16 MITIGATION AND MONITORING MEASURES

16.1 Introduction

This EIAR has assessed the impacts and resulting effects likely to occur as a result of the Proposed Development on the various aspects of the receiving environment.

The Proposed Development will be operated in a manner that will ensure that the potential impacts on the receiving environment are avoided where possible. In cases where impacts or potential impacts have been identified, mitigation measures have been proposed to reduce the significance of particular impacts. These mitigation recommendations are contained within each chapter exploring specific environmental aspects.

This chapter of the EIAR collates and summarises the mitigation commitments made in Chapter 4 to Chapter 13.

16.2 Summary of Mitigation Measures

16.2.1 Population and Human Health

16.2.1.1 Construction Phase

16.2.1.1.1 Mitigation

No specific mitigation measures are required during the Construction Phase in relation to population and human health, given the lack of direct, adverse effects resulting from the Proposed Development. However, mitigation measures in relation to air emissions, noise, traffic, and waste are identified in their respective chapters in this EIAR.

16.2.1.1.2 Monitoring

No specific monitoring is proposed in relation to population and human health during the construction phase.

16.2.1.2 Operational Phase

16.2.1.2.1 Mitigation

No specific mitigation measures are required during the Operational Phase of the Proposed Development in relation to population and human health, given the lack of direct, adverse effects resulting from the Proposed Development. However, mitigation measures in relation to air emissions, noise, traffic, and waste are identified in their respective chapters in this EIAR.

16.2.1.2.2 Monitoring

No specific monitoring is proposed in relation to population and human health during the operational phase.

16.2.2 Biodiversity

16.2.2.1 Construction Phase

16.2.2.1.1 Mitigation

The Proposed Development is not likely to have a significant effect on any European or Nationally designated sites, mitigation measures intended to avoid or reduce any harmful effects of the Proposed Development on European sites were not required.

Habitats

Landscape Management Plan

The landscape design incorporates and supports a wide array of habitats and will include the planting of 1250 new native trees. The landscape design includes a multitude of habitat boxes to cater for birds, insects, and bats, as well as a series of raingardens and swales which will provide habitat for a variety of animals while also serving as water retention features. Also included in the design plan are wildflower meadows and woodland planting.

Retention and Protection of Vegetation during Construction

Any vegetation (including trees, hedgerows or scrub adjacent to, or within, the Proposed Development boundary) which is to be retained shall be afforded adequate protection during the construction phase in accordance with the Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes (TII, 2006b), as follows:

- All trees along the Proposed Development boundary that are to be retained, both within and adjacent to the Proposed Development boundary (where the root protection area of the tree extends into the Proposed Development boundary), will be fenced off at the outset of works and for the duration of construction to avoid structural damage to the trunk, branches or root systems of the trees. Temporary fencing will be erected at a sufficient distance from the tree so as to enclose the Root Protection Area (RPA) of the tree. The RPA will be defined based upon the recommendation of a qualified arborist.
- Where fencing is not feasible due to insufficient space, protection for the tree/hedgerow will be afforded by wrapping hessian sacking (or suitable equivalent) around the trunk of the tree and strapping stout buffer timbers around it.
- The area within the RPA will not be used for vehicle parking or the storage of materials (including soils, oils and chemicals). The storage of hazardous materials (e.g. hydrocarbons) or concrete washout areas will not be undertaken within 10m of any retained trees, hedgerows and treelines.
- A qualified arborist will assess the condition of, and advise on any repair works necessary to any trees which are to be retained or that lie outside of the Proposed Development boundary but whose RPA is impacted by the works. Any remedial works required will be carried out by a qualified arborist.
- A buffer zone of at least 5m will be maintained between construction works and retained hedgerows to ensure that the root protection areas are not damaged.

Preventing Spread of Non-native Invasive Plant Species

While there were no non-native invasive species recorded in the Proposed Development site, there is potential for species to spread to the site during the interim between the original surveys and commencement of construction following grant of planning permission (if received). A confirmatory pre-construction invasive species survey will be undertaken by a suitably qualified specialist to confirm the absence, presence and/or extent of any Third Schedule non-native invasive species within the Proposed Development site. If the presence of any of these species is confirmed within the Proposed Development site, the implementation of an Invasive Species Management Plan prepared by a suitably qualified professional in line with TII guidelines (2020b) will be required.

Badger and Other Protected Mammals

As the usage of the Proposed Development site by badgers and other protected mammals can change over time, a confirmatory pre-construction check of the Proposed Development site for new burrow entrances, resting places and signs will be carried out before commencement of construction immediately prior to construction works commencing to confirm their usage by badger or other potential protected mammals.

Any new badger setts (or resting places) identified will be afforded protection in line with the requirements set out in the National Roads Authority (2005) guidance document as follows:

- Badger setts if encountered will be clearly marked and the extent of bounds prohibited for vehicles clearly marked by fencing and signage.
- In the season June to November, no heavy machinery will be used within 30m of badger setts; lighter machinery (generally wheeled vehicles) will not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance will not take place within 10m of sett entrances.
- During the breeding season (December to June inclusive), none of the above works will be undertaken within 50m of active setts, nor blasting or pile driving within 150m of active setts.
- Where works need to be undertaken within these zones, or where works directly affect newly identified badger setts, consultation with an ecologist with relevant badger management experience is required, and could include advanced badger mitigation measures such camera trapping to confirm sett status and sett closure / destruction, which must be undertaken outside the breeding season as per specialist advice, and will all be conducted under the supervision of an ecologist with experience in badger mitigation.
- Any potential new constraints (other protected mammals) identified will also be afforded protection in line with the requirements set out in the TII guidance documents and mitigated in line with the advice and supervision of an experienced ecologist as needed.

