Chapter 15.0

Summary of Mitigation and Monitoring

15.0 Introduction

This EIAR is written in a grouped format, i.e. disciplines are considered by specialist consultants. One disadvantage with a grouped structure is that it may be more difficult to gain a comprehensive understanding of the full range of mitigation measures, as they are discussed in separate chapters.

To overcome this difficulty, this chapter provides a summary of all the identified mitigation measures discussed in the previous EIAR chapters.

15.1The Development

Chapter 2 of the EIAR provides a description of the proposed development including details on phasing and the proposed construction activities. This chapter also provides detail on the Preliminary Construction Environmental Management Plan (CEMP) that accompanies this planning application. The CEMP includes measures to avoid, reduce or mitigate negative impacts that may arise from the construction phase of the proposed development.

In considering the potential impacts that may occur during the construction of the proposed development the CEMP sets out Environmental Management Procedures (EMPs) that have been developed and will be implemented to manage the environmental impacts of activities associated with the construction of the proposed development. The Environmental Management Procedures (EMP's) include the following:

Reference	**Procedure:-**
EMP-1	Fuel and Oil Management
EMP-2	Traffic Management
EMP-3	Waste Management
EMP-4	Noise Management
EMP-5	Dust Management
EMP-6	Site Environmental Training and Awareness
EMP-7	Environmental Emergency Response
EMP-8	Monitoring and Auditing Procedure
EMP-9	Environmental Accidents, Incidents and Corrective Actions Procedure
EMP-10	Environmental Complaints Procedure
EMP-11	Odour Control Procedure
EMP-12	Light Pollution Control Measures
EMP-13	Surface Water Management and Run-off Control Measures

The final CEMP will be agreed with the Planning Authority prior to the commencement of construction activities on the site.

15.2 Alternatives

Chapter 3 details the alternatives considered during the design process of the proposed application. Several layouts were considered during the design process to avoid or minimise environmental impacts. Mitigation measures associated with the final layout are addressed within each relevant discipline of the EIAR.

15.3 Population and Human Health

Chapter 4 considers the impacts of the proposed development on the Population and Human Health discipline. No likely negative impacts have been identified for population, or land use. Accordingly no mitigation measures are required. The mitigation of impact upon population and human health is mainly considered in the detailed design of the development in order to reduce risks from potential sources of danger such as traffic or air pollution in combination with providing necessary infrastructure.

The proposed development has been designed to avoid negative impacts in relation to local amenities and recreational facilities by:

- Incorporating the provision of a crèche within the design proposal;
- Providing direct access to existing schools in the study area;
- Incorporating leisure and amenity facilities within the layout, including c. 3 hectares of parkland; an outdoor gym/ exercise area, various smaller open spaces and play areas and extensive provision for walking and cycling throughout the development, including an attractive greenway.

Accordingly, no further mitigation measures are required.

During construction the implementation of the CEMP and appropriate health and safety will mitigate any risks to human health.

15.4 Land and Soils

Chapter 5 of the EIAR assesses the impact of the proposed development on soils and the geological environment, as well as identifying proposed mitigation measures to minimise any impacts. It should be noted that the avoidance and reduction of the volume of excavated material has been a key consideration throughout the design process. It is expected that all excavated materials will be reused on site. The following measures are proposed to reduce impacts on land and soils as a result of the proposed development.

Construction Phase

As noted a preliminary CEMP has been prepared for the proposed development. The CEMP, submitted with this application is sufficient to mitigate proposals in own right. The detail of this CEMP will be agreed with the Local Authority prior to commencement of the proposed development. The CEMP contains a range of site-specific mitigation measures which include the following:

- The moving and storage of excess material has been kept to a minimum and has informed the phased delivery of the scheme - N1-N2-N3-N4-N5-N6.

- Excavated material is to be stored on-site as outlined in the CEMP, to be re-used for later stages of the development.
- The preliminary site investigations have identified that certain quantities of subsoil will require soil strengthening methods for re-use as structural fill. These works will be carried out on site within the designated area. This area will include provisions to control the run-off of storm water.
- Given the topography of the site, control measures to protect surface waters from contamination will be put in place prior to the commencement of any site works.

Stripping of topsoil

The stripping of topsoil will be carefully controlled and managed. Required temporary storage of topsoil will be carefully managed to prevent any potential negative impact on the receiving environment. The material will be separated from any surface water drains, and the movement of material will be minimised in order to reduce degradation of soil structure and generation of dust. At any time, the extent of topsoil strip will be limited to the immediate vicinity of the active work area.

Topsoil stockpiles will be protected during the construction stage through compaction of the exposed layers. These stockpiles will be placed so as to avoid damage by surface water flow. Figure 5.8 of the EIAR shows the proposed location of stockpiles on the site.

Excavation of Subsoil Layers

All excavated materials will be visually assessed for signs of possible contamination such as staining or strong odours. No site investigation samples have found materials that are contaminated. However, any samples of any unusual staining or odour will be collected and analysed for the presence of possible contaminants.

Any excavated soil which is determined to be contaminated will be managed according to best practice and disposed of accordingly by a licensed waste disposal contractor. Stockpiles of excavated subsoil materials will be protected for the duration of the works in the area designated in the CEMP and will be separated according to reuse.

Imported Fill

No large or long-term stockpiles of fill material will be held on the site. At any time, the extent of fill material held on site will be limited to that needed in the immediate vicinity of the active work area.

Smaller stockpiles of fill, where required, will be suitably protected to ensure no sediment laden runoff enters existing surface water drains. Such stockpiles are to be located in order to avoid double handling.

Construction Traffic

All vehicles delivering to the site will be required to use installed wheel wash facilities at entrances. Road sweeping and dust suppression measures will be implemented as necessary.

Vehicles using the site will be confined to pre-determined haul routes around the site to reduce the area of disturbed ground and limit the potential for soil disturbance and sediment run off. Works will need to be undertaken in accordance with local council requirements and the adopted CEMP.

Accidental Spills and Leaks

To minimise any impact on the underlying subsurface strata from material spillages, all oils, solvents and paints used during construction will be stored within temporary bunded areas. Oil and fuel storage tanks shall be stored in designated areas, and these areas shall be bunded to a volume of 110% of the capacity of the largest tank/ container within the bunded area(s) (plus an allowance of 30 mm for rainwater ingress). Drainage from the bunded area(s) shall be diverted for collection and safe disposal.

Refuelling of construction vehicles and the addition of hydraulic oils or lubricants to vehicles will take place in a designated area (or where possible off the site) which will be away from nearby surface water gulley's or drains. In the event of a machine requiring refuelling outside of this area, fuel will be transported in a mobile double skinned tank. An adequate supply of spill kits and hydrocarbon adsorbent packs will be stored in this area. 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.

