

20 Summary of Mitigation Measures

20.1	Introduction	2
20.2	Mitigation Strategies	2
20.3	Population and Human Health.....	2
20.4	Biodiversity	3
20.5	Land, Soils, Geology, Hydrogeology, Utilities	9
20.6	Hydrology.....	10
20.7	Noise & Vibration	11
20.8	Air Quality	16
20.9	Climate.....	18
20.10	Wind and Microclimate	21
20.11	Landscape and Visual Impact Assessment.....	21
20.12	Material Assets – Traffic and Transport	22
20.13	Material Assets – Waste Management	23
20.14	Archaeological and Cultural Heritage.....	26
20.15	Architectural Built Heritage	27
20.16	Risk of Major Accidents and/or Disasters.....	32

20.1 Introduction

This chapter was prepared Brock McClure Planning Consultants. This chapter provides a summary of mitigation measures proposed in Chapters 5 to 18. The appointed contractor will be required to adhere to the mitigation contained in the EIAR for the protection of the environment and to ensure sustainable development.

20.2 Mitigation Strategies

There are three established strategies for impact mitigation - avoidance, reduction and remedy. The efficacy of each is directly dependent on the stage in the design process at which environmental considerations are taken into account (i.e. impact avoidance can only be considered at the earliest stage, while remedy may be the only option available to fully designed projects).

Avoidance

Avoidance is generally the fastest, cheapest and most effective form of impact mitigation. Environmental effects and consideration of alternatives have been taken into account at the earliest stage in the project design processes.

Reduction

This is a common strategy for dealing with effects which cannot be avoided. It concentrates on the emissions and effects and seeks to limit the exposure of the receptor. It is generally regarded as the "end of pipe" approach because it does not seek to affect the source of the problems (as do avoidance strategies above). As such this is regarded as a less sustainable, though still effective, approach.

Reducing the Effect

This strategy seeks to intercept emissions, effects and wastes before they enter the environment. It monitors and controls them so that acceptable standards are not exceeded. Examples include wastewater treatment, filtration of air emissions and noise attenuation measures.

Reducing Exposure to the Impact

This strategy is used for impacts which occur over an extensive and undefined area. Such impacts may include noise, visual impacts or exposure to hazard. The mitigation is effected by installing barriers between the location(s) of likely receptors and source of the impact (e.g. sound barriers, tree screens or security fences).

Mitigation by Remedy

This is a strategy used for dealing with residual impacts which cannot be prevented from entering the environment and causing adverse effects. Remedy serves to improve adverse conditions which exist by carrying out further works which seek to restore the environment to an approximation of its previous condition or a new equilibrium.

20.3 Population and Human Health

Construction Phase

A bespoke and detailed Construction Management Plan (CMP) to provide a mechanism for implementation of the construction phase mitigation measures which are described in the EIAR. The purpose of this report is to summarise the measures to be implemented during the construction phase.

All personnel will be required to implement the requirements of the CMP and shall be required to comply with all legal requirements and best practice guidance for construction sites.

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.

Adherence to the construction phase mitigation measures presented in this EIAR will ensure that the construction of the proposed development will have an imperceptible and neutral impact in terms of health and safety.

Operational Phase

The proposed development has been designed to avoid negative impacts on population and human health through;

- The inclusion of a childcare facility within the proposed development;
- Landscaping to mitigate against issues arising from microclimate conditions;
- The inclusion of a comprehensive foul and surface water management system;
- Energy efficient measures; and,
- High quality finishes and materials.

20.4 Biodiversity

Construction Phase

The following measures, designed to protect surface water quality, will serve to prevent any adverse effects occurring because of construction phase groundwater discharges from the Site. These mitigation measures will treat the source (e.g., refuelling of plant to be carried out at designated refuelling station locations on Site) or remove the pathway (e.g., no release of wastewater generated on-Site to ground during the construction phase).

All works carried out as part of the proposed development will comply with all Statutory Legislation including the Local Government (Water Pollution) acts, 1977 and 1990. Personnel working on the Site will be trained in the implementation of environmental control and emergency procedures. Procedures and relevant documents produced will be formulated in consideration of standard best international practice including but not limited to:

- CIRIA, (2001), Control of Water Pollution from Construction sites, Guidance for Consultants and Contractors;
- Construction Industry Research and Information Association (CIRIA) Environmental Good Practice on Site (C650), 2005;
- BPGCS005, Oil Storage Guidelines;
- UK Pollution Prevention Guidelines (PPG) UK Environment Agency, 2004;
- Construction Industry Research and Information Association CIRIA C648: Control of water pollution from linear construction projects: Technical guidance (Murnane et al. 2006);
- CIRIA C648: Control of water pollution from linear construction projects: Site guide (Murnane et al. 2006); and
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

Reduction of Noise Related Impacts

Bird species are sensitive to disturbance from increased noise as a result of the Construction Phase of the Proposed Development.

Mitigation to reduce the effects of noise during the Construction Phase (including human presence, plant, machinery and vehicles) is required to avoid significant adverse effects on the birds and other noise sensitive species (such as badger) which may be present on the Site, as follows:

- High noise disturbance works (such as demolition and heavy drilling) should be undertaken outside of the breeding bird season (March – August).
- Minimise working time outside of the designated area within the Proposed Development Site.

- Acoustic barriers should be installed along the entire length of the southwestern boundary of the Site to prevent disturbance to badger which may be using the area (subject to survey results and approach to maintain/remove sett as required).
- Selection of plant machinery with low inherent potential for generating noise.
- Siting of plant as far away from sensitive receptors as permitted by Site constraints.
- Avoidance of unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Proper balancing of plant items with rotating parts.
- Keep internal routes well maintained and avoid steep gradients.
- Minimise drop heights for materials or ensure a resilient material underlies.

Acoustic barriers are readily available online and have the benefit of reducing noise levels by up to 43dB. Where works are occurring outside of the breeding bird sensitive season, noise monitoring is not required, however this could change depending on the results of the remaining ecology surveys which are ongoing at the Site at the time of writing this report. This report will be updated following completion of said surveys, with all necessary mitigations provided therein, including noise monitoring, should it be required. Acoustic barriers should remain in place for the duration of the construction works, once erected (if required).

These measures will ensure that any noise disturbance to nesting birds or any other fauna species in the vicinity of the Site of the proposed development will be reduced to a minimum.

Air Quality Control (Dust Suppression and prevention)

The following general dust control measures will be followed for the duration of the Construction of the Site and will ensure no significant dust related effects occur to nearby sensitive receptors.

- Haulage vehicles transporting gravel and other similar materials to Site will be covered by a tarpaulin or similar.
- Access and exit of vehicles will be restricted to certain access/exit points.
- Vehicle speed restrictions of 20km/hr will be in place.
- Bowsters will be available during periods of dry weather throughout the Construction period.
- During dry and windy periods, and when there is a likelihood of dust nuisance, a bowster will operate to ensure moisture content is high enough to increase the stability of the soil thereby reducing the amount of dust.
- Stockpiles will be stored in sheltered areas of the Site, covered, and watered regularly or as needed if exposed during dry weather.
- Gravel should be used at Site exit points to remove caked-on dirt from tyre tracks.
- Hard surfaced roads will be wet swept to remove any deposited materials.
- Unsurfaced roads will be restricted to essential traffic only.
- If required to control dust nuisance wheel-washing facilities will be located at the exit from the construction area.
- Dust production as a result of Site activity will be minimised by regular cleaning of the access roads using vacuum road sweepers and washers. Access roads should be cleaned at least 0.5km on either side of the approach roads to the access points.
- Public roads outside the Site shall be regularly inspected for cleanliness, as a minimum daily, and cleaned as necessary. A road sweeper will be made available to ensure that public roads are kept free of debris.
- The frequency of cleaning will be determined by the Site agent and is weather and activity dependent.
- The height of any required stockpiles will be kept to a minimum, and slopes should be gentle to avoid windblown soil dust.
- The following will be dampened during dry weather:
 - Unpaved areas subject to traffic and wind.
 - Stockpiles.

- Areas where there will be loading and unloading of dust-generating materials.
- Under no circumstances will wastewater from equipment, wheel or surface cleaning enter the local drainage network.

Root Protection Zones

Protective tree fencing in compliance with BS 5837:2012 'Trees in relation to design, demolition and construction – Recommendations' will be erected prior to any Construction works being undertaken to prevent damage to the canopy and root protection areas of existing trees to be retained at the Site.

The fencing will be signed off by a qualified arborist prior to construction to ensure it has been properly erected. No ground clearance, earthworks, stock-piling or machinery movement will be undertaken within these areas.

The project Arborist will be instructed prior to commencement on Site; to ensure that appropriate tree protection measures are in place. These measures will entail robust fencing around the root protection zones of all trees and hedgerows being retained on Site. An adequate level of signage will also be provided to highlight 'no work zones' and ensure that Site creep and damage to retained habitats does not occur. The northern and southern boundary hedgerows must be sufficiently protected for the duration of the Construction Phase to maximise their ecological value in the final landscape plan.

The project Arborist, the project Ecologist and the Site Manager will work together to ensure these sections of hedgerow/woodland are protected for the duration of the works.

