry weather.

4.4.1 Noise

Specific noise abatement measures shall comply with the recommendations of BS5228-1 2009. These measures will include:

- a) No plant used on site will be permitted to cause an ongoing public nuisance due to noise.
- b) The best means practicable, including proper maintenance of plant, will be employed to minimise the noise produced by on site operations.
- c) All vehicles and mechanical plant will be fitted with effective exhaust silencers and maintained in good working order for the duration of the contract.
- d) Compressors and generators will be attenuated models fitted with properly lined and sealed acoustic covers which will be kept closed whenever the machines are in use and all ancillary pneumatic tools shall be fitted with suitable silencers.
- e) Machinery that is used intermittently will be shut down or throttled back to a minimum during periods when not in use.
- f) Any plant, such as generators or pumps, required to operate before 07:00hrs or after 19:00hrs will be surrounded by an acoustic enclosure or portable screen.
- g) Location of plant shall consider the likely noise propagation to nearby sensitive receptors.
- h) Machines shall be turned off when not in use.
- i) A copy of the EPA 'Guidance Note for Noise: License Applications, Surveys and Assessments in Relation to Scheduled Activities (NG4)' will be available on site for the duration of the works and will be referred to as required during the works.

The development will generate typical construction activity related noise and vibration sources from use of a variety of plant and machinery such as excavators, lifting equipment, dumper trucks and generators.

Any complaints will be addressed to the construction manager, logged and followed up in a prompt fashion. In addition, prior to particularly noisy construction activity, e.g. rock breaking (if required) close to property, etc., the site contact will inform the nearest noise sensitive locations of the time and expected duration of the works.

All works on site shall comply with BS 5228 2009+ A1 2014 (Parts 1 & 2) which gives detailed guidance on the control of noise and vibration from construction activities. In general, the contractor shall implement the following:

- a) Avoid unnecessary revving of engines and switch off equipment when not required.
- b) Keep internal haul roads well maintained and avoid steep gradients.
- c) Minimise drop height of materials.
- d) Start-up plant sequentially rather than all together.

4.4.2 Vibration

Vibration limits to be applied for the works will be those specified in the TII document Guidelines for the Treatment of Noise and Vibration in National Road Schemes (TII, Revision 1, 2004).

4.4.3 Dust

The aim is to ensure good site management by avoiding dust becoming airborne at source. This will be done through good design, planning and effective control strategies. The siting of construction activities will take note of the location of sensitive receptors and prevailing wind directions to minimise the potential for significant dust nuisance. In addition, good site management will include the ability to respond to adverse weather conditions by either restricting operations onsite or using effective control measures quickly before the potential for nuisance occurs.

1. During working hours, technical staff will be available to monitor dust levels as appropriate; and
2. At all times, the dust management procedures put in place will be strictly monitored and assessed.

The dust minimisation measures will be reviewed at regular intervals during the construction phase to ensure the effectiveness of the procedures in place and to maintain the goal of minimisation of dust generation. In the event of dust nuisance occurring outside the site boundary, site activities will be reviewed, and procedures implemented to rectify the problem. Specific dust control measures to be employed are presented below.

Please refer to Section 1.4 of the EIAR Schedule of Mitigation Measures included in Appendix A for further mitigation measures.

4.4.3.1 Site Routes

Site access routes (particularly unpaved areas) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved areas is to apply speed restrictions.

- a) A speed restriction of 15 km/hr will be applied as an effective control measure for dust for onsite vehicles or delivery vehicles within the vicinity of the site.
- b) Road sweepers with water tank will be provided to keep areas moist and to remove mud and aggregate from hard surfaces. Water will be sourced from mains supply. The road sweeper will also clean the site access route as required.
- c) Bowsers will be available during periods of dry weather throughout the construction period, with water sourced from the mains supply. The bower will operate during dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use.

4.4.3.2 Excavation

Excavation work during periods of high winds and dry weather conditions can be a significant source of dust.

- a) During dry and windy periods, and when there is a likelihood of dust nuisance, watering shall be conducted to ensure moisture content of materials being moved is high enough to increase the stability of the soil and thus suppress dust.
- b) During periods of very high winds (gales), activities likely to generate significant dust emissions will be postponed until the gale has subsided. The movement of truck containing materials with a potential for dust generation to an off-site location will be enclosed or covered.

4.4.3.3 Stockpiling

The location and moisture content of stockpiles are important factors which determine their potential for dust emissions. The following measures will be put in place:

- a) Regular watering will take place during dry/windy periods to ensure the moisture content is high enough to increase the stability of the soil and suppress dust.
- b) Permanent or long-term stockpiles of topsoil shall be seeded to limit dust emission.

4.4.4 Site Traffic

Spillage and blow-off of debris, aggregates and fine material onto public roads will be reduced to a minimum by employing the following measures:

- a) Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered at all times to restrict the escape of dust.
- b) Any hard surface site roads will be swept to remove mud and aggregate materials from their surface.
- c) A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate.
- d) Road sweepers will be employed to clean the site access route as required.
- e) Hoarding will be maintained in good order.

Please refer to Section 1.6 of the EIAR Schedule of Mitigation Measures included in Appendix A for further mitigation measures.

4.5 Biodiversity and Invasive Species Management

All site-specific measures shall be adopted to ensure the protection of biodiversity during the construction works.

Confine disturbance of vegetation to a minimum and where possible stay out of areas where no work is to take place.

Retain landscape features, such as trees, hedgerows, and green areas where possible.

Landscaping with native flora where possible and the All-Ireland Pollinator Plan should be considered.

Care should be taken when removing vegetation for small mammals, such as hedgehogs, badgers, and foxes.

Vegetation should be removed in accordance with the Wildlife act and at the appropriate times outside of the bird nesting season. Hedge cutting should not take place between the 1st of March and the 31st of August, in order to ensure minimal disturbance to wildlife active during this time. Removal of any vegetation from the site is to be carried out between the beginning of September and the end of February.

Implementation of mitigation measures on-site is to be supervised by an ecologist.

No Third Schedule Invasive species were recorded within the site. See the EIAR Biodiversity Chapter accompanying this application for further details.

In the unlikely event that third schedule invasive species are discovered on site, they are to be removed and treated by a licensed and trained specialist to prevent the spread of invasive species, in line with a detailed management plan. This measure is to be carried out prior to any construction work on the application site.

For any infill being brought onsite, ensure that the source is free of invasive species such as Japanese Knotweed, Gunnera and Rhododendron.