Bats

Mitigation measures have been proposed in the Bat Mitigation Strategy (Appendix 5-5) with reference to practices outlined in *Bat Mitigation Guidelines for Ireland V2* (Marnell et al. 2022), *Bat Surveys for Professional Ecologists: Good Practice Guidelines (*Collins, 2023) and in *Bats*

& Bat Boxes: Guidance Notes for Agri-environment Schemes (Bat Conservation Ireland, 2015). The aims of the mitigation strategy are to avoid disturbance of roosting bats or mortality of bats during the proposed works, and to provide alternative roost sites to offset the loss of known and potential roost sites.

Supervision of Proposed Works

A suitably qualified / licenced bat specialist (note: or other person as may be stipulated in any subsequent condition by Dún Laoghaire-Rathdown County Council, e.g., an Ecological Clerk of Works), will be engaged by the appointed contractor who will advise the appointed contractor on ecological matters during construction, communicate all findings in a timely manner to the Applicant and statutory authorities, and supervise and direct the ecological measures associated with the proposed development.

The proposed demolition works will be completed within one month (subject to planning consent). The demolition of the building confirmed as a bat roost will occur during the spring or autumn periods, as the risk of accidental death or injury is lower at this time, as it is outside the main maternity season and hibernation season. Bats may use roosts in smaller numbers in winter for hibernation but may nevertheless be present.

The following measures are proposed for demolition of the confirmed roost building (Building 4) and will be conduced under a derogation licence from the NPWS:

- Presence/absence of bats in the building will be determined by suitably qualified, experienced, and licensed ecologist(s) in advance of building demolition. Presence/absence will be determined by roost inspection checks (*e.g.* using an endoscope device) and a combination of dusk emergence and/or dawn re-entry surveys (if weather conditions are suitable).
- Immediately following completion of the above (the next day after dawn/dusk emergence surveys), the roofing will be removed under the supervision of the licenced bat ecologist during daylight hours. The bat worker will inspect the roof materials in advance of removal with a suitable device such as an endoscope.
- The contractor undertaking demolition works will facilitate safe access for the bat worker to the roof area of the building to allow inspection for roosting bats. Safe access may be facilitated via a scaffold, or via a Mobile Elevated Working Platform (MEWP) or similar.
- The demolition works will be conducted under the supervision of the licenced bat ecologist. In the event that bats are encountered during the works, they will be removed by hand, and transferred to a bat box (for specification, refer to Section 5.6.1.4.2), which will be installed on site in advance of works.

Regarding the retention and protection of vegetation, in the event where any of the trees showcasing PRFs (Figure 5-6) require removal, pruning, or cutting, these will need to be checked in advance of pruning to confirm absence of roosting bats. Given the potential for PRFs to host roosting bats, the completion of tree works will be conducted under a derogation licence from the NPWS to disturb a bat or its roost and/or to remove/destroy a bat roost. In general, the checks of PRFs will proceed as follows:

1. PRFs will be inspected at height by an appropriately trained and qualified professional[1] with the use of an endoscope device or similar.
2. Where a PRF can be fully inspected and no evidence of bats is detected, the tree may be felled/pruned/cut immediately or on the same working day during daylight hours. As bats are mobile species and are known to 'roost switch' between different tree PRFs (Andrews, 2018), it is not appropriate to allow a larger passage of time between inspection of a feature and its removal due to the increased risk of occupancy by a bat.
3. Where a PRF can be fully inspected and a bat is identified roosting within the PRF[2], works on that particular tree will be suspended. The licensed ecologist will be engaged to complete a roost emergence and dawn re-entry survey of the PRF. The survey will be completed with equipment including recording bat detectors and night vision aids [e.g. infrared camera(s) or thermal imaging camera(s) of an appropriate specification to detect emerging/returning bats]. Where bats are confirmed to be absent, recommendation 2 (above) will apply. Where a bat roost is confirmed, the bat(s) will be allowed to leave the PRF or will be excluded from the PRF before the feature is removed. This may require multiple roost emergence, dawn re-entry, and roost inspection surveys.
4. Where a PRF cannot be fully inspected or where there is doubt as to whether bats are likely to be present, works will be suspended on that particular tree. A qualified ecologist will be engaged to complete a roost emergence and dawn re-entry survey of the PRF. The survey should be completed with equipment including recording bat detectors and night vision aids [e.g. infrared camera(s) or thermal imaging camera(s) of an appropriate specification to detect emerging/returning bats]. Where bats are confirmed to be absent, recommendation 2 (above) will apply. Where a bat roost is confirmed, the bat(s) will be allowed to leave the PRF or will be excluded from the PRF before the feature is removed. This may require multiple roost emergence, dawn re-entry, and roost inspection surveys

Any vegetation (including trees, hedgerows or scrub adjacent to, or within, the proposed development boundary) which is to be retained shall be afforded adequate protection during the construction phase in accordance with the Guidelines for the Protection and Preservation of Trees, Hedgerows and Scrub Prior to, During and Post Construction of National Road Schemes (National Roads Authority, 2006a).

Lighting proposals for the construction phase will adhere to the advice provided in Bats and Lighting – Guidance for Planners, Engineers, Architects and Developers (Bat Conservation Ireland 2010), Guidance Note GN08/23 Bats and Artificial Lighting at Night (Institution of Lighting Professionals & Bat Conservation Trust, 2023) and Guidance Note GN01/21 The Reduction of Obtrusive Light (Institute of Lighting Professionals, 2021). Construction stage lighting details will be reviewed by a qualified bat ecologist. If necessary, the bat ecologist will

[1] In general, an appropriately trained and qualified professional will either be i) a tree surgeon who has undergone tree roost inspection training and has a certificate issued by the trainer, or ii) a qualified and experienced bat ecologist who holds a Regulation 54(2)(d) derogation licence for roost disturbance and Wildlife Acts Section 9 & 23(6)(b) and Section 23&34 licences for disturbance of bats in their roosts.

[2] Where a bat is encountered by a tree surgeon, they should withdraw from inspecting said tree immediately in order to avoid triggering disturbance of a bat or its roost.

recommend adjustments to directional lighting (e.g. through cowls, shields or louvres) to restrict light spill in sensitive areas.