Invasive Species Removal

It is recommended that non-native/invasive flora species recorded at the Site, Spanish bluebell and three-cornered garlic, are controlled/removed as per the appropriate best-practice guidelines. Removal and disposal should be carried out in accordance with appropriate guidelines such as TII (formerly NRA) The Management of Invasive Alien Plant Species on National Roads (2020), with consideration given to the prevention of spread of these plants.

An invasive species pre-commencement survey will be conducted in which all Third Schedule invasive species on-Site will be resurveyed and marked on the ground by the ECoW prior to the commencement of construction works within the lands. This will be undertaken in late spring, when the plants are in their flowering and vegetative phase and clearly identifiable above ground; The areas of Spanish bluebell and three-cornered garlic will be removed from all habitats within the lands. The material will be removed from Site by an appropriately qualified and licensed professional with experience in treatment of invasive species.

Both invasive species recorded on Site can be controlled by chemical or physical means, or a combination of both, which is the preferred method of control as per the TII guidance document for invasive species treatment (TII, 2020).

Biosecurity

The following best practice Site hygiene and biosecurity measures will be in place as a precautionary measure to avoid the potential introduction of new invasive floral species at the Site and / or transfer offsite via movement of materials/staff:

- All soils/materials being introduced to the Site will be sourced from a certified invasive flora-free source site, to ensure no introduction of invasive plant materials to the Site occurs.
- Personnel working on or between sites will ensure their clothing and footwear are cleaned, ensuring they are visually free from soil and organic debris, in order to prevent inadvertent spread of invasive plant material.

- All vehicles entering or leaving the Site will have been suitably checked and pressure-washed to ensure no introduction of invasive flora to and from the Site. Measures such as a drive through hygiene bath or footbaths will be considered where appropriate.
- Designated wash-down area to be located away from sensitive receptors such as watercourses, ditches, drains etc.
- Material/water left after vehicles have been pressure-washed must be contained, collected and disposed of appropriately (these waters must not under any circumstances be discharged to drains or nearby ditches).

Timing of Vegetation Clearance

Any vegetation clearance at the Site will need to be cognisant of any potentially present fauna, and as such this mitigation is included as precautionary guidance, even though hedgerows are to be retained. The table below provides guidance for when vegetation clearance is permissible in relation to hibernating and breeding fauna. Information sources include British Hedgehog Preservation Society's Hedgehogs and Development and The Wildlife (Amendment) Act, 2000 and the Herpetofauna Groups of Britain and Ireland (1998).

Vegetation removal will not occur within the period of March-August inclusive, and the hedgerow sections marked for removal will be conducted outside of this period. The preferred period for vegetation clearance is within the months of September and October to avoid the main breeding bird season, as well as mammal hibernation and common lizard hibernation; vegetation clearance at the Site should be supervised by an ecologist.

During any works at the Site, should a breeding bird and/or an active nest be found, the nest will be protected through the demarcation of a 5m buffer zone (or appropriate area) around the nest, and no further works will take place in the vicinity of the nest until the young have fledged. Where continuance of works is critical during the nesting season, an ecologist will be instructed to survey the vegetation in question and make recommendations on how best to proceed. The area containing the nest would need to be protected with a suitable buffer to minimise disturbance until the ecologist has confirmed the young have fledged.

Ecological Feature	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec
Breeding Birds	Vegetation clearance permissible		<u>Nesting bird season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of nesting birds by an ecologist.						Vegetation clearance permissible			
Small terrestrial mammals (Hedgehog)	<u>Mammal hibernation season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist.		Vegetation clearance permissible						<u>Mammal hibernation season</u> No clearance of vegetation or works to relevant structures permitted unless confirmed to be devoid of hibernating mammals by an ecologist.			

Common Lizard	Lizard Hibernation Season No habitat clearance permissible	Active period Habitat (scrub, tall sward grass) clearance permissible	Lizard Hibernation Season No habitat clearance permissible
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Table 20.1 Guidance on Vegetation Clearance

Mitigation 11: Waste Management

As best-practice all construction-related rubbish on Site e.g., plastic sheeting, netting etc. will be kept in a designated area and kept off ground level so as to prevent small mammals such as hedgehogs from entrapment and death.

Trenches/pits must be either covered at the end of each working day or include a means of escape for any animal falling in e.g., a plank or objects placed in the corner of an excavation (Species such as badgers will continue to use established paths across a site even when construction work has started).

Any temporarily exposed open pipe system will be capped in such a way as to prevent animals gaining access as may happen when contractors are off Site.

Mitigation 12: Construction Phase Lighting

To minimise ecological disturbance during the Construction Phase, lighting will be managed with a strong emphasis on environmental sensitivity. Where possible, all construction lighting will be switched off during non-working hours to reduce unnecessary illumination of the surrounding environment.

When lighting is required, directional lighting will be the preferred method. This approach significantly reduces light spill beyond the immediate work area, thereby limiting potential disruption to nearby habitats. This is particularly important for nocturnal mammals, bats, and other light sensitive species that may be using the site or adjacent areas for commuting, foraging, or other essential behaviours. These species are often highly sensitive to artificial lighting, which can interfere with their natural activity patterns and ecological functions.

To further mitigate impacts, it is recommended that LED luminaires with a warm white spectrum (2700K–3000K) be utilised. This spectrum reduces the blue light component, which is known to be more disruptive to wildlife. LED lighting is also advantageous due to its sharp cut-off angles, lower intensity, and dimming capabilities, all of which contribute to minimising light pollution and ecological disturbance.

These measures are intended to support the protection and conservation of local biodiversity, ensuring that construction activities are carried out in a manner that is both responsible and environmentally conscious.

Operational Stage**Invasive Species Management**

Certain plant species and their hybrids are listed as Invasive Alien Plant Species in Part 1 of the Third Schedule of the European Communities (Birds and Natural Habitats) Regulations 2011 (SI 477 of 2011, as amended). In addition, soils and other material containing such invasive plant material, are classified in Part 3 of the Third Schedule as vector materials and are subject to the same strict legal controls.

Despite the measures identified in the accompanying CEMP (JJC, 2025c) for the importation of only clean materials, there is the potential for the inadvertent import of invasive species to the Site. If established, there is a risk of further spread both within and out of the Site.

As such, it is recommended that any newly landscaped areas, particularly where infill materials and soils have been imported for soft landscaping, are assessed during the Operational Phase within

the next botanical season for the presence of any inadvertently introduced invasive species, with particular focus on those listed on Schedule III of SI 477 of 2011. If invasive species are detected, an Invasive Species Management Plan will be prepared, agreed with the Local Authority and implemented at the earliest possibility to limit the potential for further spread.

Bat Friendly Lighting

Artificial lighting within the Proposed Development will be designed and installed to minimise the effect on local wildlife and in accordance with the Bat Conservation Trust guidelines on artificial lighting and bats (ILP, 2023):

- There will be no light spill to the boundary habitats.
- All luminaires used will lack UV/IR elements to reduce effect.
- LED luminaires will be used because they are highly directional, lower intensity, good colour rendition and dimming capability.
- A warm white spectrum (<2700 Kelvins will be used to reduce the blue light component of the LED spectrum).
- Luminaires will feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to bats.
- Column heights should be carefully considered to minimise light spill. The shortest column height allowed should be used where possible.
- Only luminaires with an upward light ratio of 0% and with good optical control will be used.
- Luminaires will be mounted on the horizontal, i.e. no upward tilt.
- Any external security lighting will be set on motion-sensors and short (1min) timers.
- As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.

Artificial lighting at the Site should be designed so as to minimise any potential for significant effects on SCI birds in flight, or nesting on Site, throughout the Operational lifetime of the Site. Consideration should be given to the following common issues that arise as a result of light pollution: glare, light trespass, over-illumination and sky glow (Crymble, n/d). The following measures will ensure the protection of seabirds and other birds in flight throughout the lifetime of the Operational Phase of the Proposed Development:

- LED luminaires possessing a warm white spectrum (<2700k) will be used so as to reduce the blue light component. LED lights are also ideal due to their sharp cut-off, lower intensity, and dimming capabilities.
- External lighting will be set on motion-sensors and short (1min) timers.
- Balcony lighting should be switched off as default, with the option to turn lights on given to the room's occupants using a timer switch.
- Column heights should be carefully considered to minimise light spill. The shortest column height allowed should be used where possible.
- Fixtures should be downward facing with limited light spill. As a last resort, accessories such as baffles, hoods or louvres will be used to reduce light spill and direct it only to where it is needed.
- There will be no light spill onto boundary habitats (treelines, hedgerows, woodland).

Alternative Suitable Habitat for Breeding Herring Gull

To support the conservation of the herring gull, a Special Conservation Interest (SCI) species of the North-western Irish Sea SPA, the proposed LRD Site in Blackrock, Dublin will incorporate alternative suitable breeding habitat tailored to the species' ecological requirements. This could include the installation of elevated nesting platforms or flat, gravel-covered roof spaces that mimic natural cliff or island nesting sites, ensuring minimal human disturbance and predator access. These features should be positioned with adequate spacing to reduce territorial conflict and oriented to provide shelter from prevailing winds.