All ready-mixed concrete will be brought to site by truck. It is recommended that 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 wastewaters or contaminated storm water to the underlying subsoil. The pouring of concrete will take place within a designated area using a geo-synthetic material to prevent concrete runoff into the soil/ groundwater media. Wash down and washout of concrete transporting vehicles will take place at an appropriate facility off site.

In the case of drummed fuel or other chemicals which may be used during construction, containers should be stored in a dedicated internally bunded chemical storage cabinet and labelled clearly to allow appropriate remedial action in the event of a spillage.

Potentially contaminated groundwater and polluted surface water generated during construction activities will not be discharged directly to ground or surface drainage. Welfare facilities will be provided for construction operatives but are only likely to comprise individual 'port-a-loos' with no connection to the foul sewer proposed.

Geological Environment

The implementation of the construction phase mitigation measures highlighted above will ensure that the soils geology and hydrogeological environment is not adversely impacted during normal and/ or emergency conditions during the construction phase.

A groundwater seepage assessment was conducted by JBA Consulting to ascertain the potential for seepage from groundwater in areas of excavation. The assessment concluded that groundwater discharge rates may be expected to range from 2-92 m^3/d in the south western part of the site, or 0.00004-0.002 l/s per unit length. The design of the proposed stormwater network for the development uses the higher discharge rate within its design capacity calculations to account for groundwater seepage entering the network at the locations where the proposed drainage will be lower than the recorded groundwater level.

After implementation of the mitigation measures recommended above for the construction phase, the proposed development will not give rise to any significant long-term adverse impact.

Operational Phase

In general, drainage from within the proposed development will be collected by gullies and drainage pipelines to a fuel interceptor and attenuation tank prior to discharge to the local surface water network. Drainage to the east and north-east of the site will be collected by open swales or gullies and drainage pipelines before going through to a fuel interceptor and into a soak-away. There are no predicted impacts arising from the operational phase.

Monitoring

The proposed monitoring during the construction phase in relation to the soil and the geological environment are as follows:

- Adherence to the Construction Management Plan referenced previously.
- Construction monitoring of the works (e.g. inspection of existing ground conditions on completion of cut to road formation level in advance of placing capping material, stability of excavations etc).
- Inspection of fuel / oil storage areas.
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and provision of vehicle wheel wash facilities.
- Monitoring of contractor's stockpile management (e.g. protection of excavated material to be reused as fill, protection of soils for removal from site from contamination).
- Monitoring sediment control measures (sediment retention ponds, surface water inlet protection etc.).

No ongoing monitoring is proposed on completion of the construction phase. The pumping stations will be monitored by Irish Water through installed telemetry facilities.

15.5 Water and Hydrology

Chapter 6 of the EIAR assesses the impact of the proposed development on water and hydrology.

The following measures are proposed during the construction phase to mitigate against potential risks to the surrounding hydrological environment:

Construction Phase

- The site-specific CEMP will be developed by the appointed works contractor and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in this CEMP. Construction will occur on a phased basis and earthworks management will be carried out by contractors in accordance with best practice to prevent surface and ground water impacts.

- The proposed grounding of the 38KV ESB overhead line and subsequent crossing of the watercourse to the west will be carried out in accordance with ESB Networks requirements and will include directional drilling to avoid impact with the stream. All necessary measures including protective bunds, temporary bridges and silt fences will be provided by the appointed contractor. Inland Fisheries Ireland will be consulted before any of these works are carried out on-site.

- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate, to the existing watercourse. It is anticipated that a suitably experienced Earthworks Contractor will be appointed to carry out the bulk excavations on the site, with all required measures being put in place to the satisfaction of the Local Authority.

- Weather conditions and typical seasonal weather variations will be accounted for when planning the stripping of topsoil and excavations with an objective of minimising soil erosion and protecting the excavated subsoil and rock for re-use on site.

- All spoil/earthworks storage areas (plans of which are included) will be located on well-vegetated lands and will be surrounded by secure silt fencing. It is proposed to use the lands reserved for the school campus as stock-pile areas, in conjunction with existing ditches to create the necessary barriers and sediment ponds to ensure silt run-off is fully controlled.

- If de-watering of earthworks materials is required the resulting water will be pumped out onto well-vegetated areas away from springs, drains or rock outcrops and allowed to run-off into formed settlement ponds prior to discharge to the main drainage system.

- In order to mitigate against spillages contaminating the surrounding surface water and hydrogeological environments, all oils, fuels, paints, and other chemicals will be stored in secure bunded hardstand areas. Refuelling and servicing of construction machinery will take place in a designated hardstand area which is also remote from any surface water inlets or outlets (where not possible to carry out such activities off site). Any hardstand areas will be isolated from main drainage runs and will include petrol interceptors prior to discharge.

- Concrete batching will take place off site and wash down and wash out of concrete trucks will take place off site (at authorised concrete batching plant in full compliance with relevant planning and environmental consents).

- Discharge from any vehicle wheel wash areas will be directed to on-site settlement ponds and will pass through a hydrocarbon interceptor prior to discharge.

- The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be tankered off-site to a licensed facility if necessary, until a connection to the public foul drainage network has been established.

- The construction compound's potable water supply will be protected from contamination by any construction activities or materials in the instance that a temporary well has to be sunk.

- Spill Kits to be kept in designated areas.

The following mitigation/reductive measures are proposed for the operational phase of the scheme:

Operational Phase

- The proposed road gradients, road levels, and dwelling finished floor levels (FFL) have been designed to ensure the concentration of surface water run-off in any one location is avoided.

- Each drainage area has been assessed independently of others in terms of allowable run-off rates. SuDS measures are proposed for each neighbourhood, which have not been included for in the sizing of the storm sewer network, reducing the discharge rate to below greenfield run-off rates (QBar). These proposed interception measures will ensure that the initial 5mm of rainfall is prevented from discharging to the storm network, thereby ensuring the water quality of the receiving watercourse to the west is preserved.

- Surface water runoff on the western side of the site will be attenuated to greenfield runoff rates (Qbar) as agreed with the Drainage Department of Cork City Council.

- SuDS measures in this location will include the use of permeable paving at traffic calmed junctions and the use of planted swales where possible along road edges to provide a primary cleaning of run-off before entering the storm network. Measures will also include soakpits in rear gardens in parts of the development and water butts for each unit.

- Surface water discharge rates will be controlled by a Hydrobrake type vortex control device or similar approved, in conjunction with below ground Stormtech attenuation chamber storage, or similar approved.

