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15 Summary of Proposed Mitigation Measures

15.1 Introduction

A key objective of the Environmental Impact Assessment process is to identify likely significant environmental impacts at the pre-consent stage and where necessary to propose measures to mitigate or ameliorate such impacts. This chapter of the EIAR summarises the proposed mitigation measures set out in Chapters 4 to 13.

It is proposed that the appointed contractor will develop a site-specific Construction and Environmental Management Plan (CEMP) prior to works commencing on-site. All the mitigation measures proposed within the individual specialists' assessments will be incorporated into the plan.

Discipline	Proposed Mitigation Measure
Landscape & Visual	• The design seeks to mitigate potential negative effects by: • the design form heights and layout of the architectural scheme • the integration of the landscape design with the architectural and engineering the extension of the Santry River linear park.
Material Assets- Traffic & Transport	**The design seeks to mitigate potential negative effects by:** • Proposing an upgrade to the Oscar Traynor Road / Coolock Drive signalised junction in order to assist to reduce traffic speeds by reducing the widths of the individual approaching lanes of the northern and western arms. • The reduced widths will act as a traffic calming measure by increasing driver caution at this location. • Introducing pelican pedestrian crossing features along Coolock Drive and Greencastle Road in order to provide a more pedestrian friendly environment, and hence reduce traffic speeds of oncoming traffic. • Proposing an internal roads layout as per the Design Manual for Urban Roads and Streets, to reduce traffic speeds. • Preparing a Mobility Management Plan, which has outlined a series of measures to reduce the reliance on private vehicular modes of transport for future residents.
Material Assets- Built Services	The design seeks to mitigate potential negative effects by: All new-build service infrastructure is to be designed in accordance with the relevant service provider and asset owner's code of practice, which require due cognisance of the receiving environment.
Land & Soils	The design seeks to mitigate potential negative effects by: • All new-build infrastructure is to be designed in accordance with the Technical Guidance Documents of the Building Regulations and associated codes of practice, which require due cognisance of the receiving environment. Design depths of proposed infrastructure are to be optimised so that excessive excavations are avoided where possible, and by association a reduction in resultant waste and machinery operation time.
Water & Hydrology	The design seeks to mitigate potential negative effects by: • Surface water treatment has been designed to significantly improve the quality of the site run-off to water courses or to ground. Storm water run-off shall pass through at least 2 stages of treatment with over 90% of rainfall events passing through soakaway systems into the receiving ground. • The form of the development is such that groundwater shall be unaffected.

TABLE 15.1 INCORPORATED DESIGN MITIGATION

Discipline	Proposed Mitigation Measure
Population & Human Health	Mitigation measures proposed during the construction phase of development are: • Preparation of a detailed Construction and Environmental Management Plan (CEMP) by the selected contractor prior to work commencing on site; • Project supervisors for the construction phase will be appointed in accordance with the Health, Safety and Welfare at Work (Construction Regulations) 2013; and • A Preliminary Health and Safety Plan will be formulated during the detailed design stage which will address health and safety issues from the design stages, through to the completion of the construction phases.
Landscape & Visual	Mitigation measures proposed during the construction phase of development are: • The provision of site hoarding along the property boundaries; and • Measures will be included in the Outline Construction Management Plan relating to the control of lighting, storage of materials, placement of compounds, control of vehicular access, and effective dust and dirt control measures, etc.
Material Assets-Traffic & Transport	Mitigation measures proposed during the construction phase of development are: • Measures contained in the Traffic Construction Management Plan o Daily and weekly working hours; o Agreed haul routes for incoming materials; o Licensed hauliers to be used; o Disposal sites, if necessary; o Travel arrangements for construction personnel; o Appropriate on-site parking arrangements for construction personnel to prevent overspill parking on the local road network; o Temporary construction entrances to be provided; o Wheel wash facilities if required; o Road cleaning and sweeping measures to be put in place if required; o Temporary construction signage to be put in place and maintained; and o Any proposed traffic management measures such as temporary traffic lights and signage on any public roads.