Additionally, the provision of nearby foraging opportunities, such as green roofs with invertebrate-rich substrates, would enhance habitat suitability. Monitoring and adaptive management should be embedded into the design to ensure long-term viability and alignment with the SPA conservation objectives. The establishment and monitoring of this alternative habitat will be undertaken by a suitably qualified ecologist.

20.5 Land, Soils, Geology, Hydrogeology, Utilities

Demolition Stage

Due to the surface level only demolition and the absence of excavation during this stage the impacts on the sites soils, geology and hydrogeology is likely to be neutral, imperceptible and short-term.

Demolition waste will be dealt with in accordance with regional and national legislation. The predicted impact on the soils, geological and hydrogeological environments during the demolition phase are predicted to be **neutral, imperceptible and short-term**.

During the demolition phase the development will adhere to its own CEMP and mitigation plans. Overall, the extent of demolition occurring on the proposed development will be minimal. Therefore, the cumulative impacts for the demolition phase are expected to be neutral, imperceptible, short-term and negligible.

Construction Stage

In the absence of mitigation measures, the construction phase presents potential for impact on soils geology and hydrogeology associated with the following activities:

- Excavation and Infilling
- Site run off and accidental spills on site

Without the consideration and employment of mitigation measures the potential impacts during the construction phase the sites soils, geology and hydrogeology are short-term, significant to slight and negative

During construction of this proposed and permitted developments there will be removal of soil cover and installation of hardstand and some potential for localised accidental construction related oil spills and or alkaline discharges from cement works. Increase in hardstand and installation of drainage systems will reduce recharge to ground. All developments will have to incorporate measures to protect soil and water quality in compliance with legislative standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2009 and amendments).

Therefore, the cumulative impact for the construction phase is considered to be neutral, imperceptible, short-term and negligible.

Operational Stage

In the absence of design and mitigation measures, the operation phase presents potential impacts associated with the following activities:

- Surface water run off
- Increase in hardstanding

Without the consideration and employment of mitigation measures the potential impacts during the operational phase the sites soils, geology and hydrogeology are long-term, significant to imperceptible and neutral- negative.

20.6 Hydrology

Demolition Phase

Due to the surface level only activities and the absence of excavation during this stage the impacts on the soils, geology and hydrogeology is **likely to be neutral, slight and short-term**.

Demolition activities on the site of the proposed development are not expected to have any impact upon the immediate or surrounding hydrological environment.

The predicted impact on the soils, geological and hydrogeological environments during the demolition phase are predicted to be **neutral, imperceptible, short-term and negligible**.

During the demolition phase the development will adhere to its own CEMP and mitigation plans. Overall, the extent of demolition occurring on the proposed development will be minimal with no impact upon the immediate or surrounding hydrological environment.

Therefore, the cumulative impacts for the demolition phase are expected to be **neutral, imperceptible, short-term and negligible**.

Construction Phase Mitigation Measures

In the absence of mitigation measures, the construction phase presents potential for impact on the hydrological environment associated with the following activities:

- Increased surface run-off due to soil compaction and gradual hardstanding introduction and sediment loading in run-off.
- Accidental spills or leaks of hydrocarbons from construction vehicles, on-site toilet and wash facilities or alkaline water from cement works impacting run-off.
- Soil excavation and removal.

Without the consideration and employment of mitigation measures the potential impacts during the construction phase to the soils, geology and hydrogeology are **short-term, slight and negative**.

In order to reduce impacts on the soils, geological and hydrogeological environment, the contractor will be obliged to work in compliance with a Construction Environmental management plan (CEMP) which includes a number of mitigation measures to be adopted as part of the construction works on site:

- Control of excavated soil from entering waterways.
- Control of aggregates and fill from entering waterways.
- Fuel and chemical handling to mitigate against suspended solids entering waterways.
- Control of surface water during construction to mitigate against suspended solids entering waterways.
- Control of foul water discharges.
- Ensuring the statuses of waterbodies are not impacted during construction.

The predicted impact on the soils, geological and hydrogeological environments during the construction phase are predicted to be **neutral, imperceptible and short-term**.

During construction of this and proposed and permitted developments, there will be removal of soil cover and installation of hardstand and some potential for localised accidental construction related oil spills and or alkaline discharges from cement works. Increase in hardstand and installation of drainage systems will reduce recharge to ground and increase the amount of surface water runoff. Contractors for the proposed development will be contractually required to operate in compliance with a Construction Environmental Management Plan (CEMP). All developments will have to incorporate measures to protect soil and water quality in compliance with legislative

standards for receiving water quality (European Communities Environmental Objectives (Groundwater) Regulations (S.I. 9 of 2009 and amendments)).

Therefore, the cumulative impact for the construction phase is considered to be **short-term, neutral, imperceptible and negligible**.

Operational Phase Mitigation Measures

In the absence of design and mitigation measures, the operation phase presents potential impacts associated with the following activities:

- Surface water run off
- Increase in hardstanding
- Decreased recharge to the aquifer
- Increased wastewater to Ringsend WWTP

Without the consideration and employment of mitigation measures the potential impacts during the operational phase to the soils, geology and hydrogeology are **short-term, slight to significant and negative**.

During operation, all employees will be trained and equipped to respond to emergency events and the proper handling and storage of fuels.

Surface and ground water will be handled through the use of sustainable drainage system (SuDS) and the surface water drainage strategy, which will minimise the risk of contaminants entering into the receiving environment and regulate flow rates.

The predicted impact on the hydrological environment during the operational phase are predicted to be **neutral, imperceptible and long-term**.

During operation, there is expected to be a slight change in the localised recharge to the aquifer due to the increase in hardstanding, however through mitigation measures the effects upon the hydrogeological environment will result in minimal cumulative impacts. The increased hardstanding will also result in an increase in surface water run off discharging to surface water bodies. Through the use of SuDs the potential run off rates will be mitigated against. Foul water will be piped to Ringsend WWTP, which Uisce Éireann has confirmed capacity for.

Therefore, the cumulative impact for the operational phase is considered to be **long-term, neutral, imperceptible and negligible**.

20.7 Noise & Vibration

Mitigation measures for the construction phase are set out below in order to reduce potential impacts as far as practicable to within the adopted criteria for noise and vibration.

Construction Phase - Noise

The construction stage will be undertaken over a number of phases from site preparation through to building construction and internal fit out. In terms of the potential noise and vibration impacts, the key stages and activities are expected to involve:

- Site clearance and demolition of existing structures;
- Ground works (excavation and piling);
- Superstructure Construction; and
- Internal fit out.

The construction programme will create typical construction activity related noise onsite. Indicative ranges of noise levels associated with construction may be calculated in accordance with the methodology set out in British Standard Institute (BSI) BS 5228-1:2009 +A1:2014 Code of Practice for noise and vibration control of construction and open sites - Part 1: Noise (BSI, 2014).

This standard sets out sound power / sound pressure levels for plant items normally encountered on construction sites, which in turn enables the prediction of noise levels.

The following section discusses typical noise levels associated with the proposed development demolition/construction phase and comments on potential noise impacts at distances to the nearest Noise Sensitive Locations (NSLs) during the key stages and types of activities that will occur on site.

Demolition Works

The existing buildings and associated structures within the site will be demolished. There will be periods when breakers will be required to break out foundations and solid structures.

Excavation and Piling

Piling / coring through rock may be required to allow excavation of the basements in the strata above the rock in accordance with the proposed design. Excavation in rock is not envisaged.

Pile wall is expected to be installed in blocks A1, B1, B2, B3, B4 and D1 to allow excavation of basements. Foundations for these blocks will be a raft type foundation. C1, C2 and C3 shall have strip foundations. E1 and E2 shall have piled foundations. Gate lodge shall have mini piled foundation.

For construction works associated with activities such as excavation and structural works including excavators, loaders, dozers, cranes, generators, concreting works and rotary bored piling noise levels are typically in the range of 70 to 83 dB L_{Aeq} at 10m.

Night-time construction works

Works during night-time hours will apply to the construction of the slabs, for apartment blocks A1, B1, B2, B3, B4 and D1 which must be carried out. These works will be limited to concrete power floating application. This would include, for example two concrete power floaters and one diesel operating simultaneously within a work area. It is assumed that one slab in one block will be worked on per night, moving through the site. As such these works will operate near an NSL for a limited period while the majority of these works will occur at further distances.

During the nighttime power floating works, the construction noise threshold value of 50 dB L_{Aeq} is likely to be exceeded at distances of up to 45m from the works location in the absence of any noise mitigation. Noise mitigation will therefore be required where this activity is scheduled within 50m of NSLs along the Proposed Project, mitigation is provided in Section 9.8. With mitigation in place, it is expected that there will be a 5 to 10 dB reduction to the noise levels in Table 9.17 and hence it is possible that works may take place at distances of 25 m from the residences without causing a significant impact.

Construction of Proposed Structure

For construction work areas with lower noise levels such as those associated with superstructure works including site compounds (for storage, offices and material handling, generators etc.), smaller items of mobile plant (excavators, cranes, dozers), landscaping and concreting works with lower noise emissions, a total construction noise level of 80 dB L_{Aeq} at 10m has been used for the purposes of predictive-calculations.