- Surface water runoff to the eastern side of the site will be routed to buried Stormtech chambers for infiltration into the existing subsoil in-line with site investigation results. This will facilitate the recharge of aquifers in the area whilst limiting the run-off from the overall site to less than the current rate.

- A contract will be entered into with a suitably qualified contractor for the maintenance of the attenuation system including Hydro-brake and the installed hydrocarbon interceptors.

- The proposed pumping stations can provide for back-up generators and in the case of the Ballyhooly Road pumping station accommodate connection to the pre-existing network in the case of an operational failure.

The following methodologies are being implemented as part of the SuDS surface water treatment approach:

- The use of on-site infiltration where feasible (eastern side of the scheme).
- Permeable paving at suitable locations in and around the retail/crèche area.
- Permeable paving to be used for junction treatments and tied into storm sewer network in all locations.
- Planted swales along access roads where practical (including tree-pits).
- Attenuation chambers sized to 30 and 100 year return period storms.
- Installation of Hydrobrake vortex control system (limiting surface water discharge from the site to Qbar (5 l/s/ha)).
- Fuel/oil separators will be sized and installed in accordance with permitted discharge from the site for the various phases.

- Attenuation storage design allows for 20% growth of rainfall intensity due to climate change.
- Green Roof attenuation storage provided for in Apartments in neighbourhood 6.

No specific mitigation measures are proposed in relation to foul drainage however, all new foul drainage lines will be pressure tested and subject to a CCTV survey in order to identify any possible defects prior to being made operational. All testing will be carried out as per the requirements of Irish Water and will be subject to periodic spot-checks by the Irish Water appointed site engineer.

Monitoring

The following monitoring is proposed during the construction phase in relation to the water and hydrological environment:

- Adherence to the Construction Environmental Management Plan (CEMP).
- Inspection of fuel / oil storage areas and continued maintenance by a suitably qualified sub-contractor.
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and vehicle wheel wash facilities.
- Monitoring sediment control measures (sediment retention ponds, surface water inlet protection etc.) to be carried out by the appointed Environmental Engineer.
- Monitoring of discharge from sediment retention ponds (e.g. pH, sediment content).

During the operational phase an inspection and maintenance contract will be implemented in relation to the proposed Class 1 full retention fuel / oil separators. These will form part of the "taken in charge" infrastructure. The Pumping Stations will be taken in charge by Irish Water and operational control of those will rest with Irish Water.

15.6 Air Quality and Climate

Chapter 7 of the EIAR assesses the impact of the proposed development on air quality and climate. The following mitigation measures are set out in Chapter 7:

Air Quality

Construction Phase

Construction traffic will be the dominant source of emissions during construction. The air quality assessment has determined that the impact of development traffic on the pollutants NO2, PM10 and PM2.5 will be negligible. As is the case for developments of this type, the volume of construction traffic will be considerably less than development traffic during the operational phase of the development. Therefore, in addition to the size and nature of the construction activities, exhaust emissions from construction traffic during the construction phase will have a negligible impact on local air quality.

With regard to construction dust, once dust emissions are managed through the implementation of a satisfactory dust management plan (as appended at Appendix 7.1 of the EIAR) then the effect on PM10 and PM2.5 concentrations (i.e. fine particulates) will be slight. Details of the dust management plan will be agreed with the planning authority.

The dust management plan will detail a set of mitigation measures to be put in place during the construction phase. The impact of dust emissions is dependent on the mitigation measures adopted. The requirement for mitigation measures will depend on meteorological

conditions, the specific construction activities (i.e. relating to earthworks, construction and site vehicles) and the potential for dust nuisance as a result of those activities.

Typical mitigation measures which will be required when there is the potential for dust nuisance are detailed below. An on-site record of all air quality / dust complaints should be maintained. The cause of any complaints should be identified and the measures taken to reduce emissions should be recorded.

- The site should be designed such that machinery and dust causing activities are as far from nearby sensitive locations as possible.
- A barrier should be erected around the site to screen dusty activities.
- Material handling systems and site stockpiling of materials should be designed and laid out to minimise exposure to wind.
- Water misting or sprays should be used as required if particularly dusty activities are necessary during dry or windy periods. Water suppression should be used during dry and/or windy conditions to minimise dust emissions.
- Site roads should be regularly cleaned and maintained. Hard surface roads should be swept to remove mud and aggregate materials from their surface. Site roads that have the potential to give rise to dust emissions should be watered as required during dry and/or windy conditions.
- Vehicles delivering material with the potential for dust emissions should be enclosed or covered to restrict the escape of dust.
- Vehicles exiting the site should make use of a wheel wash facility prior to entering onto public roads, to ensure mud and other wastes are not tracked onto public roads.
- Public roads outside the site should be regularly inspected for cleanliness, and cleaned as necessary using water-assisted dust sweepers.

The dust management plan and control measures in place should be reviewed at regular intervals during the construction phase to ensure the effectiveness of the control measures and to improve these measures where needed.

Operational Phase

Mitigation measures in relation to traffic-derived pollutants are managed at a strategic level by EU legislation on vehicle emissions and fuel quality. The results of the dispersion modelling assessment show that there are no requirements for local management of air quality during the operation phase of the development.

Climate

Construction Phase

The embodied CO2 in construction can be reduced at project specification / procurement through leaner design, designing out waste, reusing materials, and selecting materials with lower embodied carbon over the project life-cycle.

Operational Phase

It is noted that the policy and legislative measures in place in Ireland with regard to reducing national greenhouse gas emissions will lead to a reduction in CO2 emissions from road traffic. Accordingly, no site specific mitigation measures have been recommended for the operational phase of the proposed development.

In terms on monitoring, it is recommended that dust monitoring be conducted during the construction pf the proposed development to assess nuisance dust levels. No monitoring is required once the development is operational.

15.7 Noise and Vibration

Chapter 8 of the EIAR assesses the impact of the proposed development on noise and vibration. The following mitigation measures are set out in Chapter 8:

Construction Phase

The scheme contractor will be obliged to give due regard to *Code of Practice BS 5228: Noise Control on Construction and Open Sites*, which offers detailed guidance on the control of noise from construction activities. In particular, it is proposed that various practices be adopted during construction, including:

- Limiting the hours during which site activities likely to create high levels of noise are permitted. The hours listed in Table 8.1 of the EIAR should therefore be rigidly adhered to.

- Establishing channels of communication between the contractor/developer, local authority and residents.

- Appointing a site representative responsible for matters relating to noise.

- Ensuring all site access roads are kept as even as possible so as to mitigate the potential for vibration from lorries.

- Monitoring typical levels of noise during critical periods and at sensitive locations (at houses along the road to the north only) in accordance with the approach discussed in Section 8.7 of Chapter 8 of the EIAR.