Provision of Alternative Roost Facilities On-site During and Post Development Works

As part of the mitigation measures, alternative roosts appropriate to the bat species recorded will be provided nearby within the proposed development site. For soprano pipistrelles these are tree crevice-type boxes, with 25-35mm crevices. Therefore, a combination of two Schwegler type 2F bat boxes and four Schwegler type 1FF flat bat boxes (or similar models) will be installed at a suitable location to be determined by the bat worker/ecologist within the site boundary.

The tree-mounted bat boxes will be installed either by the ecologist or by the contractor under the supervision of the ecologist. It is preferable that each box faces a slightly different aspect from southeast to southwest facing, to provide a range of slightly differing temperature regimes (Bat Conservation Ireland, 2015). All bat boxes will be installed at least 3m above ground level to minimise the risk of interference by humans. The bat boxes will be located away from areas that are subject to artificial light spill. All boxes will be installed prior to the commencement of demolition and construction works.

Measures for the Unforeseen Discovery of Roosts during Works

In the event of the unforeseen discovery of roosts during the construction of the proposed development all construction activities will cease in proximity to the discovered roost, and the bat specialist/ecologist contacted for advice. The local NPWS ranger will be contacted by the bat specialist/ecologist for an agreed approach.

Reporting to the NPWS

A report documenting adherence to measures within Section 5.6.1.4 of this report will be produced by the licensed ecologist and forwarded to the NPWS within three months of completion of demolition works. The success of the proposed strategy will be measured by the mortality of any bats during construction, and the provision of alternative roosting sites in the lands during and after construction.

Breeding Birds

Where feasible, vegetation (e.g. hedgerows, trees, scrub and grassland) will not be removed, between the 1st of March and the 31st of August, to avoid direct impacts on nesting birds. Where the construction programme does not allow this seasonal restriction to be observed, then these areas will be inspected by a suitably qualified ecologist for the presence of breeding birds prior to clearance. Areas found not to contain nests will be cleared within 3 days of the nest survey, otherwise repeat surveys will be required. Should nesting birds be encountered during surveys, the removal of vegetation will be required to be delayed until after the nesting has finished.

16.2.2.1.2 Monitoring

A suitably experienced and qualified Ecological Clerk of Works (ECoW) will be retained by the appointed contractor. The ECoW will advise the appointed contractor on ecological matters during construction, undertake pre-construction surveys as necessary, communicate all findings in a timely manner to the appointed contractor and statutory authorities, acquire any licenses / consents required to conduct the work, and supervise and direct the ecological measures associated with the Proposed Development.

Pre-construction surveys for badger, bats and breeding birds will be carried out as described in the respective sections.

16.2.2.2 Operational Phase

16.2.2.2.1 Mitigation

Designated Sites

That the Proposed Development is not likely to have a significant effect on any European or Nationally designated sites, mitigation measures intended to avoid or reduce any harmful effects of the Proposed Development on European sites were not required or taken into account.

Habitats

As outlined within the landscaping proposals accompanying this application, planting of native tree and shrub species will be implemented within the site during construction. The implementation of the landscape plan will extend into the operational phase, as planting becomes established and continues to mature.

Bats

As part of the Bat Mitigation Strategy (Appendix 5-5), alternative roosts appropriate to the bat species recorded will be provided within the proposed development site. These will be installed at a suitable location determined by the bat worker/ecologist prior to the construction phase and will be maintained and monitored throughout the operation phase.

Consideration of light spill has been incorporated into the lighting design being cognisant of lighting impacts on bats. no additional mitigation is necessary as mitigation has been considered in the design

Breeding Birds

As an enhancement measure for the loss of nesting habitat and in order to provide additional nesting opportunities for breeding birds, 6 no. 1B Schwegler nest boxes or similar will be installed within the Proposed Development site. The nest boxes will be installed at a minimum of 3m above ground level to ensure against disturbance from humans and domestic animals such as cats. The boxes will be deployed across the site in appropriate locations, as advised by a suitably qualified ecologist.

16.2.2.2.2 Monitoring

A landscape monitoring plan will be undertaken for a number of years post implementation to ensure establishment of planting and success of habitat management.

While the success of the proposed Bat Mitigation Strategy will not be measured by occupancy of roosts by bats, it is considered to be best practice and appropriate to implement a monitoring plan to gather information and assess whether the bat population has responded favourably to mitigation measures.

A three-year post-installation monitoring programme will be undertaken. The bat boxes will be checked for presence of bats or signs of bats on a biennial basis between August and September in years 1 and 3 post-installation by an appropriately licensed and qualified ecologist.

The results of the monitoring surveys will be recorded and shared with the local authority and the NPWS.

.

16.2.3 Land and Soils

16.2.3.1 Construction Phase

16.2.3.1.1 Mitigation

Import of Aggregates and Materials

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

Airborne Dust Generation

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

Reuse of Soil

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

Management and Control of Soils and Stockpiles

Where possible, stockpiling of soils and subsoils onsite will be avoided. However, in the event that stockpiling is required, stockpiled materials, pending reuse onsite, will be located away from the location of any sensitive receptors (watercourses and drains). In accordance with Inland Fisheries Ireland guidelines, stockpiles will not be allowed within 30m of the open water where sufficient working areas are available within the Site boundary.

The re-use of suitable cut material onsite for the Proposed Development (i.e., landscaping, raising levels or engineering fill) will be undertaken in accordance with the engineered design of the Proposed Development. Surplus or unsuitable soils will be removed offsite.