Indicative Construction Noise Levels

Indicative noise calculations have been undertaken which assume that plant items are operating for 66% of the time. Screening from a standard site hoarding of 2.4m is assumed around all site boundaries. It must be stated that for most of the time, plant and equipment will be a greater distance from the nearest NSLs than those used within the calculations and the "on-time" of plant and equipment will be less than those assumed over a normal working day (i.e. the use of piling rigs or breakers for demolition will be in use for shorter periods than those assumed over a normal working day) and consequently will have lower noise levels. The assessment presented is therefore representative of a best estimate conservative scenario representing construction activities. Table 20.2 presents the calculated noise levels at varying distances.

Taking into account the outline construction programme, it is possible to predict typical noise levels using guidance set out in BS 5228-1:2009+A1:2014. Table 20.2 outlines typical plant items and associated noise levels that are anticipated for various phases of the construction programme. The values presented below assume no mitigation measures in place.

Activity	Item of Plant (BS5228 Ref)	Plant Noise Level L_{Aeq} at 10m	Predicted Noise Level, (dB $L_{Aeq,1hr}$) at varying distances			
			NSL1 (25m)	NSL2 (20m)	NSL3 (30m)	NSL4 (20m)
Site Clearance/Demolition	Track Excavator (C2.21)	71	54	56	52	56
	Tracked Mobile Crane (C4.50)	79	54	56	52	56
	Tracked Crusher (C1.14)	85	65	67	63	67
	Dump Truck (C2.3)	71	62	64	60	64
	Concrete Breaker (C1.4)*	82	68	70	66	70
	Cumulative Site Clearance and Demolition		71	73	69	73
Piling	Dump Truck (C2.30)	79	62	64	60	64
	Large Rotary Bored Piling Rig (C3.14)	83	66	68	64	68
	Tracked excavator (D2.21)	71	54	56	52	56
	Cumulative Piling		67	70	66	70
General Construction	Dump Truck (C2.30)	79	62	64	60	64
	Tracked excavator (C2.21)	71	54	56	52	56
	Compressor (D7.8)	70	53	55	51	55
	Telescopic Handler (C4.54)	79	62	64	60	64
	Hand-Held Circular Saw (C4.72)	79	62	64	60	64
	Diesel Generator (C4.76)	61	44	46	42	46
	Internal Fit out	70	53	55	51	55
	Cumulative General Construction		68	70	66	70
Night Time Works	Power Float (D.6.44)	72	55	57	53	55
	Diesel Generator (C4.76)	61	39	41	37	39
	Cumulative Night Works		55	57	53	55
Road Works/Landscaping	Asphalt Paver & Tipping Lorry (C5.30)	75	58	60	56	58
	Electric Water Pump (C5.40)	68	51	53	49	51
	Vibratory Roller (C5.20)	75	58	60	56	58
	Cumulative Landscaping and Road Works		62	64	60	64

Table 20.2 Calculated Construction Noise Levels at Varying Distances

At a distance up to 20m from areas of major construction, representative of NSL2 and NSL4, the predicted construction noise levels associated with breaking, crusher and piling activities are above the 65 dB(A) CNT. The effect of this, assuming plant items occurring at the same time, at the same distance from NSLs is negative, significant to very significant and temporary. Other activities are predicted to be over the CNT and therefore with reference to Table 20.2 it is expected that there will be a negative, significant to very significant and short-term impact associated with general construction. These potential effects are presented in the absence of mitigation measures.

At a distance up to 25m from areas of major construction, representative of NSL1, the predicted construction noise levels associated with breaking, crusher are above the 65 dB(A) CNT. The effect of this, assuming plant items occurring at the same time, at the same distance from NSLs is negative, significant to very significant and temporary. Other activities are predicted to be over the CNT. It is expected that there will be a negative, moderate to significant and short-term impact associated with general construction, and site clearance/demolition. These potential effects are presented in the absence of mitigation measures.

At a distance of 30m from areas of major construction, representative of NSL3, the predicted construction noise levels, during are above the 65 dB(A) CNT and therefore it is expected that there will be a negative, moderate to significant and short-term effect at this location in the absence of mitigation.

At greater distances than 45m predicted construction noise levels are equal or below CNT, therefore any impact is expected to be negative, slight to moderate and short-term. Noise mitigation measures will therefore be required on site to reduce construction noise levels along these boundaries to reduce any potential significant effects. Recommended mitigation measures are presented in Section 9.8.

Night-time construction works

During night-time hours at distances up to 20 from powerfloating activities, representative of NSL2, and NSL 4, assuming all plant items are operating together at the same time, the predicted construction noise levels are above the 50 dB(A) CNT and therefore it is expected that there will be a negative, significant to very significant and temporary effect at this location in the absence of mitigation.

At distances from 25m to 30m, representative of NSL1 and 3, assuming all plant items are operating together at the same time, the predicted construction noise levels are above the 50 dB(A) CNT and it is expected that there will be a negative, moderate to significant and temporary effect at this location in the absence of mitigation.

At greater distances than 45m predicted construction noise levels are equal or below CNT, therefore any impact is expected to be negative, moderate and short-term.

Noise mitigation measures will therefore be required on site to reduce construction noise levels along these boundaries to reduce any potential significant effects. Recommended mitigation measures are presented in Section 9.8.

Construction Traffic

The noise levels associated with mobile plant items such as concrete dump trucks, loaders etc. operational on site have been included as part of the construction noise assessment and calculated noise levels in Table 9.17. Consideration should also be given to the addition of construction traffic along the site access routes. Access to the development site for construction traffic will be via the site entrance on Temple Hill Road to the west of the site.

It is possible to calculate the noise levels associated with the passing vehicle using the following formula.

$$L_{Aeq,T} = L_{AX} + 10\log_{10}(N) - 10\log_{10}(T) + 10\log_{10}(r_1/r_2) \text{ dB}$$

where:

$L_{Aeq,T}$	is the equivalent continuous sound level over the time period T in seconds);
L_{AX}	is the "A-weighted" Sound Exposure Level of the event considered(dB);
N	is the number of events over the course of time period T;
r_1	is the distance at which L_{AX} is expressed;
r_2	is the distance to the assessment location.

A calculation distance of 5m from the road has been used to assess noise levels at the closest buildings along the construction routes. The mean value of Sound Exposure Level for truck moving at low to moderate speeds (i.e. 15 to 45km/hr) is of the order of 82dB $L_{A\max}$ at a distance of 5 metres from the vehicle. This figure is based on a series of measurements conducted under controlled conditions.

Reference has been made to the Construction Management Plan where details of construction traffic numbers have been set out. It is estimated that HGV movements will range from 5 no. per hour over the different construction phases. The construction vehicle numbers for the various construction phases are summarised below. The nearest NSL's at Temple Hill Road/ Newtown Avenue/ Temple Avenue junction are screened by a masonry wall in excess of 2m high. BS 5228 states the following regarding screening;

The construction vehicle numbers for the various construction phases are summarised below:

Construction Phase	No. of trucks/peak hour	Calculated Noise level at -nearest NSL's from road edge (5m), dB $L_{Aeq,thr}$, without screening
Excavation	5	8
General Construction	5	58

Table 20.3 :Calculated Construction Traffic Noise Levels at Edge of Road

The predicted noise level associated with construction vehicle traffic numbers above is of the order of dB $L_{Aeq,thr}$. With reference to baseline noise levels presented in Table 916 and Table 93, This level is below the construction noise threshold and the in line with prevailing noise levels along the Temple Hill Road/ Newtown Avenue/ Temple Avenue junction, and noise associated with construction traffic is predicted to be in a negative not significant and short-term effect.

Construction Phase – Vibration

During demolition and ground-breaking in the excavation phase, there is potential for vibration to propagate through the ground. Empirical data for this activity is not provided in the BS 5228-2:2009+A1:2014 standard, however the likely levels of vibration from this activity is expected to be below the vibration threshold for building damage on experience from other sites.

AWN have previously conducted vibration measurements under controlled conditions, during trial construction works, on a sample site where concrete slab breaking was carried out. The trial construction works consisted of the use of the following plant and equipment when measured at various distances:

- 3 tonne hydraulic breaker on small CAT tracked excavator
- 6 tonne hydraulic breaker on large Liebherr tracked excavator

Vibration measurements were conducted during various staged activities and at various distances. Peak vibration levels during staged activities using the 3 Tonne Breaker ranged from 0.48 to 0.25 PPV (mm/s) at distances of 10 to 50m respectively from the breaking activities. Using a 6 Tonne Breaker, measured vibration levels ranged between 1.49 to 0.24 PPV (mm/s) at distances of 10 to 50m respectively.

The range of values recorded provides some context in relation typical ranges of vibration generated by construction breaking activity likely required on the proposed site. This range of vibration magnitudes indicate vibration levels at the closest neighbouring buildings are likely expected to be below the limits set out in Table 94 to avoid any cosmetic damage to buildings.

In terms of disturbance to building occupants, works undertaken within close proximity to the residential receptors on the site perimeter have the potential to emit perceptible vibration levels.

Notwithstanding the above, any construction activities undertaken on the site will be required to operate below the recommended vibration threshold set out in Table 94 during all activities. Further discussion on mitigation measures during this phase are discussed in Section 9.8.

It is anticipated that excavations will be made using standard excavation machinery, which typically do not generate appreciable levels of vibration close to the source. Taking this into account and considering the distance that these properties are from the works and the attenuation of vibration levels over distance, the resultant effect of vibration levels at the nearest NSLs are expected to be negative, not significant to slight and short term.