Please refer to Section 1.3 of the EIAR Schedule of Mitigation Measures included in Appendix A for further mitigation measures.

4.6 Consent and Licenses

All statutory consents and licences required to commence on-site construction activities will be obtained ahead of works commencing, allowing for the appropriate notice period. These will include, but are not limited to:

- a) Site notices.
- b) Construction commencement notices.
- c) Licence to connect to existing utilities and mains sewers, where required

4.7 Services and Utilities

Welfare facilities (canteens, toilets etc.) will be available within the construction compound and this will remain in place for the construction of the proposed development. The offices and site amenities will initially need to have their own power supply and water deliveries until connections are made to the mains networks. The Contractor will ensure that sufficient facilities are always available to accommodate the number of employees on site.

Electrical connections will be made by suitably qualified personnel following consultation with the relevant authorities and will be cognisant of subsequent construction works. High voltage connections will be established for heavy duty equipment and site facilities, as required. The current electricity facilities on the site of the proposed development are supplied by the ESB through a ring network. All electrical works, including connection to the ESB network will be carried out by a suitably qualified contractor.

Water supply required for welfare facilities, dust suppression and general construction activities will be sourced from the existing public piped supplies on the Dublin Road, in consultation with Uisce Eireann.

Please refer to Section 1.11 of the EIAR Schedule of Mitigation Measures included in Appendix A for further mitigation measures.

4.8 Material Handling, Storage and Delivery

The Contractor will ensure that the delivery of materials is coordinated to minimise impacts to adjacent properties. The Contractor will ensure that all materials are adequately stored and secured in their site compound. The Contractor will ensure the roads adjacent to the site are kept clean and free of debris.

It is proposed to source general construction materials from the local area to minimise transportation distances (subject to suitable material costs). Where possible 'Just in Time' delivery system will operate to minimise storage of materials on-site.

Aggregate materials such as sands and gravels will be stored in clearly marked areas in the compound area. Liquid materials will be stored within temporary bunded areas, doubled skinned tanks or bunded containers (all bunds will conform to standard bunding specifications - BS EN 1992-3:2006) to prevent spillage.

Construction materials will be transported in clean vehicles. Lorries/trucks will be properly enclosed or covered during transportation of friable construction materials and spoil to prevent the escape material along the public roadway.

4.9 Visitor Management

Visitors will only be allowed to enter the main site compound via the designated pedestrian access gate. A dedicated, secured footpath to the site office is established at the gate for registration and obtaining PPE prior to entering the site. A log will be maintained by security to control access to the site. Visitors

will be required to attend a site-specific induction to allow access to the compound and/or construction site unless being accompanied by an inducted member of the site team. Visitors will then be taken by an inducted member of the construction team to the required area of the site.

4.10 Employment and Management Workforce

Construction employment numbers will vary depending on the construction stage of the project and the actual approach adopted by the Main Contractor. However, it is anticipated that at the peak of construction there will be a workforce in the range of approximately 40 people employed depending on the stage of construction.

All employees working on the site will be required to have a SafePass Card (or similar approved Construction Health & Safety card), manual handling training and the necessary certificates to operate machinery as required. The details of training required, records maintained, and induction procedures will be outlined in the Main Contractor's Health and Safety Plan(s).

4.11 Communications with Local Stakeholder Management

The Developer will, as required, liaise with owners of local properties in advance of works commencing onsite and coordinate works to have minimum impact on the operation of local properties. All signage used will meet the requirements of the Safety, Health & Welfare at Work (General Applications) Regulations 2007 and Chapter 8 Traffic Signs Manual

4.12 Preliminary Traffic Management Plan

A Traffic Management Plan (TMP) will be prepared for the development in accordance with the principles outlined below and shall comply with the requirements of:

- i. Department of Transport Traffic Signs Manual 2010 - Chapter 8 Temporary Traffic Measures and Signs for Roadworks
- ii. Department of Transport Guidance for the Control and Management of Traffic at Road Works (2010)
- iii. Any additional requirements detailed in the Design Manual for Roads and Bridges (DMRB) & Design Manual for Urban Roads & Streets (DMURS)

The Contractor shall prepare a detailed traffic management plan for works at that interface with the existing road network and obtain all required road opening licenses.

Please refer to Section 1.9 of the EIAR Schedule of Mitigation Measures included in Appendix A for further mitigation measures.

4.13 Waste Management

Circular economy is a concept that materials and resources should be reused, repaired, refurbished and recycled as much as possible. The *Waste Action Plan for a Circular Economy* and the *Circular Economy and Miscellaneous Provisions Act 2022* set out how the construction industry should reduce waste were created and strive to ensure materials are returned to the circular economy.

The management of resources and waste should reflect the waste management hierarchy, with waste prevention and minimisation being the first priority succeeded by reuse and recycling. The development has been assessed under the following headings:

- i. Design for Reuse and Recycling
- ii. Design for green procurement
- iii. Design for Off-Site Construction
- iv. Design for Materials Optimisation

Typical waste materials that will be generated from the construction works will include:

1. Soil and stones
2. Concrete and bricks
3. Wood, glass and metals
4. Paper and cardboard
5. Mixed C&D waste
6. Chemicals (solvents, paints, adhesives, detergents etc.)

The management of all hazardous waste arisings, if they occur, shall be coordinated in liaison with Health and Safety Management.

4.13.1 Waste Minimisation

Waste minimisation measures proposed are summarised as follows:

- i. Materials will be ordered on an 'as needed' basis to prevent over supply.
- ii. Materials will be correctly stored and handled to minimise the generation of damaged materials.
- iii. Materials will be ordered in appropriate sequence to minimise materials stored on site.
- iv. A waste tracking log will be established.
- v. Sub-contractors will be responsible for similarly managing their wastes.
- vi. All wood waste generated by site works will be inspected and examined and will be segregated as re-useable wood and scrap wood waste.

4.13.2 Waste Storage

The main waste storage area will be located in the site compound. A dedicated and secure area containing bins, and/or skips, and storage areas, into which all waste materials generated by construction site activities, will be established within the development.

Waste materials generated will be segregated at the site compound, where it is practical to do so. Where the on-site segregation of certain waste types is not practical, offsite segregation will be carried out. There will be skips and receptacles provided to facilitate segregation at source. All waste receptacles leaving site will be covered or enclosed. The appointed waste contractor will collect and transfer the wastes as receptacles are filled.

The site Construction Manager will ensure that all staff are informed of the requirements for segregation of waste materials by means of clear signage and verbal instruction. Appointed employees will be made responsible for ensuring good site housekeeping.