Surplus material, not suitable for reuse onsite, will be segregated, and stockpiled appropriately for removal offsite. For any excavated material identified for removal offsite, while assessment

and approval of acceptance at a destination re-use, recovery Site or waste facility is pending, excavated soil for recovery/disposal shall be stockpiled as follows:

- A suitable temporary storage area shall be identified and designated.
- All stockpiles shall be assigned a stockpile number.
- Material identified for reuse onsite, offsite and waste materials will be individually segregated and all segregation, storage and stockpiling locations will be clearly delineated on the Site drawings.
- Soil stockpiles will be covered to prevent run-off from the stockpiled material generation and/or the generation of dust.
- Material identified for reuse on Site, off Site and waste materials will be individually segregated.
- Any waste that will be temporarily stored / stockpiled will be stored on impermeable surface high-grade polythene sheeting, hardstand areas or skips to prevent cross-contamination of the soil below or cross contamination with soil.
- Regular watering will take place to ensure the moisture content is high enough to increase the stability of the soil and thus suppress dust.
- Stockpiles will be a minimum of 30m from drains.

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

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

Degradation of Soils

The segregation and stockpiling of soils during the construction phase of the Proposed Development pending reuse or removal offsite will be carefully managed and maintained in order to minimise potential impact on soil quality. Handling of the stockpiled soil and stone will be minimised and will not be disturbed once formed. Stockpiles will be formed to minimise infiltration or accumulations of rainwater in the stockpiles.

Export of Resource (Soil and Subsoil) and Waste

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

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

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

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

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

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

Concrete Works

All ready-mixed concrete will be delivered to the site by truck. The following measures will be implemented where poured concrete is being used on site:

- The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out on site.
- Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed.
- Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening.
- Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete.
- Concrete mixer trucks will not be permitted to wash out on-site with the exception of cleaning the chute into a container which will then be emptied into a skip for appropriate compliant removal offsite.

Surplus concrete will be returned to batch plant after completion of a pour.

Handling of Fuels, Chemicals and Materials

Any diesel, fuel or hydraulic oils stored on-site will be sealed, secured and stored in a dedicated internally bunded chemical storage cabinet unit or inside concrete bunded areas to prevent any seepage to ground. There will be clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage.

- Bunds will have regard to Environmental Protection Agency (EPA) guidelines ‘Storage and Transfer of Materials for Scheduled Activities’ (EPA, 2013) and Enterprise Ireland’s Best Practice Guide (BPGCS005 Oil Storage Guidelines). All tank and drum storage areas will, as a minimum, be bunded to a volume not less than the greater of the following:
    - 110% of the capacity of the largest tank or drum within the bunded area; or
    - 25% of the total volume of substance that could be stored within the bunded area.

- Vehicle or equipment maintenance work will take place in a designated impermeable area within the Site.
- Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants.
- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained.
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the Site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and EPA guidelines.
- Site staff will be familiar with emergency procedures for in the event of accidental fuel spillages.
- All staff on-site will be fully trained on the use of equipment to be used on-site.
- Portable generators or similar fuel containing equipment will also be placed on suitable drip trays or bunds.

Refuelling of plant and vehicles during the construction phase will only be permitted at designated refuelling station locations onsite and will be from a road tanker brought to site as required. Each station will be fully contained and equipped for spill response and a specially trained and dedicated Environmental and Emergency Spill Response team will be appointed by the Contractor before the commencement of works onsite.

A procedure will be drawn up by the contractor which will be adhered to during refuelling of on-site vehicles. This will include the following:

- Fuel will be delivered to plant on-site by dedicated tanker.
- All deliveries to on-site vehicles will be supervised and records will be kept of delivery dates and volumes.
- The driver will be issued with, and will carry at all times, absorbent sheets and granules to collect any spillages that may accidentally occur.
- Where the nozzle of a fuel pump cannot be placed into the tank of a machine then a funnel will be used.
- All re-fuelling will take place in a designated impermeable area. In addition, oil absorbent materials will be kept on-site in close proximity to the re-fuelling area.

Emergency Procedures

Emergency procedures will be developed by the appointed Contractor in advance of works commencing and spillage kits will be available on-site including in vehicles operating on-site. Construction staff will be familiar with emergency procedures for in the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential impacts in accordance with industry standards and legislative requirements.

- Any required emergency vehicle or equipment maintenance work will take place in a designated impermeable area within the Proposed Development Site.
- Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants.
- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained.

- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the Proposed Development Site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and standards.
- All construction works staff will be familiar with emergency procedures for in the event of accidental fuel spillages.
- All construction works staff on-site will be fully trained on the use of equipment.

This procedure will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to the receiving hydrological and hydrogeological environment associated with the construction phase of the Proposed Development.

Welfare Facilities

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

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

16.2.3.1.2 Monitoring

During the construction phase of the Proposed Development the following monitoring measures will be considered:

- Routine monitoring and inspections during refuelling, concrete works to ensure no impacts and compliance with avoidance, remedial and mitigation measures.
- Inspections and monitoring will be undertaken during excavations and other groundworks to ensure that measure that are protective of water quality are fully implemented and effective.
- Materials management and waste audits will be carried out at regular intervals to monitor the following:
    - Management of soils onsite and for removal offsite.
    - Record keeping.
    - Traceability of all materials, surplus soil and other waste removed from the site
    - Ensure records are maintained of material acceptance at the end destination.

16.2.3.2 Operational Phase

16.2.3.2.1 Mitigation

There is no requirement for mitigation measures for the operational phase taking account of the design measures for the Proposed Development.

16.2.3.2.2 Monitoring

There is no requirement for mitigation measures to address potential cumulative impacts during the operational phase taking account of the design measures for the Proposed Development.

16.2.4 Hydrology

16.2.4.1 Construction Phase

16.2.4.1.1 Mitigation

During the construction phase, all works will be undertaken in accordance with the Outline Construction Management Plan (CMP) (Atkins Ireland Limited, 2024) and the Construction Environmental Management Plan (CEMP) (EGC, 2024). Following appointment, the contractor will be required to further develop the CMP and CEMP to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001). The CMP and CEMP will be implemented for the duration of the construction phase, covering construction and waste management activities that will take place during the construction phase of the Proposed Development. Mitigation works will be adopted as part of the construction works for the Proposed Development. These measures will address the main activities of potential impact which include:

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

Control and Management of Water and Surface Water Runoff

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

All run-off from the site or any areas of exposed soil will be managed as required with temporary pumping and following appropriate treatment as required. Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to onsite settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge at a controlled rate. It is noted that, where required, surface water runoff will be prevented from entering open excavations with sandbags or other approved methods proposed by the Contractor.