Operational Phase – Noise

During the operational phase of the proposed development, there will be an increase in vehicular traffic associated with the site on some surrounding roads.

A traffic impact assessment relating to the proposed development has been prepared by NRB Consulting Engineers, as part of this EIAR. Using this information, the related noise impacts along the relevant road links has been assessed.

Figure 93 below outlines the breakdown of sections of road and Table 919 and Table 920 displays the predicted change in noise level at different road links around the site for the year of opening and the design year using the Annual Average Daily Traffic (AADT) flows along the road links under consideration.

Vibration

No vibration mitigation measures are required applicable the operational phase.

20.8 Air Quality

Construction Phase

Air Quality

To minimise potential air quality impacts during construction, a suite of best practice mitigation measures will be implemented at the Proposed Development site. These measures are informed by guidance from the IAQM (2024) and are designed to effectively manage dust and emissions. The following measures will be adopted as appropriate to the scale and nature of the works.

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
- Display the name and contact details of the person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager;
- Display the head or regional office contact information; and
- Develop and implement a Dust Management Plan (DMP), the final dust management plan will form part of the overall construction management plan which will formally be prepared and submitted to Dun-Laoghaire Rathdown County Council (DLRCC) post grant of planning permission.

Site Management

- Record all dust and air quality complaints, identify causes(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; and
- 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.

Monitoring

- 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 surface

such as street furniture, cars and windowsills within 100m of the site boundary, with cleaning to be provided if necessary;

- Carry out regular site inspections to monitor compliance with the DMP, record inspection results, and make an inspection log available to DLRCC when asked; and
- 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.

Preparing and Maintaining the Site

- Plan the 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;
- Remove materials that have a potential to produce dust from site as soon as possible, unless being re-used on site; and
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicle/Machinery and Sustainable Travel

- Ensure all vehicles' engines are switched off when stationary to prevent idling;
- Avoid the use of diesel or petrol-powered generators and use mains electricity or battery powered equipment where practicable; and
- A speed restriction of 20km/hr will be applied as an effective control measure for dust for on-site vehicles using unpaved haul roads.

Operations

- Only use cutting, grinding or sawing equipment or in conjunction with suitable dust suppression techniques such as water sprays or local extraction, e.g. suitable local exhaust ventilation systems;
- 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 chutes, 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; and
- Ensure equipment is readily available on-site to clean any dry spillages and clean up spillages as soon as reasonably practicable after the event using wet cleaning methods.

Waste Management

- No bonfires and burning of waste materials.

Measures Specific to 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; and
- Bag and remove any biological debris or damp down such material before demolition.

Measures Specific to Earthworks

- Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable;
- Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as practicable; and
- Only remove the cover in small areas during work and not all at once.

Measures Specific to Construction

- Avoid scabbling (roughening of concrete surfaces) where possible;
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless that 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 during delivery; and
- For smaller supplies of fine power materials ensure bags are sealed after use and stored appropriately to prevent dust.

Measures Specific to Trackout

- 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;
- Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable;
- Record all inspections of haul routes and any subsequent action in a site log book;
- Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned;
- 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 site size and layout permits; and
- Access gates are to be located at least 10m from receptors where possible.

These measures will be monitored and reviewed throughout the construction phase to ensure their effectiveness and compliance with relevant standards.

Operational Stage

It has been determined that the operational phase air quality effect is imperceptible and, therefore, no site-specific mitigation measures are proposed.

20.9 Climate

Embodied carbon of materials and construction activities is the primary source of climate impacts during the construction phase. Where possible, the proposed St. Teresa's residential development will specify the use of local materials containing recycled content and will reintegrate materials arising from demolition works as long as is technically viable. A Demolition Plan – D1 drawing which accompanies this planning application details structures that have been demolished as part of 2019 granted permissions SHD ABP-303804-19. Further pre-construction carbon Avoidance, Remedial & Mitigation Measures include:

Design for Performance

- Request a Design for Performance approach from design teams and contractors.
- Include contractual targets for whole life carbon with a focus on Net Zero and nature-positive goals where possible.

Circularity in Design

- Require design teams to develop a circularity concept for projects, focusing on adaptability, disassembly, and reuse.
- Set a target for a percentage of reused and recycled materials in designs.

Building Lifecycle Report

- Ensure the building lifecycle report is regularly reviewed and updated in line with current policy and best practice for sustainable construction.

Carbon Literacy

- Develop carbon literacy within design and construction teams by providing training on carbon literacy, ESG reporting, and disclosure.
- Incorporate sustainability and carbon considerations into site team talks, construction targets, and reporting.
- Include training clauses for contractors and sub-contractors to upskill their teams in low-energy construction techniques.

Building Renovation Passports (BRPs)

- Request Building Renovation Passports for this asset as part of the roadmap to decarbonise each asset.

Cement Reduction

- Specify the minimum amount of cement needed in concrete and substitute where feasible to reduce cement usage.

Sustainable Procurement

- Review sustainable procurement and material choices during detailed design to identify and implement lower embodied carbon options.
- Request Environmental Product Declarations (EPDs) and prefer products with EPDs where possible within procurement restrictions.
- Drive demand for EPDs by increasing the percentage of products used in the project with EPDs.

European Framework for Sustainable Buildings

- Commit to using key indicators from the European Framework for sustainable buildings, Level(s), with support from the IGBC.
- Focus on indicators such as Life Cycle Assessment (LCA), Life Cycle Cost (LCC), Indoor Air Quality (IAQ), and Circularity.

Energy and Carbon Performance Reporting

- Plan to disclose the operational energy and carbon performance of the project in your annual reporting.

Post-Occupancy Evaluation

- Allow for post-occupancy evaluation of completed developments to ensure feedback is passed to the design team.

Demolition and Construction Waste Management

- Create a demolition and construction programme allowing sufficient time to determine reuse and recycling opportunities for demolition waste.
- Appoint a competent demolition contractor to undertake a pre-demolition audit detailing resource recovery best practice and identifying materials for reuse and recycling.
- Reuse materials on site in the new build areas where possible.

EU Taxonomy Compliance

- Commit to complying with EU taxonomy requirements on the circular economy, specifically reuse, recycling, and material recovery of demolition and construction waste.
- Review and ensure compliance with the EU Taxonomy Regulation (EU) 2020/852 regarding circular economy practices for demolition and construction waste.

Local Material Sourcing

- Source materials locally where possible to reduce transport-related CO2 emissions.

Specific measures will be introduced during the construction phase to further reduce GHG (GHG) emissions:

- Materials like mixed construction and demolition waste, plastic, concrete, brick, tiles, ceramics, and bituminous mixtures will be diverted from waste processing and reused on-site, where possible.
- Timber will be used as a lower-carbon alternative for framing house units.

Additionally, certified datasheets for construction materials will outline their operational temperature limits, ensuring that temperature-sensitive materials perform adequately. The Contractor will also address risks associated with fog, lightning, and hail through appropriate risk assessments and mitigation plans.

During the construction phase the following best practice measures shall be implemented on site to prevent significant GHG emissions and reduce impacts to climate:

- **Energy-Efficient Equipment:** Use energy-efficient machinery and equipment on-site. Regular maintenance and proper operation can also help reduce fuel consumption and emissions.
- **Renewable Energy:** Incorporate renewable energy sources, such as solar panels, to power construction activities. This can significantly reduce reliance on fossil fuels
- **Reduce Idling:** Prevention of on-site or delivery vehicles from leaving engines idling, even over short periods.
- **Sustainability Awareness:** Ensure that sustainability and carbon specifically is incorporated into site team talks, construction and reporting targets. Integrate training clauses for contractors and sub-contractors to upskill their onsite personnel including sub-contractors in low energy construction skills. Appoint sustainability champions to ensure that the project continues to perform in a sustainable manner.
- **Sustainable Transportation:** Encourage carpooling, use of public transportation, or electric vehicles for workers commuting to the site.
- **Monitoring and Reporting:** Regularly monitor and report GHG emissions from the construction site. This helps in identifying areas for improvement and ensuring compliance with environmental standards Sustainability spot checks should be added to ongoing site inspections and feedback shared with all onsite to ensure measures are being adopted.
- **Maintenance:** Ensure all plant and machinery are well maintained and inspected regularly.
- **Waste Management:** Implement a robust waste management plan to reduce, reuse, and recycle construction waste. Proper waste management can significantly cut down on emissions Minimising waste of materials due to poor timing or over ordering on site will aid to minimise the embodied carbon footprint of the site. Application of the waste hierarchy to all waste material generated.
- **Sustainable Procurement:** Sourcing low carbon materials locally where possible to reduce transport related CO2 emissions.

Operational Stage

Several measures have been incorporated into the design of the development in order to mitigate against the impacts of future climate change. For example, adequate attenuation and drainage have been incorporated into the design of the development to avoid potential flooding impacts as

a result of increased rainfall events in future years. These measures have been considered when assessing the vulnerability of the Proposed Development to climate change (see Section 11.7.3).