4.13.3 Records

A written record of all quantities and nature of wastes removed from the site will be maintained onsite in a waste file (in hardcopy or electronically).

It is the responsibility of the construction manager or his/her delegate that all contracted waste haulage drivers hold an appropriate waste collection permit for the transport of waste loads and that all waste materials are delivered to an appropriately licenced or permitted waste facility in compliance with the relevant Regulations.

The Contractor, as part of regular site inspection audits, will determine the effectiveness of the waste management strategy and will assist the project manager in determining the best methods for waste minimisation, reduction, re-use, recycling and disposal as the construction phase progresses and waste materials are generated.

Please refer to Section 1.10 of the EIAR Schedule of Mitigation Measures included in Appendix A for further mitigation measures.

5 Conclusion

This Construction Environmental Management Plan sets out the overall management strategy for construction works for the proposed site works. The CEMP aims to ensure the management of construction activity is carried out in a planned, structured, and considerate manner which minimises the impacts of the works on the local environment, residents and commercial activities in the vicinity of the site. The project team are committed to ensuring that the construction activities to be carried out are pro-actively managed to minimise potential impacts.

Appendix A EIAR Schedule of Mitigation Measures



Schedule of Mitigation Measures Construction Phase (Reference Only)

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1. EIAR SCHEDULE OF MITIGATION MEASURES (CONSTRUCTION PHASE)

1.1 Land, Soils, and Geology

1.1.1 Mitigation

1.1.1.1 Construction Environmental Management Plan

- ▶ The CEMP will set out the proposed procedures and operations to be utilised on the proposed construction site to protect water quality. The CEMP will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.
- ▶ During the project planning phase, a comprehensive emergency response plan will be developed by the construction contractor. This plan will outline a well-defined procedure for effectively managing emergencies as they arise. Furthermore, it's imperative to disseminate this emergency protocol to all site personnel during the site induction process. This plan will include for events such as:
 - Pollution incidents: These may involve spillages, the malfunction of temporary structures, embankment collapse, acts of vandalism, fires, and other related events.
 - Extreme weather occurrences: Events such as heavy rainfall, flooding, are important factors to consider due to their potential impact on the construction process.

1.1.1.2 Measures for the Reuse of Soils, and Sourcing of Aggregates

- ▶ Where excavated soil is intended for reuse on site, topsoil will be stockpiled separately to the subsoil at designated locations. Stockpiled topsoil and subsoil will be kept free from disturbance for the duration of construction to reduce risk of physical damage and compaction pending reuse across the site for backfilling and landscaping.
- ▶ All excavated materials will be visually inspected by suitably qualified persons assessed for signs of possible contamination such as staining or strong odours. Should any unusual staining or odour be noticed, samples of this soil will be analysed for the presence of potential contaminants to ensure that historical pollution of the soil has not occurred. Should it be determined that any of the soil excavated is contaminated, this will be segregated and appropriately disposed of by a suitably permitted/licensed waste disposal contractor. Suitable soils and stones will be retained and reused on-site as backfill where possible.
- ▶ If any waste soil requires removal from site, it will be classified by an experienced and qualified environmental professional to ensure that the waste soil is correctly classified for transportation and recovery/disposal offsite.
- ▶ Regulation 27 (By-products), as amended, of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2011-2020, (Previously Article 27 of the European Communities (Waste Directive)), allows material from one site to be reused on another site. By-product notifications are made to the EPA via their online notification form. This process requires certain conditions to be met, and excavated material should not be removed from site until approval from the EPA has been received. The potential to reuse material as a by-product will be confirmed during the course of the excavation works, with the objective of eliminating any unnecessary disposal of material. Regulation 27 will also be investigated to see if material can be imported onto the site for beneficial reuse instead of using virgin materials.
- ▶ Regulation 28 (End-of-waste status) as amended, of S.I. No. 323/2020 - European Union (Waste Directive) Regulations 2011-2020, (Previously Article 28 of the European Communities (Waste

Directive)), allows certain specified waste to cease to be waste when it has undergone a recovery, including recycling, operation and complies with specific criteria. Regulation 28 will be considered for waste streams, where the regulation may be utilised.

- ▶ Imported CL.503 material will be required to provide a suitable bedding layer that will be placed in accordance with IS 328:2021, GNI/AD/SP/007, Guidelines for Managing Openings in Public Roads 2017 (The Purple Book) and compacted in the trench before laying the pipeline. All imported fill and aggregate that may be required will be sourced from reputable suppliers. All suppliers will be vetted for:
 - Aggregate compliance certificates/declarations of conformity for the classes of material specified for the Proposed Development,
 - Environmental Management status; and
 - Regulatory and Legal Compliance status of the Company

1.1.1.3 Measures for the Control of Pollution from Other Substances

- ▶ The following mitigation measures will be implemented during the construction phase in order to prevent any spillages of fuels and other construction chemicals and prevent any resulting discharge to the soil or geological environment:
 - Hydrotreated Vegetable Oil (HVO) will be used to fuel vehicles and plant including generators and cranes.
 - All plant and machinery will be regularly maintained and serviced to minimise the risk of release of fuel. This will only be undertaken by qualified personnel;
 - Designation of bunded maintenance and refuelling areas on the Site;
 - Provision of spill kit facilities across the site strategically located in high risk areas;
 - Where mobile fuel bowsers are used, the following measures will be taken:
 - ◆ Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - ◆ The pump or valve will be fitted with a lock and will be secured when not in use;
 - ◆ All bowsers to carry a spill kit and operatives must have spill response training;
 - ◆ Portable generators or similar fuel containing equipment will be placed on suitable drip trays.
- ▶ In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:
 - Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
 - Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, double skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
 - Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
 - All drums to be quality approved and manufactured to a recognised standard;
 - If drums are to be moved around the Site, they will be secured and on spill pallets; and
 - Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.
- ▶ Refuelling and maintenance of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site) which will be away from watercourses. Emergency procedures and spill protection equipment such as oil booms, oil soakage pads, socks and sand will be available in clearly marked bins/silos and in construction vehicles to be used in the event of an accidental release during refuelling. This equipment will be checked weekly to ensure there is sufficient supply for the site. Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the site and disposed of in accordance with all relevant waste management legislation. Training will be given to site workers in how to manage a spill event. Prior to any work commencing on site, all construction equipment will be checked to ensure that it is mechanically sound, to avoid

leaks of oil, hydraulic fluids and grease. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank.