- Provision of site hoarding for screening purposes.

Furthermore, it is envisaged that a variety of additional and practicable noise control measures will be employed, including:

- Selection of plant with low inherent potential for generation of noise.
- Siting of noisy plant as far away from sensitive properties as permitted by site constraints.
- All compressors shall be “sound reduced” models fitted with properly lined and sealed acoustic covers which shall be kept closed whenever the machines are in use.
- All ancillary pneumatic percussive tools shall be fitted with mufflers or silencers of the type recommended by the manufacturers, and where commercially available, dampened tools and accessories shall be used.
- Blasting will only be permitted in agreement with Cork City Council. As outlined in the preliminary site investigation report rock encountered on-site is ‘rippable’ so blasting is not anticipated at this stage.

Vibration from construction activities will be limited to the values set out in Table 8.20 of the EIAR but will likely be far below these values. It should be noted that these limits are not absolute, but provide guidance as to magnitudes of vibration that are very unlikely to cause cosmetic damage. Magnitudes of vibration slightly greater than those in the table are

normally unlikely to cause cosmetic damage, but construction work creating such magnitudes should proceed with caution. Where there is existing damage, these limits may need to be reduced by up to 50%.

Where required, construction noise monitoring will be undertaken at periodic sample periods at the nearest noise sensitive locations to the development works to check compliance with the construction noise criterion. Noise monitoring should be conducted in accordance with the International Standard ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise*.

Operational Phase

Activity Noise from Proposed Crèche

The noise impact assessment has demonstrated that no additional noise mitigation measures will be required in respect of activity noise from the crèche.

Delivery Truck Events

The noise impact assessment has confirmed that the following additional mitigation measure should be applied in relation to delivery truck events:

Mitigation Measure 8.1: Retail unit delivery truck events should be restricted to daytime periods only.

Pumping Station Emissions

The noise impact assessment has confirmed that the following additional mitigation measure should be applied in relation to pumping station emissions:

Mitigation Measure 8.2: Emergency generators shall be selected and/or designed such that they do not emit noise levels of more than 70dB LAeq at a distance of 1m from the pumping station buildings.

Mitigation Measure 8.3: Restriction of emergency generator testing times to maximum half hour periods during weekday daytime periods only.

Development Car Parking

The noise impact assessment has demonstrated that no additional noise mitigation measures will be required in respect of development car parking.

Building Services Plant

The noise impact assessment has confirmed that the following additional mitigation measures should be provided in relation to building services plant:

Mitigation Measure 8.4: Selected building services plant shall have a noise level no louder than 75dB LAeq at a distance of 1m from the unit or building façade (or have noise control measures incorporated to achieve the same).

Mitigation Measure 8.5: A barrier wall should be provided to screen any noise producing mechanical equipment provided on the roof (or if provided at ground level) with direct line-of-sight with the dwellings to the north.

Vehicular Traffic on New Internal Road Network

The noise impact assessment has demonstrated that no additional noise mitigation measures will be required in respect of vehicular traffic on the new internal road network.

Additional Vehicular Traffic on Public Roads

The noise impact assessment outlined in the previous section has demonstrated that no additional noise mitigation measures will be required in respect of additional vehicular traffic on public roads.

Monitoring

Chapter 8 recommends that continuous boundary noise monitoring during the construction of the proposed development as the construction noise assessment identified a number of existing dwellings along the north of the site that may experience some slight exceedances during the a few of the development phases.

It is recommended that monitoring locations should be selected so as to be representative of the closest dwellings to the works and as a minimum should include the locations shown in Figure 8.11 of the EIAR during the Site Works Phase and Phases 3 & 5. Noise monitoring should be conducted continuously during each of these phases and take into account the following requirements:

- Noise levels shall be measured in terms of the following quantities: LAeq,1hr & LAmax.
- The sound level meter shall be a Class 1 integrating sound level meter, complying with BS EN 61672:2003.
- The field calibrator shall comply with BS EN 60942:2003.
- Both the sound level meter and calibrator will have valid calibration certificates issued not more than one year prior.
- The equipment should be calibrated on a weekly basis and any drift in calibration level identified.
- An SMS transmitter shall be fitted to the monitoring equipment. If the adopted threshold level for noise is exceeded, an SMS message shall be sent to the contractor's appointed Noise Liaison Officer.
- When an exceedance is confirmed, the works shall be halted and alternative working practices or additional mitigation measures implemented.
- Monitoring results shall be downloaded on a weekly basis and summarised in a report format to be agreed with the Noise Liaison Officer.

15.8 Materials Assets

The Material Assets Chapter of the EIAR is split into two parts – Part A Utilities, Services and Waste and Part B Traffic and Transport.

Part A Utilities, Services and Waste

All possible measures shall be taken to avoid unplanned disruptions to any services and utilities within the site area during the construction of the proposed development. It is noted that mitigation measures that are identified in the Water and Hydrology Chapter of this EIAR and the CEMP are relevant to material assets. These measures are considered to result in

any adverse effects on material assets during the construction stage being avoided or suitably mitigated.

Construction Phase

The following measures are proposed during the construction phase to mitigate against potential risks to the surrounding hydrological environment:

- The site-specific Construction and Environment Management Plan (CEMP) will be developed by the appointed works contractor and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in this CEMP. Construction will occur on a phased basis and earthworks management will be carried out by contractors in accordance with best practice to prevent surface and ground water impacts.
- The proposed undergrounding of the 38KV ESB overhead line and subsequent crossing of the watercourse to the west will be carried out in accordance with ESB Networks requirements and will include directional drilling to avoid impact with the stream. All necessary measures including protective bunds, temporary bridges and silt fences will be provided by the appointed contractor. Inland Fisheries Ireland will be consulted before any of these works are carried out on-site.
- Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate, to the existing watercourse. It is anticipated that a suitably experienced Earthworks Contractor will be appointed to carry out the bulk excavations on the site, with all required measures being put in place to the satisfaction of the Local Authority.
- All spoil/earthworks storage areas (plans of which are included) will be located on well-vegetated lands and will be surrounded by secure silt fencing. It is proposed to use the lands reserved for the school campus as stock-pile areas, in conjunction with existing ditches to create the necessary barriers and sediment ponds to ensure silt run-off is fully controlled.
- If de-watering of earthworks materials is required the resulting water will be pumped out onto well-vegetated areas away from springs, drains or rock outcrops and allowed to run-off into formed settlement ponds prior to discharge to the main drainage system.
- In order to mitigate against spillages contaminating the surrounding surface water and hydrogeological environments, all oils, fuels, paints, and other chemicals will be stored in secure bunded hardstand areas. Refuelling and servicing of construction machinery will take place in a designated hardstand area which is also remote from any surface water inlets or outlets (where not possible to carry out such activities off site). Any hardstand areas will be isolated from main drainage runs and will include petrol interceptors prior to discharge.
- Concrete batching will take place off site and wash down and wash out of concrete trucks will take place off site (at authorised concrete batching plant in full compliance with relevant planning and environmental consents).
- Discharge from any vehicle wheel wash areas will be directed to on-site settlement ponds and will pass through a hydrocarbon interceptor prior to discharge.
- The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be tankered off-site to a licensed facility if necessary, until a connection to the public foul drainage network has been established.