The Proposed Development has been designed to reduce the impact on climate as a result of energy usage during operation. The Sustainability and Energy Statement prepared by OCSC and building lifecycle report prepared by Aramark and submitted under separate cover with this planning application details a number of incorporated design mitigation measures that have been incorporated into the design of the development to reduce the impact on climate wherever possible.

Such measures included in the Proposed Development to reduce the impact to climate from energy usage are:

- The development will be in compliance with the requirements of the Near Zero Energy Building (NZEB) Standards.
- EU Taxonomy alignment with 10% lower than NZEB.
- A renewable energy rating (RER) of 20% will be achieved to comply with Part L (2021) of the NZEB regulations.
- A Building Energy Rating (BER) of A2/A3 is being targeted.
- Improved building thermal transmittance (U-Values), air permeability and thermal bridging.
- Use of air source heat pumps.
- Sustainability information provided to building occupants
- Smart building technologies
- Approach is based on the Energy Hierarchy Plan - Be Mean, Be Lean, Be Green

In addition, electric vehicle and bicycle parking will be provided within the development which will promote the use of more sustainable modes of transport and reduce potential transport emissions. Full descriptions of the measures proposed, and their benefits are outlined within the Building Lifecycle Report submitted with this application.

20.10 Wind and Microclimate

Beyond what is already proposed under the scope of the proposed development, no further mitigation is proposed in relation to wind.

The landscaping proposed for the development has been considered within the wind analysis carried out and its effect has been beneficial in reducing the wind speed around the development and creating calmer wind condition in areas such the parks and landscaped areas where pedestrian can be comfortable for long-term sitting. Landscaping is simulated as porous zones within the CFD model.

20.11 Landscape and Visual Impact Assessment

Construction Stage

Apart from (a) the measures for tree protection (as recommended in the Arboricultural Report prepared by The Tree File Ltd), and (b) standard best practice construction site management (as set out in the Construction and Environmental Management Plan by JJ Campbell & Associates), no additional mitigation measures are proposed for landscape and visual effects.

Operational Stage

The only potential negative effects of the proposed amendment are in the views from St Vincent's Park and St Louise's Park, where the increased height of Blocks D1, E1 and E2 would increase these buildings' prominence, changing the character of the landscape context.

These existing low density residential estates are located adjacent to the subject site, which was identified in the Blackrock Local Area Plan 2015-2021 (the 'BLAP', which was extended to March

2025) as having “substantial development potential having regard to its zoning, site size, proximity to Blackrock village core, public transport links and recreational facilities”. The BLAP stated: “The site presents an opportunity to consolidate and enhance the local built environment within the Plan boundary while providing additional housing within this attractive and desirable locality... This area of the landholding lends itself to higher density development... given its proximity to the District Centre and a major public transport corridor”.

The introduction of taller, high density building typologies to the landscape and views is an unavoidable consequence of compact growth policy, and is increasingly common in the city as former institutional and industrial lands are redeveloped for high density residential use. Previously, this was assumed to cause negative landscape/visual impacts, but there are now numerous examples of high density development taking its place comfortably in the urban landscape without unduly affecting the visual and residential amenities of neighbouring lower density areas.

A reduction in height of Blocks D1, E1 and E2 would reduce the significance of the landscape and visual effects of the development on St Vincent's Park and St Louise's Park. However, this would reduce the housing yield from the valuable urban site. The preservation of the views and landscape character of the neighbouring estates must be weighed against the community gain of the increased provision of housing on the site

20.12 Material Assets – Traffic and Transport

Construction Phase

Mitigation during construction will include the implementation of a CTMP, which will outline strategies to manage and minimise traffic disruption. These measures will include restricted delivery hours and haulage hours to avoid peak traffic periods, clear signage to inform road users of temporary changes, and ongoing liaison with DLRCC to coordinate works and respond to any emerging issues. These actions listed will reduce the potential short-term effects on the local road network and ensure safe and efficient movement for all road users during the construction phase:

- Implementation of a Construction Traffic Management Plan (CTMP) as part of the Construction Environmental Management Plan.
- Restrict HGV and delivery movements to off-peak periods.
- Manage contractor parking and loading to avoid disruption.
- Temporary signage and traffic management to protect pedestrians and cyclists

Operational Phase

Operational phase mitigation measures include the provision of a reduced number of car parking spaces to discourage private car use, alongside the integration of high-quality cycle and pedestrian infrastructure to promote active travel. The Proposed Development also includes a Parking Management Plan and a Working Mobility Management Plan to support shared mobility options. The implementation of a comprehensive MMP will encourage modal shift, reduce reliance on private vehicles and support long-term behavioural change among residents and visitors. Specific Measures are:

- Lower Restricted car parking provision to discourage car dependency.
- Provision of 962 secure bicycle parking spaces (exceeding DLRCC standards).
- Delivery of high quality pedestrian and cycle connections, including an upgraded access that coordinates and includes the NTA Bus Connects Plans locally.
- EV spaces integrated into the scheme in a demand-led approach
- Ongoing Mobility Management Plan (MMP) to encourage sustainable travel behaviour

20.13 Material Assets – Waste Management

This section outlines the measures that will be employed in order to reduce the amount of waste produced, manage the wastes generated responsibly and handle the waste in such a manner as to minimise the effects on the environment.

Construction Stage

The primary waste management objective during construction will be to prevent waste from arising in the first place and to reuse, recycle or recover waste materials, where possible. The following mitigation measures will be implemented during the construction phase of the Proposed Development:

Waste Management (WM)_1:

As previously stated, a project specific RWMP has been prepared in line with the requirements of the EPA's *Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects* (2021) and is included as Appendix 15.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of the mitigation strategy for the site. The mitigation measures presented in the RWMP will ensure effective waste management through minimisation, reuse, recycling, recovery and disposal of waste material generated during the demolition, excavation and construction stages of the Proposed Development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 15.1) in agreement with DLRCC and in compliance with any planning conditions, or submit an addendum to the RWMP to DLRCC, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream; and
- The Contractor will implement the RWMP throughout the duration of the proposed demolition, excavation and construction stages in the construction phase.

Additionally, the following mitigation measures will be implemented:

WM_2:

- A quantity of topsoil and sub soil will need to be excavated to facilitate the Proposed Development. All excavated material will be removed off-site. Proper classification and segregation of the excavated material will be required to ensure that any potentially contaminated materials are identified and management in a manner that prevents negative impacts on workers and on water and soil environments, both on and off-site.

WM_3:

- Building materials will be chosen to 'design out waste', in line with circular economy principles and green procurement strategies outlined in the RWMP.

WM_4:

- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
 - Concrete rubble (including ceramics, tiles and bricks);
 - Soil and stones;
 - Concrete, bricks, tiles and ceramics;
 - Wood, glass and plastics;
 - Metals;
 - Gypsum-based construction material;

- Paper and cardboard;
- Mixed construction and demolition (C&D) waste; and
- Chemicals (solvents, paints, adhesives, detergents etc.).

WM_5:

- Leftover materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible (alternatively, the waste will be sorted for recycling, recovery or disposal).

WM_6:

- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site.

WM_7:

- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required).

WM_8:

- A Resource Manager (RM) will be appointed by the main Contractor(s) to ensure effective management of waste during the demolition, excavation and construction works.

WM_9:

- All construction staff will receive training in site-specific waste management procedures as part of the induction process.

WM_10:

- All waste leaving the site will be reused, recycled or recovered where possible, to avoid material designated for disposal.

WM_11:

- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licensed facilities.

WM_12:

- All waste leaving the site will be recorded and copies of relevant documentation maintained.

WM_13:

- Nearby sites requiring clean fill material will be contacted to investigate reuse opportunities for clean and inert material, if required. If any of the material is to be reused on another site as by-product (and not as a waste), this will be done in accordance with *Regulation 27 (By-products)*, as amended, *European Union (Waste Directive) Regulations 2011-2020*. EPA approval will be obtained prior to moving material as a by-product.

These mitigation measures will ensure that the waste arising from the construction stage of the Proposed Development is dealt with in compliance with the provisions of the *Waste Management Act 1996, as amended*, associated Regulations and the *Litter Pollution Act 1997* and the *NWCPE*. They will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

Operational Stage

The primary waste management objective during the operational phase will be to ensure that all waste generated within the Proposed Development is managed in accordance with the *Waste Management Act 1996, as amended*, associated Regulations and the *Litter Pollution Act 1997* and

the NWCPE. Measures will focus on segregation, reuse, recycling, and recovery, with disposal as a last resort, in line with the waste hierarchy and circular economy principles.

The following mitigation measures will be implemented during the operational phase of the Proposed Development:

WM_14:

- All waste materials will be segregated into appropriate categories and will be temporarily stored in appropriate bins or other suitable receptacles in a designated, easily accessible areas of the site.

WM_15:

- As previously stated, a project specific OWMP has been prepared and is included as Appendix 15.2. The mitigation measures outlined in the OWMP will be implemented in full and form part of the mitigation strategy for the site. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the NWCPE, *Waste Action Plan for a Circular Economy – Waste Management Policy in Ireland* and the DLRCC waste bye-laws.
- The facilities management team of the site during the operational stage will be responsible for ensuring the ongoing implementation of this OWMP and the abiding of DLRCC waste bye-laws, ensuring a high level of recycling, reuse and recovery at the site of the Proposed Development.