Where dewatering of shallow groundwater is required or where surface water runoff must be pumped from the excavations, water will be managed in accordance with best practice standards (i.e., CIRIA C750), the CMP (Atkins Ireland Limited, 2024), the CEMP (Enviroguide, 2024b) and regulatory consents to minimise the potential impact on the local groundwater flow regime of the underlying aquifer.

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

drainage ditches). Where required, the water will also be directed through a hydrocarbon interceptor prior to discharge from the Site.

Unauthorised discharge of water (groundwater / surface water runoff) to ground, drains or watercourses will not be permitted. Existing surface water drainage located along public roads (i.e., Wayside, Enniskerry Road and Glenamuck Road) will be protected for the duration of the works. The appointed Contractor will ensure that the discharge of water to ground, drains or watercourses will be in accordance with the necessary discharge licences issued by UE under Section 16 of the Local Government (Water Pollution) Acts and Regulations for any water discharges to sewer or from Kildare County Council under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990 for discharges to surface water.

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

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

Importation of Materials

Contract and procurement procedures will ensure that all imported aggregates, soil and other construction materials required for the Proposed Development will be sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity/compliance standards and statutory obligations. The importation of aggregates will be subject to management and control procedures to ensure the suitability for use in accordance with engineering and environmental specifications for the Proposed Development. Therefore, any unsuitable material will be identified prior to unloading / placement on-site.

Concrete Works

Pre-cast concrete will be used where technically feasible to meet the design requirements for the Proposed Development. Where cast-in-place concrete is required, all work will be carried out to avoid any contamination of the receiving geological environment through the use of appropriate design and methods implemented by the appointed Contractor and in accordance with the CMP (Atkins Ireland Limited, 2024), the CEMP (Enviroguide, 2024) and relevant industry standards.

All ready-mixed concrete will be delivered to the site by truck. The following measures will be implemented where poured concrete is being used on site:

- The production, transport and placement of all cementitious materials will be strictly planned and supervised. Site batching/production of concrete will not be carried out on site.
- Shutters will be designed to prevent failure. Grout loss will be prevented from shuttered pours by ensuring that all joints between panels achieve a close fit or that they are sealed.

- Where concrete is to be placed by means of a skip, the opening gate of the delivery chute will be securely fastened to prevent accidental opening.
- Where possible, concrete skips, pumps and machine buckets will be prevented from slewing over water when placing concrete.
- Concrete mixer trucks will not be permitted to wash out on-site with the exception of cleaning the chute into a container which will then be emptied into a skip for appropriate compliant removal offsite.
- Surplus concrete will be returned to batch plant after completion of a pour.

Handling of Fuels and hazardous Materials

Fuelling and lubrication of equipment will be carried out in accordance with the procedures outlined in the CEMP (Enviroguide, 2024), in a designated area of the site away from any watercourses and drains (where not possible to carry out such activities onsite.

Any diesel, fuel or hydraulic oils stored on-site will be sealed, secured and stored in a dedicated internally bunded chemical storage cabinet unit or inside concrete bunded areas to prevent any seepage to ground. There will be clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage.

- Bunds will have regard to Environmental Protection Agency (EPA) guidelines 'Storage and Transfer of Materials for Scheduled Activities' (EPA, 2013) and Enterprise Ireland's Best Practice Guide (BPGCS005 Oil Storage Guidelines). All tank and drum storage areas will, as a minimum, be bunded to a volume not less than the greater of the following:
    - 110% of the capacity of the largest tank or drum within the bunded area; or
    - 25% of the total volume of substance that could be stored within the bunded area.
- Vehicle or equipment maintenance work will take place in a designated impermeable area within the Site.
- Emergency response procedures will be put in place, in the unlikely event of spillages of fuels or lubricants.
- Spill kits including oil absorbent material will be provided so that any spillage of fuels, lubricants or hydraulic oils will be immediately contained.
- In the event of a leak or spill from equipment in the instance of a mechanical breakdown during operation, any contaminated soil will be removed from the Site and compliantly disposed off-site. Residual soil will be tested to validate that all potentially contaminated material has been removed. This procedure will be undertaken in accordance with industry best practice procedures and EPA guidelines.
- Site staff will be familiar with emergency procedures for in the event of accidental fuel spillages.
- All staff on-site will be fully trained on the use of equipment to be used on-site.
- Portable generators or similar fuel containing equipment will also be placed on suitable drip trays or bunds.

Refuelling of plant and vehicles during the construction phase will only be permitted at designated refuelling station locations onsite and will be from a road tanker brought to site as required. Each station will be fully contained and equipped for spill response and a specially

trained and dedicated Environmental and Emergency Spill Response team will be appointed by the Contractor before the commencement of works onsite.

A procedure will be drawn up by the contractor which will be adhered to during refuelling of on-site vehicles. This will include the following:

- Fuel will be delivered to plant on-site by dedicated tanker.
- All deliveries to on-site vehicles will be supervised and records will be kept of delivery dates and volumes.
- The driver will be issued with, and will carry at all times, absorbent sheets and granules to collect any spillages that may accidentally occur.
- Where the nozzle of a fuel pump cannot be placed into the tank of a machine then a funnel will be used.
- All re-fuelling will take place in a designated impermeable area. In addition, oil absorbent materials will be kept on-site in close proximity to the re-fuelling area.

Emergency Procedures

Emergency procedures will be developed by the appointed Contractor in advance of works commencing and spillage kits will be available on-site including in vehicles operating on-site. Construction staff will be familiar with emergency procedures for in the event of accidental fuel spillages. Remedial action will be immediately implemented to address any potential impacts in accordance with industry standards and legislative requirements.