- The construction compound's potable water supply will be protected from contamination by any construction activities or materials in the instance that a temporary well has to be sunk.
- Spill Kits to be kept in designated areas.
- All water mains will be cleaned and tested in accordance with Irish Water guidelines and standards prior to connection to the public water main.
- The proposed public lighting for the development has been designed in accordance with the relevant standards and will be installed by a competent electrical contractor.
- Waste generated will be stored temporarily on site until it is collected by a licensed waste contractor. All waste generated will be managed and disposed of in accordance with the Construction Environmental Management Plan (CEMP), a preliminary version of which has been prepared by MHL and Associates Ltd for this planning application and the final CEMP which will be agreed with the appointed site contractor. All waste generated will be managed in accordance with the relevant local, regional and national waste guidelines and legislation and taken to suitably registered and licensed waste facilities for processing, segregation, reuses and recycling, recovery or disposal as deemed appropriate.

The control measures relating to surface water run-off during the construction phase of the development shall follow best practice as recommended by CIRA 2010 and ISO 14001:2015 – Environmental Management Systems and C741 Environmental good practice on site guide (4th edition) and CIRIA (2015) Coastal and marine environmental site guide (second edition) (C744).

As noted in the preliminary CEMP the implementation of the following measures will minimise the impact on material assets in the area of the proposed development during the construction phase:

- In order to reduce the risk of defective or leaking sewers, all new sewers should be constructed in accordance with Irish Water standards.
- All appropriate measures will be taken to minimise as far as possible the risk of spillage that could lead to surface and ground contamination.
- No storage of hydrocarbons or any polluting chemicals will occur within 50m of watercourses/ active drains. Any diesel or fuel oils stored on site will be bunded to 110% of the capacity of the storage tank. Re-fuelling of plant will not occur within 50m of watercourses/ active drains and only in bunded refuelling areas.
- The construction compound will be adequately served in terms of foul drainage and water supply for staff. Foul drainage discharge from the construction compound will be removed off site to a licensed facility until a connection to the public foul drainage network has been established. The construction compound's drinking water supply shall be protected from contamination by any construction activities or materials.
- The design and connection to all necessary site infrastructure will be in accordance with all relevant codes of practice and guidelines and will be coordinated with the relevant utility provider and carried out by approved contractors.
- The CEMP sets out how waste is to be managed during the construction period.

All works near utilities apparatus will be carried out in ongoing consultation with the relevant utility company and/or local authority and will be in compliance with any requirements or guidelines they may have. Where new services are required, the Contractor will apply to the relevant utility company for a connection permit where appropriate and will adhere to their requirements.

The following mitigation measures are proposed for the operational phase:

Operational Phase

- All new foul and surface water drainage lines will be pressure tested and surveyed to identify any possible defects prior to being made operational.
- Water conservation measures such as the use of low flush toilets and low flow taps will be incorporated into the proposed dwellings to reduce water volumes and reduce the demand on public water supply and wastewater infrastructure.
- Once operational waste to be removed from the development will be by licenced waste contractors only.
- The surface water drainage strategy been designed to control the flow of storm water off site to 5 litres per second per hectare of land (98.2l/s) which is below the existing green field runoff rate of 149.4l/s
- Secure refuse and recycling store are proposed at ground floor level of the apartments in Neighbourhoods 2 and 6. Secure bin stores are located adjacent to duplexes in Neighbourhoods 1, 2 and 5. All residential waste generated within individual apartments will be brought by residents to the shared bin store area. This area will be easily accessible to residents. Residents will be required to segregate their waste beforehand and then use the appropriate bins provided.
- Bins will be provided within all units in the local centre. The retail units have dedicated storage areas where waste can be stored. Alternatively, waste can be stored here temporarily and moved to the shared bin store by the community centre by tenants. The doctor's surgery will have bins internally for general waste. This waste will be taken to the shared bin store as required.
- The crèche and community centre will use the dedicated waste store adjoining the community centre and crèche. There is additional ancillary waste storage area within the bin store adjoining the apartments in Neighbourhood 2. There is more than sufficient bin storage space between the two bin stores in the local centre to accommodate the apartments and commercial and community units.
- Full bins from the communal waste storage area will be removed by the appointed waste contractors. Set down areas for refuse collection are conveniently proposed close to the waste storage areas. All bins will comply with BS EN 840 2012 in order to ensure that the collection vehicles can service the bins, and all bins will have a fitted lid to prevent waste escaping from bins and generating litter.
- Bins within the storage area will be colour coded and labelled so that they are easily identifiable and to avoid cross contamination between the different waste streams. Informational signage will indicate what waste can be disposed of in what bin. Access to the bin storage area will be restricted to residents and waste contractors.

Monitoring

Once operational water usage within the proposed development will be monitored by water meters. Water usage will therefore be monitored by Irish Water to avoid leaks, breakages, etc.

Once operational the relevant service providers will be responsible for monitoring measures in relation to the power-supply and telecommunications infrastructure etc. The management company for the apartments will monitor the collection of waste from the apartments.

Part B Traffic and Transport

The following mitigation measures are proposed to address impacts on traffic and transport:

Construction Phase

The construction stage of the scheme proposes to re-use / relocate the bulk of the excavation within the site implying that there will be a significant reduction in construction traffic generated to and from the site over and above a site where importation or exportation of earthworks is required. This will minimise the impact the development will have on the existing roads network during this period.