Discipline	Proposed Mitigation Measure
Material Assets-Built Services	Mitigation measures proposed during the construction phase of development are: • Intrusive testing by the appointed contractor to establish the location of underground services in advance of works commencing on site; • Consultation with relevant services providers in advance of works to ensure works are carried out to relevant standards and specifications including procedures to ensure safe working practices are implemented for works in the vicinity of services such as live gas mains, works in the vicinity of overhead electricity lines and live electricity lines and works to distribution watermains; • Advising neighbouring sites of construction methodologies in advance of works, in situations which may affect them; • Placing protection of all underground services for which diversions are not required; • All decommissioned infrastructure to be sent to a suitably licenced waste management facility; • Construction methods used by the contractor are to be tailored to reduce, where possible, dust noise and air pollution; to minimise interference with the environment and the neighbouring areas; • Any spoil or waste material generated from the construction process is to be temporarily stored at an approved location on site, before being removed to a suitably licenced waste management facility; • All new infrastructure is to be installed and constructed to the relevant codes of practice and guidelines; • Potable water supply networks and waste water infrastructure are to be pressure tested by an approved method during the construction phase and prior to connection to the public networks, all in accordance with Irish Water Requirements; • Connections to the service providers are to be carried out to the approval and / or under the supervision of the Local Authority or relevant utility service provider, prior to commissioning; • All new sewers are to be inspected by CCTV survey post construction; to identify any possible physical defects for rectification prior to operational phase; • Prior to the commencement of excavations in public areas, all utilities and public services are to be identified and checked; to ensure that adequate protection measures are implemented to minimise the risk of service disruption; and All excavations within the public area are to be back-filled in a controlled manner and surface re-instated to the satisfaction of the Local Authority.

Discipline	Proposed Mitigation Measure

Land & Soils	Mitigation measures proposed during the construction phase of development are:
	• Control of Soil Excavation and Export from Site using the reduce, reuse and recycle approach;
	• All excavation arisings will be reused on site where possible;
	• The implementation of an appropriate earthworks handling protocol;
	• Dust suppression measures (e.g. damping down during dry periods), vehicle wheel washes, road sweeping and general housekeeping will ensure that the surrounding environment are free of nuisance dust and dirt on roads;
	• All fill and aggregate for the project will be sourced from reputable suppliers;
	• Designation of bunded refuelling areas on the site (if required);
	• Provision of spill kit facilities across the site;
	• Where mobile fuel bowsers are used the following measures will be taken:
	  ○ Any flexible pipe, pump, tap 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.
	• In the case of drummed fuel or other potentially polluting substances which may be used during construction 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 concrete bunded areas;
	  ○ 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 should be done so secured and on spill pallets; and
	  ○ Drums to be loaded and unloaded by competent and trained personnel using appropriate equipment.
	• There will be a requirement for a Construction Management Plan to oversee the development;
	• Earthwork operations will be carried out such that surfaces, shall be designed with adequate drainage, falls and profile to control run-off and prevent ponding and flowing; and
	• Should any discharge of construction water be required during the construction phase, discharge will be to foul sewer regulated under a Discharge Licence obtained from the Regulator (Irish Water) issued under the Water Pollution Act.

Discipline	Proposed Mitigation Measure
Water & Hydrology	Mitigation measures proposed during the construction phase of development are: • Any spoil or waste material generated from the construction process is to be temporarily stored at an approved location on site, before being removed to an accepting licensed waste disposal facility; • All new infrastructure is to be installed and constructed to the relevant codes of practice and guidelines; • All surface water infrastructure are to be pressure tested by an approved method during the construction phase and prior to connection to the public networks, all in accordance with Local Authority Requirements; • Connections to the public network are be carried out to the approval and / or under the supervision of the Local Authority prior to commissioning; • All new sewers are to be inspected by CCTV survey post construction; to identify any possible physical defects for rectification prior to operational phase; • Prior to the commencement of excavations in public areas, all utilities and public services are to be identified and checked; to ensure that adequate protection measures are implemented to minimise the risk of service disruption; and • All excavations within the public area are to be back-filled in a controlled manner and surface re-instated to the satisfaction of the Local Authority