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

This procedure will be undertaken in accordance with industry best practice procedures and standards. These measures will ensure that there is minimal risk to the receiving hydrological and hydrogeological environment associated with the construction phase of the Proposed Development.

Welfare Facilities

Welfare facilities have the potential, if not managed appropriately, to release organic and other contaminants to ground or surface water courses. Foul drainage from temporary welfare facilities during the construction phase of the Proposed Development will be discharged to temporary holding tank(s) the contents of which will periodically be tankered off site to a

licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations by tankering of waste offsite by an appropriately authorised contractor.

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

16.2.4.1.2 Monitoring

During the construction phase of the Proposed Development the following monitoring measures will be considered:

- Inspections will be undertaken during excavations and other groundworks to ensure that measures that are protective of water quality outlined in this EIAR, the CMP (Atkins Ireland Limited, 2024) and the CEMP (Enviroguide, 2024) are fully implemented and effective.
- Discharges to surface water / foul sewers will be monitored where required in accordance with statutory consents (i.e., discharge licence).
- Routine monitoring and inspections during refuelling, concrete works to ensure no impacts and compliance with avoidance, remedial and mitigation measures.

16.2.4.2 Operational Phase

16.2.4.2.1 Mitigation

There will be no risk to water quality including groundwater and surface water associated with the operational phase of the Proposed Development. It is considered that the design of the Proposed Development is in line with the objectives of the Water Framework Directive (2000/60/EC), as amended (WFD) to prevent or limit any potential impact on water quality.

There will be no petroleum hydrocarbon-based fuels used during the operational phase and the main operating system for heating will be gas based / air to water heat pump, thereby removing any potential contaminant sources associated with fuels.

There will be no discharges to ground from drainage and only rainfall on public open spaces will infiltrate to ground.

All drainage from paved areas along roads and impermeable roads will be collected and managed within the surface water drainage and SuDS solutions as outlined in the Engineering Infrastructure Report & Stormwater Impact Assessment (Roger Mullarkey & Associates, 2024).

The surface water management strategy includes a number of measures that will capture any potentially contaminating compounds (petroleum hydrocarbons, metals, and suspended sediments) in surface water runoff from the higher risk areas including roads and the impermeable areas that could potentially otherwise discharge to groundwater or receiving water courses in the vicinity the site. The measures incorporated in the SuDS design include, filter drains, permeable paving, swales, silt-trap/catchpit manholes, tree pits, green roofing, bio-retention, attenuation storage and class1 petrol interceptors within the drainage and SuDS system. The filter drains, permeable paving, swales, silt-trap/catchpit manholes, tree pits, green roofing, bio-retention, attenuation storage will be effective in the treatment and removal

of any contaminants (metals, polycyclic aromatic hydrocarbons (PAHs) and suspended solids) entrained in surface water runoff. The effectiveness of these SuDS measures is documented in TII guidance (TII, 2014). Furthermore, prior to discharging from the site will pass through a class 1 petrol interceptor that will be effective in removal of hydrocarbons that may enter the drainage system in particular in the event of worst-case scenario spill incident (e.g., collision on the roadway resulting in the loss of fuel form a vehicle).

Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures will be incorporated into the overall management strategy for the Proposed Development. This will ensure that there are no impacts on water quality and quantity (flow regime) during the Operational Phase of the Proposed Development.

Accordingly, any potential impact on receiving surface water and groundwater beneath the Proposed Development site will be avoided taking account of the design proposals. Therefore, it is considered that the water quality protection criteria and objectives of the GDSDS and Water Framework Directive will be achieved.

There is no other requirement for mitigation measures for the Operational Phase of the Proposed Development.

16.2.4.2.2 Monitoring

Ongoing regular operational monitoring and maintenance of drainage and the SuDS measures will be undertaken throughout the lifetime of the operational phase of the Proposed Development.

16.2.5 Air Quality and Climate

16.2.5.1 Construction Phase

16.2.5.1.1 Mitigation

Communications

- Develop and implement a stakeholder communications plan that includes community engagement before work commences on site;
- Display the name and contact details of person(s) accountable for air quality and dust issues on the site boundary. This may be the environment manager/engineer or the site manager;
- Display the head or regional office contact information; 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 DLRCC post grant of planning permission.

Site Management

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken;
- Make the complaints log available to the local authority when asked;
- Record any exceptional incidents that cause dust and/or air emissions, either on- or off-site, and the action taken to resolve the situation in the log book; and
- Hold regular liaison meetings with other high risk construction sites within 250m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.

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 surfaces such as street furniture, cars and window sills within 100 m of 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 the 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 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 actives 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. If they are being re-used on-site cover as described below; and
- Cover, seed or fence stockpiles to prevent wind whipping.

Operating Vehicle/Machinery and Sustainable Travel

- Ensure all vehicles switch off engines when stationary - no idling vehicles;
- Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable; and
- A speed restriction of 20 km/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 fitted 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 and 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

- Avoid bonfires and burning of waste materials;

Measures Specific to Demolition

- Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground;
- 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

- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.

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;

Access gates to be located at least 10 m from receptors where possible.

16.2.5.1.2 Monitoring

The monitoring of construction dust during the construction phase of the Proposed Development is recommended to ensure that impacts are not experienced beyond the site boundary. Monitoring of dust can be carried out by using the Bergerhoff Method. This involves placing Bergerhoff Dust Deposit Gauges at a strategic locations along the site boundaries for a period of 30 +/- 2 days. The selection of sampling point locations should be carried out in consideration of the requirements of *VDI 2119* with respect to the location of the samplers relative to buildings and other obstructions, height above ground, and sample collection and analysis procedures. After the exposure period is complete, the Gauges should be removed from the Site; the dust deposits in each Gauge will then be determined gravimetrically and expressed as a dust deposition rate in mg/m^2/day in accordance with the relevant standard.