- ▶ The following measures will be put in place to prevent any spillages to ground of fuels during machinery activities and prevent any resulting soil and/or groundwater quality impacts:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use.
 - Any pump or valve will be fitted with a lock and will be secured when not in use.
 - All bowsers to carry a spill kit and operatives must have spill response training; and Portable generators or similar fuel containing equipment will be placed on suitable drip trays.
 - Weekly checks of spill kits will be carried out to ensure they are sufficiently stocked.
- ▶ Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

1.1.1.4 Measures for the Use of Concrete

- ▶ Any ready-mixed concrete will be brought to site by truck.
- ▶ A suitable risk assessment for wet concreting will be completed prior to works being carried out which will include measures to prevent discharge of alkaline waste waters or contaminated storm water to the underlying subsoil.
- ▶ Wash water from cleaning ready-mix concrete wagons and mixers will be contaminated. Wagons and mixers must be washed off-site or in a bunded, impermeable designated washout area. Washout to be removed off site and disposed of appropriately at a licenced facility or reused for concrete.

1.1.2 Monitoring

During construction phase the following monitoring measures will be considered:

- ▶ Monitoring will be undertaken in accordance with planning conditions and undertaken by the contractor in compliance with the project CEMP.
- ▶ Contractors will carry out regular inspections to confirm compliance with the CEMP. Daily inspections by contractors will address potential environmental impacts including dust, litter, waste management and general housekeeping.
- ▶ Excavated soil during construction may contain contaminants or pollutants that could pose a risk to the environment if not managed properly. Soil sampling involves collecting representative samples of the excavated soil and analysing them to determine their composition and potential contaminants to confirm disposal options.
- ▶ Construction sites involve numerous activities that can impact the environment, from pouring concrete to refuelling vehicles and equipment. Regular inspections of these activities ensure that mitigation measures are implemented to environmental effects.
- ▶ Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all storage is located at least 20 m from surface water receptors.
- ▶ Regular inspection of surface water run-off and any sediment control measures (e.g. silt traps) will be carried out during the construction phase. Inspection and maintenance of the silt fences during construction phase is crucial to ensuring that they work as intended. They will remain in place throughout the entire construction phase.
- ▶ Runoff diversion channels/bunds need regular maintenance to keep functioning throughout their life.
- ▶ Regular auditing of construction / mitigation measures will be undertaken, e.g. concrete pouring, refuelling in designated areas, etc.
- ▶ A log of the regular inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.

1.2 Hydrology and Hydrogeology

1.2.1 Mitigation

The CEMP will set out the proposed procedures and operations to be utilised on the proposed construction site to protect water quality. The CEMP will be implemented and adhered to by the construction Contractor and will be overseen and updated as required if site conditions change by the Project Manager, Environmental Clerk of Works where relevant. All personnel working on the site will be trained in the implementation of the procedures. All relevant personnel will be fully trained in the use of this equipment. Guidelines such as "Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors" (CIRIA 532, 2001) will be complied with.

1.2.1.1 Measures for the Control of Suspended Solids

The following mitigation measures will be implemented to manage potential impact associated with sediment and sediment runoff to nearby watercourses (Industrial Estate/ Galvone Stream located c. 160 m to the east, merging with the Groody River c. 200 m north-east, which discharges to the Shannon (Lower) c. 705 m north of the site).

- ▶ Prior to commencement of construction the appointed contractor(s) will prepare and adhere to a method statement identifying the extent of the areas likely to be affected and demonstrating that this is the minimum disturbance necessary to achieve the required works.
- ▶ During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- ▶ Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- ▶ A stabilised entranceway consisting of an aggregate on a Geotech mesh/fabric base that will be located at any entry or exit point of the construction site. Aggregate will be established at the site entrance points from the construction site boundary extending for at least 10 m.
- ▶ Where stockpiling is required, temporary stockpiles will be located a minimum of 20m from any temporary or permanent surface water drainage features. Three sides will be surrounded with silt fencing with access from the fourth (uphill) side. Sides will be smoothed, and runoff directed toward drainage ditches. Stockpiles shall be stored on level terrain and be covered during heavy rainfall periods. To prevent run off from stripped ground, banks are to be placed on the downstream side of stockpiles. Stockpiles will be tightly compacted to reduce runoff and graded to aid in runoff collection.
- ▶ During earthworks and excavation works care will be taken to ensure that exposed soil surfaces are stable to minimise erosion. Movement of material will be minimised to reduce the degradation of soil structure and generation of dust.
- ▶ Hard surface site roads and public roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads will be restricted to essential site traffic only.
- ▶ Silt fencing will be installed along the perimeter of the low-lying boundary of the site. The purpose of the silt fencing is to prevent silt laden water leaving the site with the potential to impact nearby watercourses. It will consist of a double layer of geotextile membrane fixed to wooden stakes approximately 600mm high. The membrane will be anchored into the ground to form a continuous barrier to silt laden water from the works site.
- ▶ Silt fences will be monitored via a silt inspection log to be maintained by the construction manager and periodically maintained during the construction period. Typical maintenance will consist of repairs to damaged sections of membrane and removal of a build-up of silt on the upslope side of the fence.
- ▶ Daily silt fence inspections are recommended as part of their operation ensuring that any necessary repairs can be expedited.
- ▶ Drainage ditches will be installed to intercept surface water where there is a risk of significant water flow into excavations or on to adjoining lands. All collected surface water will have to be treated prior

to discharge. The run-off will be directed through appropriately sized settlement ponds to remove suspended solids. Each pond will contain a forebay equivalent to 10% of the overall plan area of the pond. The forebay receives incoming surface water into the pond and provides settlement of the larger sediment material from the runoff. The forebay prevents these larger sediment materials progressing further in the pond. The ponds will contain a permanent water level below the outfall location allowing sediment to settle to the bottom while allowing the clean water at the top of the pond to discharge to the existing surface water sewer. Settlement tanks by Siltbuster or similar may be utilised.

- ▶ Weather conditions will be considered when planning construction activities to minimise the risk of run-off from the site.
- ▶ Excavations will remain open for as little time as possible before placement of fill and reinstatement. This will help to minimise the potential for water ingress into excavations.
- ▶ Reinstatement will be carried out as soon as practicable after pipeline installation.
- ▶ Regular inspection of surface water run-off and sediment control measures will be carried out during the construction phase. A log the regular inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.