WM_16:

- On-site segregation of all waste materials into appropriate categories including (but not limited to):
 - Organic waste;
 - Dry Mixed Recyclables;
 - Mixed Non-Recyclable Waste;
 - Glass;
 - Deposit return scheme;
 - Waste electrical and electronic equipment (WEEE);
 - Batteries (non-hazardous and hazardous);
 - Cooking oil;
 - Light bulbs;
 - Cleaning chemicals (pesticides, paints, adhesives, resins, detergents, etc.);
 - Furniture (and from time-to-time other bulky waste); and
 - Abandoned bicycles.

WM_17:

- The facilities management team will ensure that all waste materials will be stored in colour-coded bins or other suitable receptacles in designated, easily accessible locations. Bins will be clearly identified with the approved waste type to ensure there is no cross contamination of waste materials.

WM_18:

- The facilities management team will ensure that all waste collected from the site of the Proposed Development will be reused, recycled or recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available.

WM_19:

- The facilities management team will ensure that all waste leaving the site will be transported by suitable permitted contractors and taken to suitably registered, permitted or licensed facilities.

These mitigation measures will ensure the waste arising from the development is dealt with in compliance with the provisions of the *Waste Management Act 1996*, as amended, associated Regulations, the *Litter Pollution Act 1997*, *The NWMPCE* and the *DLRCC waste bye-laws*. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved.

20.14 Archaeological and Cultural Heritage

Construction Phase

Archaeological strata or deposits may become evident over the ground-reduction phase of development and it is considered best practice to undertake pre-construction investigations. These can take the form of geophysical investigations or archaeological test excavation, both undertaken under licence from the National Monuments Service of the Department of Housing, Local Government and Heritage. In this particular instance the presence of underlying granite bedrock would render geophysical exploration ineffectual; test trenching would therefore be the most obvious measure to be taken to investigate the extent and nature of any surviving archaeological substrates.

Should there survive archaeological material that will be directly impacted upon by the proposed development, there is usually further negotiation with the planning authority and the National Monuments Service regarding its preservation, either in situ or by record. Should there be significant archaeological material present which requires hand excavation, a full report should issue as part of the licencing conditions and form part of the compliance documentation.

Where there is no archaeological material evident over the test trenching phase, it may be prudent to undertake a programme of licenced monitoring over the ground reduction programme until the level of undisturbed deposits is reached. This will serve to ensure that no archaeological strata or structures are impacted on by the proposed development.

Should significant archaeological deposits or structures be disturbed over the initial groundworks, all work will stop and the apposite authorities informed. With the agreement of the NMS all archaeological features will be fully recorded in accordance with the former DoEHLG's Policy and Guidelines on Archaeological Excavation. All finds identified shall be fully documented and all appropriate material retrieved for off-site analysis, storage, curation and conservation in accordance with NMI guidelines. The finds and any environmental samples taken will be stored in the offices of ABH.

On completion of the archaeological monitoring, a report will be prepared for submission to the apposite authorities for further consultation. A summary account of the excavation will be published in the Excavations bulletin.

The site archive will be compiled in accordance with the procedures outlined by the NMS and deposited in the Dublin City Archaeological Archive as soon as practicable after the final report has been submitted

Operational Phase

There is no requirement for further monitoring once the development has been built-out.

20.15 Architectural Built Heritage

Construction Stage

The conservation methodology for the describes in detail the measures to be taken to minimise the loss of or damage to historic fabric which contributes to the special interest of the Structures. The methodology in relation to the Gatelodge is as follows **Detailed Method Statement**

Conservation Method Statement for the Dismantling and Reconstruction of the Gate-lodge at St Teresa's House, Temple Hill, Monkstown, Blackrock, Co Dublin.

Description of building

The building is a single storey double-fronted lodge, open pedimented breakfront, one over one windows with granite cills and lugged architraves, granite plinth and rendered quoins. It has a hipped roof with central chimney with granite capping and plinth and double console eaves brackets. A room by room description is attached. J.A.K. Dean¹ describes it as being Italianate in style and of a pattern common in south Dublin, referring to similar examples in Newtownpark, Homestead and Tirbradden.



Lodge at St Teresa's House

Proposed works

It is proposed to deconstruct the building and reconstruct it in a different location within the original curtilage of St Teresa's House, as indicated on the planning drawings, salvaging and re-using as much of the historic fabric as possible, while substituting later non-original fabric of inferior specification with new materials matching the likely original specification. The later lean-to extension to the rear (north-west) side of the building would be omitted. As the opportunity arises to bring the building into line with modern design standards, notably those relating to disabled access, resistance to moisture and thermal insulation it is proposed that slight alterations would be made to the construction methods, as detailed below. The deconstruction and reconstruction would take place under the supervision of an architect experienced in architectural conservation.

¹ J.A.K. Dean, *The Gate Lodges of Leinster, a gazetteer* (Wordwell, Dublin 2016) Rec 200.

The works will be carried out with due regard to the Architectural Heritage Protection: Guidelines for Planning Authorities², and the Conservation Charters of ICOMOS³. Account will be taken of the Royal Institute of the Architects of Ireland Guidelines, and international and national best practice.

In addition to the existing detailed survey and record photographs, the contractor will be required to make a full set of survey drawings and photographs, showing the details of each window and door and its constituent elements. The contractor shall be required to number all the elements of the stone walls as described below and to make a full photographic survey of the stripped masonry walls.

All dismantling and removals are to be carried out with the greatest care and with the over-riding objective of preserving in good condition as much the original fabric of the building as possible. The contractor(s) shall be responsible for ensuring that no element of the historic structure which contributes to its special interest or significance, is damaged. Work will be carried out under the constant presence of a Clerk of Works experienced in the repair of historic buildings. Where any material is found to be defective beyond re-use or repair, this shall be brought to the immediate attention of the Conservation Architect before any such material is disposed of, for which the Conservation Architects written approval is required.

A specialist building conservation contractor and specialist sub-contractors will be selected on the basis of experience and competence.

Schedule of Works **Dismantlement**

- Remove all mechanical and electrical services, fixtures, fitting, pipes, conduits, junction boxes, aerials or dishes.
- Demolish and remove off site lean-to extension.
- Carefully dismantle and remove four no. sliding sash windows, frames, shutters and shutter boxes, architraves and skirting.
- Strip internal and external plaster/render and analyse composition.
- Remove ceilings (note – there is no decorative plasterwork).
- Remove fire surrounds and inserts.
- Remove ridge and hip-tiles, clean, and store carefully.
- Strip and remove off-site fibre cement slates
- Undertake detailed survey of roof timbers, numbering each element.
- recording extent of decay, if any and prepare roof timber drawing.
- Remove roof timbers, cutting out any sections affected by rot, clean and store carefully.
- Undertake detailed survey of stripped walls, including photographs,
- recording those areas constructed of stonework and brickwork.
- Take down external and internal walls, separating the material into brick, stone rubble and cut stone and carefully retaining the stone “pinnings”.
- Clean off all mortar bedding and infill and store brick and stones carefully.
- Excavate floor and remove. If stone slabs found, clean and remove to storage.
- All material to be stored in secure dry ventilated containers on site.
- Revise reconstruction drawings to include any new information discovered and consult with Conservation Architect.

Reconstruction

- The same main and specialist contractors would be engaged in the reconstruction as part of the same contract.
- Set out in position shown on planning drawings.

² Architectural Heritage Protection: Guidelines for Planning Authorities

³ International Council on Monuments and Sites

- Excavate for foundations/drainage.
- Pour strip foundations
- Construct rising walls of concrete block
- Install below-ground drainage
- Install hardcore, insulation and radon/barrier/d.p.m./d.p.c.
- Construct external and internal walls and chimney breast of brick and stone as shown on finalised construction drawings including brick arches/ hardwood lintols where appropriate
- Install wall plates.
- Construct chimney stack with prefabricated metal d.p.c. tray re-using granite plinth and capping
- Reconstruct timber roof of rafters, hips-rafters ridge board collar ties
- and ceiling joists reusing the original material.
- Where any rafter is decayed in less than 50% of its length it is to be retained and spliced with new timber of the same dimensions.
- Lay breathable roofing felt to entire roof, using UV resistant material
- where exposed at eaves.
- Set out battens and slate roof using Bangor Blue slates with copper nails
- Re-fix console brackets, and fascia and soffit, splicing in new material as appropriate.
- Lay external below ground drainage and backfill.
- Fit cast iron gutters and temporary rwps.
- Re-install granite cills and architraves, plinth and quoins.
- First fix mechanical and electrical services.
- Render external walls using lime-based render formulated to match the original, creating raised quoins and re-instating keystone above entrance door.
- Fit cast iron rwps.
- Re-fit window frames.
- Plaster internal walls using lime render to match original.
- Refit internal joinery and sashes.
- Decorate.
- Second fix mechanical and electrical services.
- Regrade immediate site and complete hard and soft landscaping.

Specifications and standards

The specifications for the various trades area are as set out in the Detailed Method Statements for the main house and include detailed specifications for:

- 1 The re-construction of stone walls
- 2 Lime render and plaster
- 3 Repairs of windows
- 4 Natural Slating
- 5 Rainwater goods
- 6 Lead roofing

Contractor(s)' Method Statement

A dimensional and photographic survey has been carried out under the direction of the Conservation Architect.