16.2.5.2 Operational Phase

16.2.5.2.1 Mitigation

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

16.2.5.2.2 Monitoring

Due to the negligible impact on air quality and climate from the operational phase of the Proposed Development, no specific monitoring is recommended.

16.2.6 Noise and Vibrations

16.2.6.1 Construction Phase

16.2.6.1.1 Mitigation

Noise

BS 5228 (2009 +A1 2014) *Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2*, provides guidance on the various aspects of construction site noise mitigation, including, but not limited to:

Selection of Quiet Plant

This practice is recommended in relation to static plant such as compressors and generators. It is recommended that these units be supplied with manufacturers' proprietary acoustic enclosures. The potential for any item of plant to generate noise will be assessed prior to the item being brought onto the site. The least noisy item will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action will be to identify whether or not said item can be replaced with a quieter alternative.

Noise Control at Source

If replacing a noisy item of plant is not a viable or practical option, consideration will be given to noise control "at source". This refers to the modification of an item of plant or the application of improved sound reduction methods in consultation with the supplier. For example, resonance effects in panel work or cover plates can be reduced through stiffening or application of damping compounds; rattling and grinding noises can often be controlled by fixing resilient materials in between the surfaces in contact.

The following work methods will be implemented to ensure minimal noise and vibration are generated at sources during the construction phases:

- All plant and equipment liable to create noise whilst in operation will, as far as reasonably practicable, be located away from sensitive receptors and neighbouring occupied buildings.
- For mobile plant items such as cranes, dump trucks, excavators and loaders, maintaining enclosure panels closed during operation can reduce noise levels over normal operation. Mobile plant will be switched off when not in use and not left idling.
- For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system.
- For percussive tools such as concrete breakers, a number of noise control measures include fitting muffler or sound reducing equipment to the breaker 'tool' and ensure any leaks in the air lines are sealed. Erect localised screens around breaker or drill bit when in operation in close proximity to noise sensitive boundaries.

- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- For compressors, generators and pumps, these can be surrounded by acoustic lagging or enclosed within acoustic enclosures providing air ventilation.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.
- Any plant, equipment or items fitted with noise control equipment found to be defective will not be operated until repaired.
- Site deliveries will be confined to working hours and allocated offloading location will be utilized for all deliveries.
- Working hours will be confined to those stipulated in the grant of planning permission.

Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. Standard construction site hoarding with a mass per unit of surface area greater than 7 kg/m^2 can provide adequate sound insulation.

Liaison with the Public

A designated noise liaison officer (who may be the Environmental Officer) will be appointed to oversee the site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the liaison officer. In addition, prior to particularly noisy construction activity, e.g., demolition, breaking, piling, etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

Project Programme

The construction programme will be arranged to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling or breaking works are in progress on a site at the same time as other works of construction or demolition that themselves may generate significant noise and vibration, the working programme will be phased so as to ensure noise limits are not exceeded due to cumulative activities.

Vibration

Ground vibration may also potentially occur during the construction phase. Vibration can be measured in terms of Peak Particle Velocity (PPV), this is expressed in millimetres per second (mm/s). Vibration standards can be considered in two varieties: those dealing with human

comfort and those dealing with cosmetic or structural damage to buildings. For example, vibration is perceptible at around 0.5mm/s in the case of road traffic, however at higher magnitudes, this vibration may become an annoyance.

Rock breaking and piling are considered the primary sources of vibration during the construction phase of a project. These would occur at higher levels of vibrations (up to 12mm/s and 6mm/s respectively), and this can be tolerated for events of a short duration.

Guidance relevant to the protection of building structures is contained in the following documents:

- British Standard BS 7385: 1993*: Evaluation and measurement for vibration in buildings Part 2: Guide to damage levels from ground borne vibration,* and;
- British Standard BS 5228: 2009+A1 2014: *Code of practice for noise and vibration control on construction and open sites – Part 2: Vibration.*

16.2.6.1.2 Monitoring

The Main Contractor will monitor the likelihood of prolonged exposure to excessive noise and commission a noise surveying/monitoring programme where necessary.

In the first instance, it is envisaged that such audits will take place on a monthly basis. This will be subject to review and the frequency of audits may be revised if deemed appropriate.

The purpose of the audits will be to ensure that all appropriate steps are being taken to control construction noise emissions. To this end, consideration will be given to issues such as the following:

- Hours of operation being correctly observed;
- Opportunities for noise control ‘at source’;
- Optimum siting of plant items;
- Plant items being left to run unnecessarily;
- Correct use of proprietary noise control measures;
- Materials handling;
- Poor maintenance; and
- Correct use of screening provided and opportunities for provision of additional screening.

Noise and vibration monitoring reports will be maintained and made available to the Local Authority and members of the public on request.

16.2.6.2 Operational Phase

16.2.6.2.1 Mitigation

During the operational phase of the development, noise mitigation measures with respect to the outward impact of the development are not deemed necessary.

16.2.6.2.2 Monitoring

Due to the negligible impact on noise and vibrations from the operational phase of the Proposed Development, no specific monitoring is recommended.

16.2.7 Landscape and Visual

16.2.7.1 Construction Phase

16.2.7.1.1 Mitigation

The key landscape and visual mitigation measures used during the Construction Phase have been incorporated into the layout of the site and design of the proposed buildings. The buildings will be low height (2-4 storeys which may be read as partially 5 No. storeys on the eastern lands due to level differences), clad in a similar neutral colored material and will have a similar horizontal emphasis.

The measures proposed revolve around the implementation of appropriate site management procedures – such as the control of site lighting, storage of materials, placement of compounds, delivery of materials, car parking. Visual impacts during the construction phase will be mitigated through appropriate site management measures and work practices to ensure the Site is kept tidy, dust is kept to a minimum, and that any locations close to public areas are kept free from building material and site rubbish.