Discipline	Proposed Mitigation Measure
Biodiversity	• Fuel, oil and chemical storage should be sited within a bunded area. The bund must be able to take the volume of the largest container plus 10% and be located at least 10m away from drains, ditches, excavations and other locations where it may cause pollution. Bunds should be kept clean and spills within the bund area will be cleaned immediately to prevent groundwater contamination; • Relevant guidelines and legislation (Section 40 of the Wildlife Acts, 1976 to 2012) in relation to the removal of trees and timing of nesting birds will need be followed e.g. do not remove trees or shrubs during the nesting season (1st March to 31st August). • Replanting of the perimeter treelines and hedgerows should be carried out with native species where possible; • Native Hedgerow planting should be included in planting schemes within the site, to reinstate nesting resource lost during site clearance; • Construction operations outside of daylight should be kept to a minimum in order to minimise disturbance to fauna in addition to roosting bird species; • Linear features such as hedgerows and treelines serve as commuting corridors for bats (and other wildlife) and the onsite boundary vegetation should be retained and/or replaced once construction ends. Native species should be chosen in all landscaping schemes. Planting schemes should attempt to link in with existing wildlife corridors (hedgerows and treelines), both onsite and off, to provide continuity of wildlife corridors. Retention of boundary hedgerows and treelines will also serve to screen the development; and • If bats are encountered during any works at the site the relevant works will be suspended until the advice of a suitably qualified and licenced bat ecologist is sought. A derogation licence may need to be sought from NPWS in order to permit removal of bats and mitigate for the loss of any roosts on the site. All works in the riparian corridor (<10m from the river) will be carried out in consultation with Inland Fisheries Ireland and the project ecologist following the best practice guidelines for construction in the vicinity of watercourses.

Discipline	Proposed Mitigation Measure
Noise & Vibration	Mitigation measures proposed during the construction phase of development are: • To the extent practicable, works are to be completed during standard construction hours. Where practical, deliveries are to be made during standard construction hours and carry out loading and unloading away from sensitive receivers; • Quieter construction methods will be used where required and where considered reasonable and feasible. Avoiding rock hammering where possible by using other excavation methods such as jaw crushers and, if unavoidable, use the smallest practical excavator/backhoe and hammer. Use rubber wheeled in preference to steel tracked equipment. Make sure all diesel equipment is fitted with appropriate mufflers (e.g. residential grade). Where acceptable from an occupational health and safety perspective, using quieter alternatives to reversing alarms (such as spotters, closed circuit television monitors and 'smart' reversing alarms), particularly during night time activities; • Equipment will be switched off when not in use (including during breaks and down times of more than 30 minutes); • Where reasonable and feasible, haulage routes will be located as far away as possible from residential receivers. Truck movements would be restricted to identified haulage routes; • Where possible, using noisy plant simultaneously or close together will be avoided; • Equipment and excavation work sites will be oriented where possible to reduce noise emissions to sensitive receivers; • Maintain equipment in efficient working order; and • A noise complaint handling procedure will be established and respond quickly to resolve any complaints in accordance with Dublin City Council established policy.

Air Quality	• Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real-time PM10 continuous monitoring and/or visual inspections. • 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 off site, and the action taken to resolve the situation in the log book. • Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and window sills within 100m of the site boundary, with cleaning to be provided if necessary. **Dust Management** • Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to the local authority when asked. • Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions. • Plan site layout so that machinery and dust causing activities are located away from receptors, as far as is possible • Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site. • Fully enclose site or specific operations where there is a high potential for dust production and the site is active for an extensive period. • Avoid site runoff of water or mud. • Keep site fencing, barriers and scaffolding clean using wet methods. • Cover, seed of fence stockpiles to prevent wind whipping. • Ensure all vehicles switch off engines when stationary – no idling vehicles. • Only use cutting, grinding or sawing equipment fitted or in conjunction with suitable dust suppression techniques such as water sprays or local extraction. • Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate. • Use enclosed conveyors and covered skips. • Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.