Construction based traffic will include site workers, deliveries of materials relating to house construction, roads construction and sales related traffic. This traffic will be mitigated by means of a traffic management plan developed as part of the Construction Management Plan (CMP). Mitigation measures such as start/finishing times outside of the identified peak periods, strict delivery times for raw materials and other measures are proposed. These include:

- Deliveries will be co-ordinated to prevent queuing of vehicles adversely affecting traffic flow and to minimise disruption to local traffic. They will be timed and coordinated to avoid conflict with collection of waste, other deliveries (particularly adjoining land-owners) and rush hour traffic (AM & PM peak hours as identified in the Traffic & Transportation report). Large deliveries will be scheduled outside peak hours to minimise disruption but will require the approval of the Employer's Representative.
- The Contractor will consider out of hours deliveries and collections to facilitate the smooth continuation of works and minimise disruption.
- In order to mitigate from a significant impact during peak traffic hours, the majority of staff will either arrive on-site before or after the peak morning traffic (8:00-09:00) and finish work before or after the evening peak traffic hours (17:00-18:00).
- The condition of the public road will be monitored on an on-going basis and a road sweeper provided to clean the public road if required.
- There will be no parking of any vehicles on the public road near the site entrance.
- Adequate parking will be provided on site for both employees and visitors.
- The condition of the site entrances will be monitored on an on-going basis and a road sweeper provided to clean the public road if required.

The construction-based traffic impact will not exceed the impact of the completed scheme on the surrounding roads network.

Operational Phase

Significant effort has been put in to delivering connectivity from the site to local services and public transport options. A 'Mobility Management Plan/Travel Plan' is a strategy for managing multi-modal access to a site or development, focusing on promoting access by sustainable modes. The objective of national and local policy is to reduce reliance on the car for travel. Inducements and encouragement should be applied in order to influence change and this can be achieved through the delivery of 'Mobility Management Plans'.

A mobility management plan relating to a residential development would form part of the sales/promotion package presented to would be purchasers and would highlight the proximity of local services, public transport provision, schools and walking/cycle distances to same. The proposed 'hard measures' that will facilitate safer pedestrian, cycle and public bus access will be provided as part of the application and will be further complimented by scheduled Local Authority Works (BSTC).

An overview of the sustainable infrastructure proposed in this development is as follows:

- Some 2.3km of upgraded or new footway/cycleway provision both within the site and on approaches to the site on Ballyhooly Road.
- The proposed upgrading of the Kilbarry Link Road/ Ballyhooly Road to include a Toucan Crossing as well as a full pedestrian phase.
- The provision of a new bus-stop on Ballyhooly Road to be provided as part of Phase I of the Scheme. This new bus-stop will facilitate the re-routing of the existing service or the provision of additional services in the area. This proposal is compatible with the BSTC Project.
- Proposed off-road bus stops on the main Distributor Road within the development which will facilitate future bus routes serving the entire UEA.
- Interim Bus-turning areas adjacent to the lands reserved for school campus to facilitate the provision of a bus service (to be provided when warranted based on density of population served) in the absence of the adjoining UEA lands not being developed.
- The provision of a combined footway/cycleway on Ballyhooly Road to serve the site which will result in the urbanisation of this section of the Ballyhooly Road encouraging walking and cycling as a safe option in what should become a lower speed area.
- The development of a portion of the 'Park' with its associated walkways and cycle ways providing amenity to both existing residential developments in the area in addition to the proposed development.

The proposed development will include a number of measures that are deemed necessary to improve road safety in the area. These measures include:

- The provision of an off-road cycle path and footpath on the Ballyhooly Road which will provide a safe link to the residential estate of Mervue Lawn and Kempton Recreation Park on the R614, where existing footpaths are located. These works are proposed to be carried out as part of the first phase of development and are expected to be in advance of the BTCS Project.
- The proposed signalisation of Junction 1: Ballyhooly Road/Kilbarry Link Road to include an all-red pedestrian phase on demand. This will facilitate and encourage to the use of public transport offerings on the Kilbarry Link Road.
- A newly constructed off-road bus stop on the R614 will again encourage the use of sustainable transport, thereby reducing the numbers of private cars in use. Less traffic generally results in reduced traffic related accidents.
- The Distributor Road within the development has been designed to include a shared 3.0m wide continuous footpath/cycleway facilitating safe access to schools, public transport, shops and sports grounds in the wider area.

It has been clearly demonstrated that the proposed scheme falls within the category of development where the use of sustainable transport solutions will be a real option. This premise is further supported by the Local Authority and the National Transport Authority's commitment to the delivery of the Ballyvolane Strategic Transport Corridors Project. This scheme has received funding with works to be completed on the ground in 2023. The proposed upgrade works will include junction improvements on the R614 Ballyhooly Road that have been assessed as part of the traffic modelling exercise carried out for the proposed development.

The traffic modelling of the 6 no. junctions, included as part of this study have concluded that Phase I of the scheme to be completed and occupied by 2022, requires no change to the existing roads network. It is proposed as part of this first phase of works to provide a traffic signal-controlled junction at the junction of the Kilbarry Link Road and the R614 Ballyhooly

Road. The purpose of this intervention is to provide a pedestrian/ cycle crossing of the Ballyhooly Road which has the added benefit of controlling the inbound flow of traffic to the Fox & Hounds Junction. Modelling was carried out on the basis that an incremental increase in the modal shift rate over a number of years (2022-2025) was applied to development traffic only and that there was no associated application of the increase in modal shift to background traffic flows (which would result in a reduction in junction flows).

Future year models for each phase of development have been carried out on the premise that upgrade works provided as part of the BSTC Project are in place from 2023 onwards. This modelling concludes that these proposed upgrade works are sufficient to ensure that the critical junctions remain operational for future years up to and including the completion date of the final phase in 2029. Thereafter additional infrastructure as outlined in the Cork Metropolitan Area Transport Strategy (CMATS) will be in the process of being delivered.

As identified previously there will be improvements on the existing roads network associated with funded Local Authority Plans. In addition to this, the CMATS document has identified the need for additional infrastructure to be provided as part of the future public transport solution to support the expansion of Cork City. The Northern Distributor Road, when completed in 2031, will provide an orbital route of Cork City, encompassing the Ballyvolane UEA. The proposal, the subject of this application, is fully compatible with CMATS.

15.9 Biodiversity

Chapter 10 of the EIAR assesses the impact of the proposed development on biodiversity.

The following mitigation measures are outlined for the construction phase of the proposed development:

Construction Phase

It is noted that the Contractor appointed by Longview Developments Ltd. to undertake the construction works shall be responsible for developing and managing the project specific CEMP, incorporating the methodologies described in the preliminary CEMP. The project specific CEMP will detail how implementation of the environmental management and mitigation measures will be monitored by an Ecological Clerk of Works.

The preliminary CEMP details the assignment of responsibility for the implementation of the plan. A set of environmental management procedures is also set out in the CEMP, including an environmental accident, incident and corrective procedure plan.

The control measures for the proposed development will follow current best practice guidelines:

- H. Masters-Williams et al (2001) Control of water pollution from construction sites. Guidance for consultants and contractors (C532). CIRIA;
- IFI (2016) *Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters*. Inland Fisheries Ireland, Dublin;
- Murnane *et al* (2002) Control of Water Pollution from Construction Sites- Guide to Good Practice. SP156; and
- Murphy, D. (2004) *Requirements for the Protection of Fisheries Habitat during Construction and Development Works at River Sites*. Eastern Regional Fisheries Board, Dublin.