1.2.1.2 Measures for the Control and Treatment of Construction Surface Water

- ▶ Surface water, rainfall or groundwater within excavations, or rainfall on other parts of the working area will not be pumped or discharged directly (without treatment) into watercourses or drains but will be treated prior to discharge to ensure the removal of pollutants and sediments.
- ▶ Discharge of treated water during construction will occur only after appropriate testing and will depend on the quality of the construction water. Where suitable, water may be discharged to the existing stormwater network following attenuation in the settlement ponds, subject to agreement with Limerick County Council. All discharges will comply with relevant regulations and permit conditions. In the event of contamination or exceedances of discharge limits, water will either be re-treated on site or removed to a licensed facility via tankers.
- ▶ Whenever possible, water pumped out from excavations will be discharged onto permeable vegetated areas after undergoing sediment removal through filtration.
- ▶ When discharging clean water into watercourses, measures like baffles, geotextiles, sediment mat, or riprap will be set up at the discharge point to avoid disturbing the watercourse. The design of the outfalls and the construction method statements for their installation shall be agreed with IFI prior to construction.
- ▶ Excavation works will halt during continuous heavy rainfall (extreme weather events), giving the ground time to drain and excess water to dissipate.
- ▶ For the avoidance of doubt, there shall not be discharge of untreated, silty, or contaminated water from the works to any watercourse or stormwater network. Should any discharge of contaminated construction water be required during the construction phase, discharge will be to foul sewer with agreement of the Uisce Eireann, or tankered off site to a licenced liquid waste facility.

1.2.1.3 Measures for the Control of Pollution from Other Substances

The following mitigation measures will be implemented during the construction phase in order to prevent any spillages of fuels and other construction chemicals and prevent any resulting discharge of pollutants to soil, surface water or groundwater systems:

- ▶ Hydrotreated Vegetable Oil (HVO) will be used to fuel vehicles and plant including generators and cranes.
- ▶ All plant and machinery will be regularly maintained and serviced to minimise the risk of release of fuel. This will only be undertaken by qualified personnel;
- ▶ Designation of bunded maintenance and refuelling areas on the Site;

- ▶ Provision of spill kit facilities across the Site, strategically located in high risk areas;
- ▶ Where mobile fuel bowsers are used, the following measures will be undertaken:
 - Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use;
 - The pump or valve will be fitted with a lock and will be secured when not in use;
 - All bowsers to carry a spill kit and operatives must have spill response training;
 - Portable generators or similar fuel containing equipment will be placed on suitable drip trays.

In the case of drummed fuel or other potentially polluting substances which may be used during the construction phase, the following measures will be adopted:

- ▶ Secure storage of all containers that contain potential polluting substances in a dedicated internally bunded chemical storage cabinet unit or inside a concrete bunded area;
- ▶ Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be stored within temporary bunded areas, doubled skinned tanks or bunded containers to a volume of 110% of the capacity of the largest tank/container. Drainage from the bunded area(s) shall be diverted for collection and safe disposal.
- ▶ Clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage;
- ▶ All drums to be quality approved and manufactured to a recognised standard;
- ▶ If drums are to be moved around the Site, they will be secured and on spill pallets; and
- ▶ Drums will be loaded and unloaded by competent and trained personnel using appropriate equipment.
- ▶ Refuelling and maintenance of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area or within the construction compound (or where possible off the site) which will be away from watercourses.
- ▶ Emergency procedures and spill protection equipment such as oil booms, oil soakage pads, socks and sand will be available in clearly marked bins/silos and in construction vehicles to be used in the event of an accidental release during refuelling. This equipment will be checked weekly to ensure there is sufficient supply for the site.
- ▶ Any spillage of fuels, lubricants or hydraulic oils will be immediately contained, and the contaminated soil removed from the site and disposed of in accordance with all relevant waste management legislation.
- ▶ Training will be given to site workers in how to manage a spill event.
- ▶ Prior to any work commencing on site, all construction equipment will be checked to ensure that it is mechanically sound, to avoid leaks of oil, hydraulic fluids and grease.
- ▶ In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank.

The following measures will be put in place to prevent any spillages to ground of fuels during machinery activities and prevent any resulting soil and/or groundwater quality impacts:

- ▶ Any flexible pipe, tap or valve will be fitted with a lock and will be secured when not in use.
- ▶ Any pump or valve will be fitted with a lock and will be secured when not in use.
- ▶ All bowsers to carry a spill kit and operatives must have spill response training; and Portable generators or similar fuel containing equipment will be placed on suitable drip trays.
- ▶ Weekly checks of spill kits will be carried out to ensure they are sufficiently stocked.

1.2.1.4 Wastewater Management

- ▶ Foul wastewater generated during the construction phase will be fully managed and controlled throughout the works. Welfare facilities including toilets, wash areas and canteens will be provided within the designated construction compound, which will remain in place for the duration of the

development. The compound will be located within the application site boundary and will not be positioned within Flood Zone A or Flood Zone B.

- ▶ Water required for welfare use and for general construction activities will be supplied from the existing public watermain on Dublin Road (R445), following consultation with Uisce Éireann.
- ▶ Foul effluent arising from site offices and welfare facilities will be collected in portable sanitary units. These units will be maintained and emptied by a licensed waste contractor, ensuring that all wastewater is appropriately transported and treated at an authorised facility.
- ▶ The appointed contractor will implement a site-specific Emergency Response Plan, consistent with relevant industry guidance. All site personnel will receive appropriate training in emergency procedures, including the management of accidental spills or sanitary system failures, to prevent any risk of contamination to surrounding surface water or groundwater environments.

1.2.1.5 Measures Relating to Works in Proximity to Watercourses

The following measures are required to ensure that surface water quality and downstream hydrological receptors are not adversely affected by the construction works:

- ▶ Work areas will be kept to the minimum footprint necessary to complete the construction activities. All working zones will be clearly marked and cordoned off in advance of commencement to prevent unnecessary ground disturbance.
- ▶ No vehicles or machinery will enter or track within drainage channels or low-lying flow paths. Where access across minor drainage features is required, temporary culverts or bridging structures will be installed to avoid disrupting natural drainage patterns and to protect water quality.
- ▶ Unnecessary tracking or excavation across vegetated or grassed areas will be avoided to minimise the risk of sediment-laden runoff entering drainage pathways.
- ▶ Silt fencing will be installed along working areas adjacent to drainage features for the duration of construction. The fencing will be securely embedded to ensure effective retention of silts and prevent sediment mobilisation to downstream receptors.
- ▶ On completion of construction, all silt fencing will be removed and disposed of at a licensed facility.
- ▶ Temporary stockpiles will be located at least 20 m from any drainage feature.
- ▶ Stockpiles will be compacted, covered during heavy rainfall, and surrounded on three sides with silt fencing.
- ▶ Banks will be installed on the downslope side to prevent runoff from stripped areas entering drainage lines.
- ▶ Earthworks will be managed to minimise erosion.
- ▶ Exposed soil will be stabilised where possible.
- ▶ Movement of excavated material will be reduced to limit soil degradation.
- ▶ Excavation works will cease during periods of continuous heavy rainfall, allowing surface water to dissipate before works recommence.
- ▶ Drainage ditches will be installed where necessary to intercept surface water flows and prevent water entering excavations or adjacent lands.
- ▶ Dewatering may be required following heavy rainfall. Any dewatering discharge will occur to a vegetated area at least 20 m from drainage features, via silt bags and/or settlement tanks. Silt fencing will be installed around the discharge area to ensure no sediment-laden water infiltrates into the drainage system.
- ▶ Collected surface water requiring treatment will be directed to settlement ponds or mobile settlement units (e.g., Siltbuster or equivalent). Settlement ponds will incorporate a forebay equal to 10% of the pond footprint to capture coarse sediment. Ponds will maintain a permanent water level to promote fine sediment settlement before discharge to the existing surface water drainage network.
- ▶ Best practice guidance will be followed for the proposed works including "Control of Water Pollution from Construction Sites and Guidance for Consultants and Contractors" (CIRIA 532, 2001) and Inland Fisheries Ireland Guidelines on protection of fisheries during construction works in and adjacent to waters (IFI, 2016).

1.2.2 Monitoring

During construction phase the following monitoring measures will be considered.

- ▶ Monitoring will be undertaken in accordance with planning conditions and undertaken by the contractor in compliance with the project CEMP.
- ▶ Contractors will carry out regular inspections to confirm compliance with the CEMP. Daily inspections by contractors will address potential environmental impacts including dust, litter, waste management and general housekeeping.
- ▶ Weekly checks will be carried out to ensure surface water drains are not blocked by silt, or other items, and that all materials storage is located at least 20 m from surface water receptors.
- ▶ Regular inspection of surface water run-off and any sediment control measures (e.g. silt traps) will be carried out during the construction phase. Inspection and maintenance of the silt fences during construction phase is crucial to ensuring that they work as intended. They will remain in place throughout the entire construction phase.
- ▶ Runoff diversion channels/bunds need regular maintenance to keep functioning throughout the project.
- ▶ Regular auditing of construction / mitigation measures will be undertaken, e.g. concrete pouring, refuelling in designated areas, etc.
- ▶ A log of the regular inspections will be maintained, and any significant blockage or spill incidents will be recorded for root cause investigation purposes and updating procedures to ensure incidents do not reoccur.

1.3 Biodiversity

1.3.1 Mitigation

1.3.1.1 Habitats

- ▶ The construction of the proposed development will be subject to specific construction management measures as set out in the Construction Environmental Management Plan (CEMP) to avoid direct and indirect impacts on the water courses which drain the site.
- ▶ Potential impacts on birds will be avoided by cutting of vegetation outside the bird nesting season March 1 to August 31.

1.3.1.2 Otters

- ▶ There are no specific mitigation measures proposed for otters. Mitigation in terms of control of construction activity and surface water quality are included in a CEMP which will have beneficial effects for upholding good water quality status and maintaining good habitats for fish and prey species for otters.

1.3.1.3 Bats

'Bat-sensitive lighting' design principles will apply to temporary lighting during the construction of the Proposed Development. Bat-sensitive lighting will comply with the following design principles:

- ▶ Where lighting is required near site boundaries, the lighting poles will be installed on the boundary and will face inwards (i.e. towards the centre of the site). This will ensure that lighting is not directed outside the site boundaries.
- ▶ All lights around the site boundary will be fitted with directional hoods and/or luminaires to direct the light downwards onto targeted areas and to prevent unnecessary light-spill.
- ▶ The intensity of lighting will be kept to the minimum level required for safety and security.

- ▶ Low-UV LEDs or low / high pressure sodium lamps will be the preferred bulb type, as they have least adverse effect on bats. Mercury, metal halide or high-UV LED bulbs will not be used.

1.3.1.4 Birds

- ▶ Potential impacts on birds will be avoided by cutting of vegetation outside the bird nesting season March 1 to August 31.
 - In the event this work is required earlier an ecological clerk of works (ECoW) should be onsite to ensure no nesting birds are present. Should an occupied nest be found the clearance works will have to wait until after fledging.
- ▶ Prior to enabling works an ECoW ornithologist will assess the site and identify any species of note using the site. The ECoW will have the authority to co-ordinate where works can take place and will create buffer zones to reduce disturbance. Measures such as the placement of hoarding can also be employed to prevent visual disturbance.
- ▶ Disturbance on the existing pond on site could impact Lapwing using the site. Hoarding is already present along the road to the north of the site and provides good mitigation against disturbance. Lapwing are sensitive to visual stimuli out to 300m, (Cutts 2013), thus additional hoarding is required to be erected south of the pond to ensure disturbance from construction works will not occur. Hoarding should consist of solid fence at least 2.5m tall.

1.3.2 Monitoring

No monitoring measures applicable beyond the mitigation measures outlined above.

1.4 Air Quality

1.4.1 Mitigation

Mitigation measures for high-risk sites as recommended by IAQM construction dust guidance are detailed in Table 1 Construction Phase Dust Mitigation Measures.

Table 1 Construction Phase Dust Mitigation Measures

Category	Mitigation Measure
Communications	Develop and implement a stakeholder communications plan that includes community engagement before work commences on site. Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager. Display the head or regional office contact information.
Site Management	Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken. Make the complaints log available to the local authority when asked. Record any exceptional incidents that cause dust and/or air emissions, either on- or offsite, and the action taken to resolve the situation in the log book. Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