The Contractor(s) shall prepare written statements demonstrating to the Conservation Architect how all elements of the structure shall be protected, including details of their temporary storage and transport. Materials must be protected from precipitation, extremes of temperature, sunlight and loading and must be secured against vandalism and theft. The statement shall specify how materials will be protected against accidental damage by site operatives, such as by boarding up, roping off, sheeting over, etc.

Deconstruction

A heritage contractor of proven experience will be engaged on the overall project to act as main contractor. Specialist heritage sub-contractors in the areas of lime render, brickwork, stonemasonry (dressed and rubble) and joinery would be nominated.

Inspection

Before any work commences the Contractor must carry out a detailed inspection of every element and confirm that the Method Statement is appropriate to the works. Where necessary and where required by the sequencing of opening up or dismantlement, the Method Statement must be adjusted to take account of new information. Where this occurs, the revised statement must be submitted to the Conservation Architect for his approval prior to the continuation of the works

Investigation

In order to facilitate the detailed and accurate recording of the building and its components, limited opening and up and removal of samples off site, may be permitted. This may only take place with the prior written approval of the Conservation Architect. Permission will only be forthcoming where the Conservation architect is satisfied that non-destructive or limited testing is to be carried out.

Drawings and Records

A detailed dimensional survey and photographic record has been undertaken and is available to the contractor. Supplementary drawings and record will be made as the works are opened up. The record documents must be delivered to the Conservation Architect and approved in writing before any removals take place.

Drawings

Before commencement, the Contractor is required to provide a full set of survey drawings, including detailing of every element showing its components, joints and profiles.

Schedules

Before commencement, the Contractor is required to prepare a full schedule of all elements to be removed, with each item to be provided with a reference number.

Records

Each element is to be clearly labelled before removal and cross-referenced to the record drawings. Labelling is to be carried out in such a way that the labels can be removed without damage but cannot be removed accidentally.

Photography

Each element must be photographed clearly in such a way that identifies the item and differentiates it from other, similar items, clearly shown the reference number and any distinguishing wear, damage or markings. If necessary, each item must have a number of photographs.

Protection, Damage and Repairs

Protection

The building is a Protected Structure as described in the Planning and Development Act 2000 (as amended) which states, inter alia,

"58.—(1) Each owner and each occupier shall, to the extent consistent with the rights and obligations arising out of their respective interests in a protected structure or a proposed protected structure, ensure that the structure, or any element of it which contributes to its special architectural, historical, archaeological, artistic, cultural, scientific, social or technical interest, is not endangered....."

(4) Any person who, without lawful authority, causes damage to a protected structure or a proposed protected structure shall be guilty of an offence."

The over-riding objective of the Conservation Works is to retain as much of the original fabric as is practicable in-situ and to protect all such fabric from damage or loss.

The Contractor's Method Statement must address all aspects of protection to the structure and all elements of it which contribute to its special interest.

Existing historical features to be retained in-situ to be protected by the construction of plywood sheeting. This will include boxing to shutters and architraves, the fixing of sheeting to retained door faces, boxing of mantelpieces and the sheeting of window panes to the lower half of windows.

The structure must be protected from water ingress arising from openings in the external envelope. Temporary covering must be kept in place. Where other openings are formed either temporarily or permanently, they must be adequately sealed.

Storage of temporarily removed historic fabric

Fabric which is removed for alteration or repair must be stored safely in secure dry dust-free storage areas, and stacked on pallets or laid flat, as appropriate. No fabric may be permitted to have loads imposed upon it.

Scaffolding and mobile towers

Scaffolding may not be fixed directly to the protected structure. Vertical supports must be appropriately placed on bearers which spread the load and protect historic surfaces. Towers must not be placed directly on historic surfaces.

New Openings

Where new openings are to be formed in existing walls, this shall be done with the minimum of damage to the fabric to be retained. The stone or brick masonry shall be neatly re-bedded to form the opening in a pattern to match that of other similar openings in the structure. Under no circumstances may shuttered concrete be used to form new openings.

Damage

All damage must be identified and recorded by the above methods before any disassembly takes place. Any damage which is not so recorded will be deemed to have been caused by the contractor or his workers or sub-contractors. Such damage must be brought to the immediate attention of the Conservation architect who may instruct that appropriate repairs are carried out without charge, or that the cost of appropriate repairs will be deducted from payments due to the Contractor under the contract

Repairs

The exact methodology of any repairs necessary which are not covered by the specification below, shall be detailed in writing and approved in writing by the Conservation Architect before any such repairs commence.

Variations

No variations to the materials or their method of assembly will be permitted without the prior written approval of the Conservation Architect.

Operational Stage

There will be no additional impact on Architectural Heritage post-completion of the works.

20.16 Risk of Major Accidents and/or Disasters

Construction Stage

The following mitigation measures are proposed within the Construction Management Plan, which reduce the risks of major accidents and disasters and risks to human health.

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

- Avoid unnecessary revving of engines and switch off equipment when not required.
- Keep internal haul roads well maintained and avoid steep gradients.
- Minimise drop height of materials.
- Start-up plant sequentially rather than all together
- In accordance with "Best Practicable Means", plant and activities to be employed on site are reviewed to ensure that they are the quietest available for the required purpose.
- Where required, improved sound reduction methods are used e.g. enclosures.
- Site equipment is located away from noise sensitive areas, as much as physically possible.
- Regular and effective maintenance by trained personnel is carried out to reduce noise and / or vibration from plant and machinery.
- Hours will be limited during which site activities likely to create high levels of noise and vibration are carried out.
- A site representative responsible for matters relating to noise and vibration will be appointed prior to construction on site.

Site Route Measures:

Site access routes (particularly unpaved areas) can be a significant source of fugitive dust from construction sites if control measures are not in place. The most effective means of suppressing dust emissions from unpaved roads is to apply speed restrictions. Studies show that these measures can have a control efficiency ranging from 25% to 80%⁵.

- A speed restriction of 20 km/h will be applied as an effective control measure for dust for on-site vehicles or delivery vehicles within the vicinity of the site;
- Bowsters will be available during periods of dry weather throughout the construction period. Research shown found that the effect of surface watering is to reduce dust emissions by 50% . The bowster will operate during dry periods to ensure that unpaved areas are kept moist. The required application frequency will vary according to soil type, weather conditions and vehicular use; and
- Any hard surface roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced areas shall be restricted to essential site traffic only.

Site Traffic Control Measures:

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

- Vehicles delivering material with potential for dust emissions to an off-site location shall be enclosed or covered at all times to restrict the escape of dust;
- Any hard surface site roads will be swept to remove mud and aggregate materials from their surface while any unsurfaced roads shall be restricted to essential site traffic only.
- A power washing facility or wheel cleaning facility will be installed near to the site compound for use by vehicles exiting the site when appropriate, and an example of the washing equipment can be seen in insert 7.1 ; and

- Road sweepers will be employed to clean the site access route as required.

Noise and Vibration Measures:

External noise and vibration monitoring will be undertaken at locations on the site boundary closest to sensitive locations. Monitors may be added, removed or relocated as necessary.

Site traffic vehicle movements would be minimised through:

- Consolidation of delivery loads to/from the site and managing large deliveries on site to occur outside of peak periods.
- Use of precast/prefabricated materials where possible
- Adequate storage space on site will be provided
- A strategy will be developed by the main contractor to minimise construction material quantities as much as possible
- Site staff vehicle movements will also be minimised by offering Travel to Work Scheme benefits to encourage car sharing.

Dust Control Measures:

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

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

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

Mobility Management Measures:

The contractor will be required as part of the contract to introduce a mobility management plan for its workforce to encourage access to the site by means other than by private car. The following section identifies some of the measures the contractor will provide as part of the Mobility Management Plan.

The Mobility Management Plan will form part of the Construction Management Plan and will be agreed with Dun Laoghaire Rathdown County Council prior to works beginning on site.

Walking

The contractor will ensure construction staff have ease of access to Temple Hill Road thereby providing convenient access to the public transport routes that run along same and the nearby DART line.

Cycling

Cycle parking spaces will be provided on the site for construction staff. In addition, lockers will be provided to allow cyclists store their cycling clothes.

Car Sharing

Car sharing among the construction staff will be encouraged, especially from areas where construction staff may be clustered. The contractor will aim to organise shifts in accordance to

staff origins, hence enabling higher levels of car sharing. Such a measure offers a significant opportunity to reduce the proportion of construction staff driving to -site and which will minimise the potential traffic impact on the road network surrounding the site.

Public Transport

The Contractor will issue an information leaflet to all staff as part of their induction on site, highlighting the location of the various public transport services in the vicinity of the construction site.

Management of the Mobility Management Plan

To oversee and implement the Mobility Management Plan for the construction works, the following mechanisms will be put in place by the Main Contractor:

- The appointment of a Mobility Manager to implement the Plan.
- The establishment of a group (which includes the Main Contractor) to oversee the ongoing implementation of the Plan.

Operational Stage

At the operational level, a Site Engineer from the main contractor and Foreman from each sub-contractor on the site shall be assigned the direct responsibility to ensure that the discrete operations stated in the Waste Management Plan are performed on an on-going basis.