The mitigation measures that are proposed in the Water and Hydrology Chapter to control surface water run-off are also relevant as mitigation measures for biodiversity.

It is noted that potential impacts on designated sites will be mitigated by the general measures and best practice construction methods for control of surface water run-off.

The following specific mitigation measures are also set out in Chapter 10 of the EIAR:

Hedgerows and Treelines

No hedgerow clearance or tree felling will occur during the bird breeding season from 1st March to 31st August. Existing trees being retained at the site and its immediate environs will be protected in line with current guidelines (e.g. NRA (now TII) 2006a).

The design of the proposed development incorporates the retention of c.2,165m of hedgerow. However, the proposed works will require the removal of c. 3,131m of hedgerow. The loss of hedgerow will be compensated by the landscaping plans for the proposed development which include planting of the following:

- c.1,291m of hedgerow comprised of native species
- c.2,722m woodland planting with understorey (native species)
- c.5,325m^2 native and semi-native shrub planting
- 580 street trees (mix of native and non-native species)
- 986 specimen trees (mix of native and non-native species)
- Boundary screening tree planting

The new planting of woody species will connect to other planted areas or existing hedgerows and treelines to maintain connectivity to the wider landscape. The species mix comprises native and non-native species and includes some pollinator friendly tree species listed in the *Pollinator Friendly Planting Code*. The hedgerows within the site are predominantly species poor with many gaps. As such, the landscaping plan will provide a net gain in the cover of woodland habitats at the proposed site.

The landscaping plan also includes a ‘wildflower meadow’, which incorporates several ornamental species listed in the *Pollinator Friendly Planting Code.*

Where open excavations are to be left in-situ overnight, measures will be taken to ensure that mammals do not become inadvertently trapped and potentially injured within the open excavations. Such measures (covering, fencing off, allowing access/egress) will be decided under the advice of the project Ecological Clerk of Works at construction stage.

Bats

Loss of commuting and foraging habitat at the site will be mitigated by the landscaping proposals, which include hedgerow, tree and woodland planting.

To minimise disturbance to bats and other fauna that are roosting/resting or active at night, construction operations during the hours of darkness will be kept to a minimum. If construction lighting is required during the bat activity period (April to September), lighting shall be directed away from all hedgerow/ treeline habitats to be retained. This can be achieved by using directional lighting (i.e. lighting which only shines on the proposed works and not nearby countryside) to prevent overspill. This shall be achieved by the design of the luminaire and by using accessories such as hoods, cowls, louvres and shields to direct the light to the intended area only.

Badgers

A pre-construction survey shall be undertaken prior to the commencement of construction to identify active badger setts occurring within the site.

In the event of badger setts being identified within proximity to the proposed works area, the following mitigation measures are proposed to ensure no disturbance of the local badger population during the construction phase of the proposed works (NRA 2005):-

- A buffer distance of 10m from sett entrances should be employed in instances where light works such as digging by hand or in the event of scrub clearance.
- A buffer distance of 20m from Badger sett entrances should be incorporated where light machinery (generally wheeled vehicles) are in operation within the site.
- A buffer distance of 30m from Badger setts should be employed where heavy machinery is in operation within the site.
- None of the above activities should be undertaken within 50m of active setts during the breeding season (1st December to 31st June inclusive).

In the unforeseen event that the project requires works to be undertaken within the recommended buffer distances outlined above, further measures as outlined in NRA (2009) will be adopted in liaison with local NPWS staff.

Birds

No hedgerow clearance or tree felling will occur during the bird breeding season from 1st March to 31st August.

It is anticipated that the landscaping proposals will mitigate for the loss of habitat utilised by birds for foraging and shelter.

The landscaping plan also includes for the installation of bird boxes in the wayleave area. These shall comprise of a mixture of box types to attract different species as follows:

- C. 7 no. bird boxes suitable for species such as tits.
- C. 7 no. open nest boxes suitable for wren, robin, blackbird and song thrush.

The final number and location of boxes will be decided by the Ecological Clerk of Works.

Invasive Species

There are records of the high impact non-native invasive plant species Japanese Knotweed and Indian Balsam from within 2km of the proposed site. No high impact non-native plant species were recorded within the proposed site during the site walkovers or habitat survey, however one small stand of Japanese Knotweed was recorded c.25m outside of the site boundary, to the west of Ballyhooly Road

The presence of invasive species has the potential to lead to an offence under the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011). Regulation 49 of the 2011 Regulations prohibits (unless under licence) the breeding, release, or allowing or causing the dispersal from confinement of any animal listed in the Third Schedule of the Regulations; or the planting, allowing or causing dispersal, and spreading of any plant listed in the Third Schedule. Japanese Knotweed is a plant listed in the Third Schedule.

It is an offence to plant or encourage the spread of invasive species by moving contaminated soil from one place to another, or incorrectly handling and transporting contaminated

material or plant cuttings. Persons must therefore take all reasonable steps and exercise due diligence to avoid committing an offence under the 2011 Regulations:-

As stated in the preliminary CEMP, "*There are no invasive species recorded on site. An Invasive Species management plan will nevertheless be put in place so as manage the spread of any such species and prevent them entering the site. Japanese Knotweed has been identified on lands west of the site and an extermination programme for that has been initiated by JK Ireland". No works are proposed in areas where Japanese Knotweed is present".*

Operational Phase

Bats

The proposed landscaping plan includes areas of hedgerow, woodland planting, street tree and specimen tree planting which will provide darker areas within the site and potential foraging and commuting areas for bats.

The proposed lighting scheme also provides for the incorporation of darker areas within the proposed site, including habitats of potential value to bats such as woodland and peripheral areas of the wayleave that will be planted with trees. Furthermore, lighting proposed at the periphery of these areas of woodland planting is limited to low level lighting of 1 lux, which is the equivalent of levels of light typically present at twilight.

Monitoring

An Ecological Clerk of Works (ECoW) will be appointed for the construction phase of the project. The EcOW will be responsible for the following:

- Monitor the implementation of the project specific CEMP and the mitigation measures outlined.
- Pre-construction surveys for:
    - Invasive species
    - Badger setts
- Monitor the landscaping from the time of planting to one year post construction to ensure viable growth of new planting. Planted material shall be checked periodically over the growing season to remove dead material. Any dead material shall be replaced within the same season with viable stock according to age/height restrictions already specified in mitigation.
- Review construction/operational phase lighting plan to ensure minimal light spillage nuisance on retained/new wildlife corridors.