Category	Mitigation Measure
Preparing and Maintaining the Site	<p>Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible.</p> <p>Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.</p> <p>Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period</p> <p>Avoid site runoff of water or mud.</p> <p>Keep site fencing, barriers and scaffolding clean using wet methods.</p> <p>Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site. If they are being re-used on-site cover as described below.</p> <p>Cover, seed or fence stockpiles to prevent wind whipping.</p>
Operating vehicle/machinery and sustainable travel	<p>Ensure all vehicles switch off engines when stationary – no idling vehicles.</p> <p>Impose and signpost a maximum-speed-limit of 25 kmph on surfaced and 15 kmph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)</p> <p>Produce and implement a Construction Transport Management Plan (CTMP) to manage the sustainable delivery of goods and materials.</p> <p>The CTMP should also support and encourage sustainable travel (public transport, cycling, walking, and car-sharing)</p>
Operations	<p>Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems</p> <p>Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate</p> <p>Use enclosed chutes and conveyors and covered skips.</p> <p>Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.</p> <p>Ensure equipment is readily available on site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.</p>
Waste management	Bonfires and burning of waste materials are legally prohibited.
Measures Specific to Demolition	<p>Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.</p> <p>Avoid explosive blasting, using appropriate manual or mechanical alternatives.</p> <p>Bag and remove any biological debris or damp down such material before demolition.</p>

Category	Mitigation Measure
Measures Specific to Construction	<p>Avoid scabbling (roughening of concrete surfaces) if possible.</p> <p>Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.</p> <p>Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.</p> <p>For smaller supplies of fine powder materials, ensure bags are sealed after use and stored appropriately to prevent dust.</p>
Measures Specific to Trackout	<p>Use water-assisted dust sweeper(s) on the access and local roads, to remove, as necessary, any material tracked out of the site. This may require the sweeper being continuously in use.</p> <p>Avoid dry sweeping of large areas.</p> <p>Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.</p> <p>Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.</p> <p>Record all inspections of haul routes and any subsequent action in a site log book.</p> <p>Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.</p> <p>Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).</p> <p>Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever site size and layout permits.</p> <p>Access gates to be located at least 10 m from receptors where possible.</p>

1.4.2 Monitoring

Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the Proposed Development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2 m above ground level. The TA Luft limit value is 350 mg/m²/day during the monitoring period of 30 days (+/- 2 days).

1.5 Climate

1.5.1 Mitigation

1.5.1.1 Greenhouse Gas Mitigation Measures

- ▶ HVO fuelled vehicles and plant will be used during construction which will reduce GHG emissions compared to petrol or diesel. The HVO will be sourced from sustainable sources and a Chain of Custody Certificate to evidence the source will be obtained from the supplier.
- ▶ Building materials will be chosen to 'design out waste', in line with circular economy principles and green procurement strategies outlined in the RWMP. Product selection will, where practicable, favour materials with recycled content and take-back schemes.
- ▶ On-site segregation of waste materials will be carried out where possible to increase opportunities for off-site reuse, recycling and recovery.

- ▶ Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible.
- ▶ All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;

In addition to the above, during the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- ▶ Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- ▶ Ensure all plant, machinery and vehicles are well maintained and inspected regularly.
- ▶ Using grid connections for electric power when practicable instead of HVO fuel powered generators
- ▶ Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site.
- ▶ Sourcing materials locally will be prioritised. This will help to reduce transport related CO₂ emissions and helps support local suppliers, further promoting economic sustainability.
- ▶ Material choices and quantities will be reviewed during detailed design, to identify and implement any lower embodied carbon options, where feasible. For example, a 30% minimum clinker replacement in cement may be utilised in line with the requirements for public bodies.

1.5.1.2 Climate Change Risk Mitigation Measures

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, extreme temperatures and wind and storms through site risk assessments, method statements and good site management practice.
- ▶ 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.

1.5.2 Monitoring

- ▶ Monitoring and reporting of the embodied carbon in the construction phase will be conducted. The aim of monitoring will be to seek further ways to minimise climate impacts. Monitoring will include contractual obligations, in line with the most recent Climate Action Plan and sectoral targets, for the successful tenderer to ensure that the Proposed Development stays in line with updated aims. Commitments to monitor GHG emissions during the construction phase will also be secured through the final Construction Environmental Management Plan (CEMP). Monitoring will include embodied carbon of construction materials, water usage, power and fuel usage, and waste generation (including reuse and recycling rates). Where monitoring shows that the Proposed Development is not meeting its targets, further mitigation will be put in place.
- ▶ Monitoring should also include reviewing potential for extreme weather events which may cause damage during construction. Contractors' Environmental Management System (EMS) will include measures to address risks during such events i.e. flooding.

1.6 Noise and Vibration

1.6.1 Mitigation

- ▶ The contractor will implement best practice noise and vibration control measures throughout construction to prevent any significant disturbance to the nearest sensitive receptors. These

measures will follow the guidelines outlined in BS 5228 (2009 + A1:2014) Parts 1 and 2, covering key mitigation strategies such as:

- Use and selection of quiet equipment options;
 - All equipment to be properly maintained;
 - Silencers to be used on all plant and machinery where possible;
 - Controlling noise at its source;
 - Limiting the hours of high noise or vibration processes;
 - Continuous noise and vibration monitoring to be employed on site;
 - Installation of screening barriers; and
 - Regular communication with the local community.
- ▶ Through enforcement of strict noise limits, monitoring on site, the restriction of working hours, and application of the above listed mitigation strategies, impacts will be managed with the intention of remaining within acceptable limits.

1.6.2 Monitoring

- ▶ The contractor will be required to ensure that construction activities comply with the noise limits established in this assessment. Regular noise monitoring must be conducted at locations representative of the nearest sensitive receptors to verify that the relevant criteria are not exceeded.
- ▶ Noise monitoring shall be carried out in accordance with the International Standard ISO 1996:2017 – Acoustics “Description, measurement, and assessment of environmental noise”.

1.7 TVIA

It is not considered that there are any additional mitigation measures required to reduce the anticipated construction phase townscape/visual effects over those that would be considered standard best practice construction management measures.

1.7.1 Monitoring

- ▶ Landscape tender drawings and specifications will be produced to ensure that the hard and soft works are implemented in accordance with best practice. This document will include tree work procedures, soil handling, planting and maintenance. The contract works will be supervised by a suitably qualified landscape architect.
- ▶ The planting works will be undertaken in the next available planting season after completion of the main civil engineering and building work.
- ▶ All tree protection requirements will be installed on commencement of the development and removed on a phased basis as stages of the development are completed.

1.8 Archaeology

1.8.1 Mitigation

The following mitigation measures will be carried out subject to the approval of the National Monuments Service (NMS) of the Department of Housing, Local Government and Heritage (DHLGH), to mitigate the potential direct effect on previously unknown archaeological heritage lies in the uncovering of sub-surface remains:

- ▶ Archaeological monitoring will be undertaken at construction phase of the area of the site outside of the previously partially constructed building. Should any further archaeological features, deposits or artefacts be identified during the course of the development, works in that area should be halted and the appropriate authorities informed. The archaeological remains will be preserved *in situ* or by record (excavation) following consultation with the National Monuments Service.
- ▶ A report is required to be compiled on completion of archaeological monitoring, and any archaeological excavation (if necessary) and will be submitted to the relevant authorities.