Discipline	Proposed Mitigation Measure
	• 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 methods. • Avoid bonfires and burning of waste materials. **Demolition** • Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible, to provide a screen against dust). • Ensure effective water suppression is used during demolition operations. Hand held 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 • Avoid explosive blasting, using appropriate manual or mechanical alternatives • Earthworks: • Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surface as soon as practicable. • Construction • 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. • 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 to prevent dust. • For smaller supplies of fine powder materials ensure bags are sealed after use and stored appropriately to prevent dust. • 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. • Avoid dry sweeping of large areas. • Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport. • Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable). • Ensure there is an adequate area of hard surfaced road between the wheel wash facility and the site exit, wherever the site size and layout permits. • Access gates to be located at least 10m from receptors where possible.

Discipline	Proposed Mitigation Measure
Cultural Heritage	Mitigation measures proposed during the construction phase of development are: • archaeological monitoring of works in the greenfield area/proposed linear park be carried out during excavation works by a suitably qualified archaeologist. • In the event of archaeological features or material being uncovered during construction phase, it is crucial that machine work cease in the immediate area to allow the archaeologist to assess, excavate and record any such material. • Should archaeological features or material be uncovered during construction phase, adequate funds to cover excavation, fencing (if required), post-excavation analysis and reporting, and conservation work should be made available.

TABLE 15.2 CONSTRUCTION MITIGATION

Discipline	Proposed Mitigation
Population & Human Health	Mitigation measures proposed during the operation phase of the development are: • The inclusion of a childcare facility within the proposed development; • Incorporating extensive open space, and extensive provision for walking and cycling throughout the development; • The inclusion of a comprehensive foul and surface water management system; • Energy efficient measures; and • High quality finishes and materials.
Landscape & Visual	Mitigation measures proposed during the operation phase of the development are: • The provision of significant additional public space, including; boulevard/streets at the ground level entrances and throughout the development at ground level; a public park linking the proposed scheme with the surrounding area to the north.; and • The relationship between the buildings and the adjacent newly created public realm is fully considered and includes semi-private buffering where appropriate between public realm and internal living areas at 'ground' level; The provision of communal/public uses within the building courtyards, in order to facilitate public access and permeability and to assist in activating public spaces
Material Assets-Traffic & Transport	Mitigation measures proposed during the operation phase of the development are: • The proposed upgrade of the Oscar Traynor Road / Coolock Drive signalised junction will assist to reduce traffic speeds by reducing the widths of the individual approaching lanes of the northern and western arms. The reduced widths will act as a traffic calming measure by increasing driver caution at this location. • Introduction of pelican pedestrian crossing features along Coolock Drive and Greencastle Road will provide a more pedestrian friendly environment, and hence reduce traffic speeds of oncoming traffic. • Furthermore, the internal roads layout has been designed as per the Design Manual for Urban Roads and Streets, to reduce traffic speeds. It should also be noted that a Mobility Management Plan has been prepared as part of this application, which has outlined a series of measures to reduce the reliance on private vehicular modes of transport for future residents.

Discipline	Proposed Mitigation
Material Assets-Built Services	Mitigation measures proposed during the operation phase of the development are: • The design and construction of the required services infrastructure in accordance with the relevant guidelines and codes of practice is likely to mitigate any potential impacts during the operational phase of the development, with the exception of any routine maintenance of the site services.
Water & Hydrology	Mitigation measures proposed during the operation phase of the development are: • The design and construction of the required services infrastructure in accordance with the relevant guidelines and codes of practice is likely to mitigate any potential impacts during the operational phase of the development, with the exception of any routine maintenance of the site services; and • Regular maintenance of the development's green roofs and bio-retention strips will be required; to ensure consistency of the positive operational impact on the water and hydrology environment, regular maintenance of landscaped areas, bio-retention and green roof areas is required.
Noise & Vibration	Mitigation measures proposed during the operation phase of the development are: • The design of the fabric of the building along with the internal ventilation provision will insure the internal noise levels will meet the appropriate standards for the future occupants of the development. • The layout of the scheme will ensure that external areas will be afforded the maximum noise reduction from the barrier affects provided by balconies and the buildings themselves.
Cultural Heritage	Mitigation measures proposed during the operation phase of the development are: • No further mitigation is recommended.

TABLE 15.3 OPERATIONAL MITIGATION