15.10 Cultural Heritage

Chapter 11 considers the impacts of the proposed development on the Cultural Heritage discipline. It outlines the following measures to mitigate the identified impacts:

Archaeology

Given the scale and extent of the proposed development within an undeveloped area of farmland, a programme of pre-development licensed archaeological investigations, to comprise a geophysical survey followed by archaeological test trenching, will be undertaken across the proposed development site. It is noted that the Cork City Council report to An Bord Pleanála in relation to the proposed development stated that these mitigation measures were acceptable. The test trenching will include an investigation of the section of the

boundary between Lahardane and Ballincolly townlands which extends into the south end of the proposed development site.

In the event that any sub-surface archaeological deposits, features or artefacts are identified during these site investigations they will be recorded and cordoned off while the Planning Authority and the National Monuments Service are consulted to determine any further mitigation measures in advance of commencement of the construction phase. Any required mitigation measures will be enacted prior to and during the construction phase and no mitigation measures during the operational phase are envisioned. The above approach has been agreed with the Local Authorities given the lack of any recorded archaeological features on site.

Architectural Heritage

There are no Protected Structures or NIAH structures located within the proposed development site or within 600m of its boundary and there were no internal buildings of any date noted during the site inspection. It is, therefore, concluded that no mitigation measures for the architectural heritage resource are required in the construction and operational phases of the proposed development.

The proposed mitigation measures will provide for either the avoidance of the cultural heritage resource or the proper and adequate recording of this resource (including currently unknown archaeological features). As a result, there will be no predicted residual impacts on the cultural heritage resource following the construction phase.

Monitoring

There a number of obligatory processes to be undertaken as part of applications to the National Monuments Service (NMS) for the licences which are required to undertake geophysical surveys and archaeological test trench excavations, and these will allow for monitoring of the successful implementation of mitigation measures. Method statements detailing the proposed strategy for all pre-construction site investigations will accompany the licence applications and these will clearly detail the extent of works and outline the consultation process to be enacted to determine further required mitigation measures in the event that any archaeological features are identified. Reports on the site investigations will be submitted to the NMS and the planning authority and will detail the results of all site investigations in written, drawn and photographic formats.

15.11 Landscape and Visual Impact

Chapter 12 of the EIAR assesses the landscape and visual impact of the proposed development. The reductive and avoidance measures include retention of existing site hedgerows wherever possible so as to conserve screening and habitat value. The positioning of phase 6 apartments in the south-western corner of the site, where they nestle into the hillside topography, also ensures that more significant impacts are avoided on elevated parts of the site.

In respect of remedial mitigation measures, design development for the site has allowed for the provision of a range of spaces to accommodate the planting of site boundary trees and hedgerows, woodland screen planting, street tree planting, avenue tree planting, planting through the wayleave park and along the distributor road and dedicated pedestrian/cyclist routes. The resulting planting infrastructure will provide definition between neighbourhoods and screening in views from outside the site as it matures.

15.12 Risk Management

Chapter 13 of the EIAR identifies and considers the likelihood and potential significant adverse effects on the environment arising from the vulnerability of the proposed

development to risks of major accidents and/ or natural disasters. With regard to mitigation measures the following is noted:

Construction Phase

A Construction Environmental Management Plan for the construction period accompanies this planning application. The CEMP identifies the environmental considerations associated with the construction process and outlines proposed work practices, management, mitigation and monitoring strategies to ensure the project is carried out in accordance with best practice, minimum impact on the surrounding environment and maximum safety throughout the duration of the scheme.
The CEMP will be a live document during the construction period and continuously updated to ensure that potential risks of major accidents and/or disasters are identified, avoided and mitigated as necessary.

Operational Phase

The proposed development will be built in accordance with best international current practice and as such mitigation against the risk of major accidents and or disasters will be embedded throughout the design stage. For example, emergency measures will be provided for the pumping station on the Ballyhooly Road which may include a generator to manage outages. On site boundary treatments will also be designed so as to prevent surface water flows from the pumping station to the adjacent watercourses and the proposal will be designed and engineered to be sealed so as to prevent ground water infiltration to the pumping station

In addition, under the provisions of the Building Control Regulations 2006 – 2018, each separate building is to be the subject of a separate Fire Safety Certificate Application. The applications for the Fire Safety Certificates will be submitted to the Local Authority Fire Department and each application will be accompanied by a fire safety compliance report and fire safety compliance drawings. The reports and drawings will demonstrate in detail how each building is to comply with Part B (Fire) of the Building Regulations 2006 – 2018. All areas of the overall development are to be provided with a number of active fire protection systems as part of the fire safety strategy. Full details of these will be set out in the compliance report submitted with the application for the Fire Safety Certificate.

The following is a summary in this regard;

i) Apartment Blocks associated with N6 are to be provided with sprinkler protection coverage under the provisions of BS 9991: 2015.The system is to be a domestic type system complying with BS 9251: 2014 (Category 2 type system) or a commercial system complying with BS EN12845: 2015.

ii) Each area of the development will be provided with a comprehensive common automatic fire detection and alarm system that is compliant with IS 3218: 2013. The system will provide Type L2/L3x automatic detection coverage throughout the development.

iii) In addition to the provision of a common fire alarm system, each dwelling is to be provided with a domestic fire alarm system that is compliant with BS 5839: Part 6: 2019. The domestic systems will be Grade D type systems providing at least Type LD2 detection/alarm coverage.

iv) The common areas of the development are to be provided with emergency lighting systems that provide coverage to all common circulation areas, non-residential rooms and the areas outside final exits. The system will be compliant with IS 3217: 2013 + A1: 2017.

v) Maintained illuminated Exit signs will be provided at all storey and final exits serving the building. These will be supplemented by additional Exit signs and directional Exit signs to ensure that all exits and escape routes are readily apparent to the building occupants. These signs will be of a type complying with BS 5499: Part 1: 2002.

vi) All common routes of escape will comply with the general fire protection features set out in Section 1.4 of Technical Guidance Document B.

vii) The covered carpark associated with N6 is to be provided with adequate levels of permanent natural ventilation. The ventilation is to equate to at least 2.5% of the carpark floor area. The ventilation is to be arranged so as to ensure cross-ventilation and a through flow of air will occur. This will be achieved by the provision of permanent openings strategically located around the perimeter of the carpark and on the roof.

Monitoring

Aside from the monitoring measures to be carried out by the contractor, as outlined in the CEMP and throughout the EIAR, no additional monitoring is considered necessary during the construction phase of the proposed development.

No additional monitoring is considered necessary during the operational phase of the proposed development.

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