1.8.2 Monitoring

None required.

1.9 Traffic

1.9.1 Mitigation

- ▶ The Appointed Contractor shall prepare a Construction Transport Management Plan (CTMP) prior to the commencement of development. All deliveries shall be provided with instructions/directions on accessing the site from the Dublin Road, and deliveries shall be scheduled outside of peak commuting hours.
- ▶ Construction operations on site and deliveries to the site will be in accordance with the Construction and Environmental Management Plan (CEMP).
- ▶ The preparation of the CTMP will entail an assessment of existing nearby employment, educational, recreational and commercial facilities to establish the peak times for vehicles, cyclists and pedestrians. This information would be used to develop the optimum start/finish/delivery times to minimise impact on these existing facilities.
- ▶ The CTMP issued at construction stage would identify haulage routes and restrictions as appropriate in discussion with the Local Authority. There will also be a requirement for comprehensive measures as part of the construction management.
- ▶ Construction vehicle movements will be minimised through:
 - Consolidation of delivery loads to/from the site and manage large deliveries on site to occur outside of peak traffic periods;
 - Use of precast/prefabricated materials where possible;
 - 'Cut' material generated by the construction works will be re-used on site where possible, through various accommodation works;
 - Adequate storage space on site will be provided;
 - A strategy will be developed to minimize construction material quantities as much as possible;
 - Construction staff vehicle movements will also be minimized by promoting the use of public transport, shared use of vehicles, cycling and walking.

1.9.2 Monitoring

- ▶ The contractor will be obliged to appoint a traffic liaison officer/traffic manager who will be involved in preparing the CTMP and to monitor the performance of the CTMP. The traffic liaison officer will be available to receive complaints, comments and queries about the traffic generated by the construction site and traffic issues associated with the site. Regular meetings will be held on-site to which with all relevant stakeholders will be invited. The traffic liaison officer/traffic manager will liaise with:
 - Limerick City & County Council including Elected Members
 - An Garda Siochana
 - Irish Rail
 - Bus Eireann

- Other relevant statutory bodies
 - Members of the community
 - Adjacent contractors
- ▶ The traffic liaison officer/traffic manager will be sufficiently senior in position and will be responsible for dealing with any complaints and remedying any non-compliance and developing solutions to prevent re-occurrence.

1.10 Waste

1.10.1 Mitigation

- ▶ A project specific Resource and Waste Management Plan (RWMP) has been prepared in line with the requirements of the EPA Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021) and is included as Appendix 14.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in the RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and construction phases of the Proposed Development.
- ▶ Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 8.1) in agreement with LCCC and in compliance with any planning conditions, or submit an addendum to the RWMP to LCCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors, hauliers and destinations of each waste stream.
- ▶ The Contractor will implement the RWMP throughout the duration of the proposed demolition, excavation and construction phases and should treat the document as outlined in the guidance as a live document.
- ▶ A quantity of topsoil and sub soil will need to be excavated to facilitate the Proposed Development. The project design team have anticipated that c. 4,127 m³ will be reused on site and c. 37,148 m³ will need to be removed off site by a licensed contractor and will be taken for appropriate reuse, recycling or disposal. In the event that any excavated soil is found to be contaminated it will need to be removed off-site. Correct classification and segregation of the excavated material is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.
- ▶ Building materials will be chosen to 'design out waste', in line with circular economy principles and green procurement strategies outlined in the RWMP. Product selection will, where practicable, favour materials with recycled content and take-back schemes.
- ▶ On-site segregation of waste materials will be carried out where possible to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
- Concrete rubble (including ceramics, tiles and bricks);
 - Plasterboard;
 - Metals; and
 - Timber.
- ▶ Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible.
- ▶ All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.
- ▶ Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).
- ▶ A Resource Manager (RM) will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works.
- ▶ All construction staff will receive training in site-specific waste management procedures as part of the induction process.

- ▶ All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;
- ▶ All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities.
- ▶ All waste leaving the site will be recorded and copies of relevant documentation maintained.
- ▶ Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with Regulation 27 of the *EC (Waste Directive) Regulations (2011-2020)*. EPA approval will be obtained prior to moving material as a by-product.

1.10.2 Monitoring

The management of waste during the construction phase will be monitored by the Contractor’s appointed Resource Manager (RM) to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation. Monitoring proposals for the construction phase are summarised in the table below.

Table 2 Monitoring Proposals Construction Phase

Likely Significant Effect	Monitoring Proposals
Litter Pollution	The Contractor will review and maintain waste records and site audits.
Unlicensed Waste Collection (Illegal Dumping)	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Insufficient Waste Facilities	A register will be maintained and reviewed. A copy of all waste collection permits will be maintained.
Lack of Waste Classification	An appointed RM will monitor all on-site waste segregation, volumes, and classification.

- ▶ A Resource Manager will be appointed to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation.
- ▶ The Resource Manager will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required.
- ▶ Where targets are not being met, the RM will identify the reasons for this and work to resolve any issues. Recording waste generation during the construction phase of the Proposed Development will enable better management of waste contractor requirements and support identification of trends or opportunities for improved resource efficiency. The data should be maintained to inform future developments.

1.11 Material Assets (Utilities)

1.11.1 Mitigation

- ▶ Consultation with Limerick County Council, Uisce Éireann, ESB Networks, EIR, ENET and other relevant service providers within the locality and compliance with any requirements or guidelines they

may have will ensure a smooth construction schedule without disruption to local and business community. The works contractor will be obliged to put best practice measures in place to ensure, any planned interruptions are agreed in advance with the utilities suppliers.

- ▶ The construction contractor will employ strict quality control measures will be undertaken while laying pipes and utilities to minimise or eradicate infiltration and ex-filtration.
- ▶ Prior to commencing any construction activities, the contractor shall conduct a comprehensive utility locating survey using advanced technologies such as ground-penetrating radar (GPR) and electromagnetic induction methods. This survey will accurately identify the location and depth of all existing underground services, including high voltage (HV) cables, water and gas pipelines, and telecommunication lines. Based on the results of the utility locating survey, exclusion zones will be demarcated around identified utilities. These zones will indicate areas where construction activities are restricted or subject to specific safety protocols.

1.11.2 Monitoring

No additional monitoring or reinstatement is required.