Site hoarding will be appropriately scaled, finished and maintained for the period of construction of each section of the works as appropriate. To reduce the potential negative impacts during the construction phase, good site management and housekeeping practices will be adhered to. The visual impact of the site compound(s) and scaffolding visible during the construction phase are of a temporary nature only and therefore require no remedial action other than as stated above.

For those trees proposed for retention, all necessary mitigation measures will be put in place in order to prevent or reduce impact to its very minimum. Mitigation measures used will need to include the erection of protective fencing at the very start of the works, ground protection installation within root zones where fencing cannot be erected to enclose the entire root zones, monitoring of the site works by the project Arboriculturist throughout the construction process and the use of tree friendly techniques and products for the construction process.

16.2.7.1.2 Monitoring

Landscape tender drawings and specifications will be produced to ensure that the landscape work is implemented in accordance with best practice. This document will include tree work procedures, soil handling, planting and maintenance. The contract works will be supervised by a suitably qualified landscape architect. The planting works will be undertaken in the planting season after completion of the main civil engineering and building work.

Any construction works within close proximity to retained trees are advised to be undertaken in accordance with approved method statements prepared by the construction contractor under the direct supervision of a qualified consultant Arboriculturist. Therefore, during the construction works, a professionally qualified Arboriculturist is recommended to be retained by the principal contractor or site manager to monitor and advice on any works within the RPA of retained trees to ensure successful tree retention and planning compliance. The

Arboriculturist is to make regular site visits to ensure that the tree protection measures are in place and adhered to.

16.2.7.2 Operational Phase

16.2.7.2.1 Mitigation

It has been determined that the operational phase Landscape and visual impact is negligible and therefore, no site-specific mitigation measures are proposed.

16.2.7.2.2 Monitoring

Monitoring of the mitigation measures will form part of the landscape management plan. Replacement trees, replacement planting and pruning measures will be captured in landscape maintenance plans and are intrinsically linked to the proposed mitigation measures. All landscape works will be in an establishment phase for the initial three years from planting. A landscape maintenance plan accompanies the planning application. Prior to completion of the landscape works, a competent landscape contractor will be engaged and a detailed maintenance plan, scope of operation and methodology will be put in place.

16.2.8 Archaeology and Cultural Heritage

16.2.8.1 Construction Phase

16.2.8.1.1 Mitigation

Archaeology

A programme of geophysical survey be carried out within the previously undisturbed greenfield portions of the Proposed Development area, in advance of construction to investigate the archaeological potential of these lands (excluding the portion of Field 2 that has already been assessed). The work will be carried out under licence, as issued by the National Monuments Service of the DoHLGH.

Geophysical survey will be followed by a programme of archaeological test trenching. This work will be undertaken by a licence eligible archaeologist in consultation with the National Monuments Service of the DoHLGH. Subject to the results of the programme of archaeological testing further mitigation may be required, such as preservation by record (excavation)/in-situ and/or monitoring of groundworks.

Architecture

Prior to the commencement of construction, a full written and photographic record will be made of 'Rock Villa' and its stone outbuildings. Overgrowth will be removed to facilitate the survey and internal access provided (if Health and Safety considerations allow). The record will be created by a suitably qualified heritage contractor and accompanied by documentary research. Furthermore, all ground works within this area will be subject to archaeological monitoring, by a suitably qualified archaeologist.

A full written and photograph record will be made of the demesne landscape associated with Rockville House. The record will be created by a suitably qualified heritage contractor and accompanied by documentary research, where relevant.

A full written and photograph record will be made of the sections of stone walling to be removed as part of the construction of the development, which currently bound part of the site. The record will be created by a suitably qualified heritage contractor and accompanied by documentary research, where relevant. The masonry should be re-used within the development where appropriate.

16.2.8.1.2 Monitoring

The mitigation measures recommended above would also function as a monitoring system during construction to allow the further assessment of the scale of the predicted impacts and the effectiveness of the mitigation measures.

16.2.8.2 Operational Phase

16.2.8.2.1 Mitigation

The predicted indirect impacts at operation stage on the Catholic Church of Our Lady of the Wayside (RPS 1802; NIAH 60260021); the gates to Kiltiernan Abbey (RPS 1793) and Rockville House (RPS 1790; NIAH 60260040) are not deemed to be significant. Due to the visual nature of the predicted impacts, it is not possible to mitigate the effects.

16.2.8.2.2 Monitoring

There is no recommendation for a monitoring system at operational phase.

16.2.9 Materials Assets – Waste and Utilities

16.2.9.1 Construction Phase

16.2.9.1.1 Mitigation

Specific avoidance, remedial and mitigation measures will be required for the Proposed Development. The measures that will be taken to ensure that there will be no significant impact on the surrounding Material Assets during the Construction Phase include:

Waste will be stored onsite in such a manner as to:

- Prevent environmental pollution.
- Minimise nuisance generation such as dust.
- Maximise waste segregation to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling, and recovery.

In the event that hazardous soil, or historically deposited waste is encountered during the site bulk excavation phase, the contractor will notify DLRCC and provide a Hazardous/Contaminated Soil Management Plan, to include estimated tonnages, description of location, any relevant mitigation, destination for disposal/treatment, in addition to information on the proposed authorised waste collector(s). According to the RWMP, it is anticipated that there will be no asbestos containing materials (ACMs) generated during the Construction Phase of the Proposed Development. If ACMs are identified on site at a later stage, a full asbestos report will be carried out. Removal of asbestos or ACMs will be carried out by a suitably qualified contractor and ACM's will only be removed from site by a suitably permitted/licenced waste contractor. in accordance with S.I. No. 386 of 2006 Safety, Health and Welfare at Work (Exposure to Asbestos) Regulations 2006-2010.

Additionally, a Construction Environmental Management Plan will be in effect for the full duration of works. The Health and Safety Authority's "Code of Practice for Avoiding Danger From Underground Services" will be followed during construction and excavation activities and all underground and overhead utilities and public services will be identified and protected during the Construction Phase. All temporary suspensions to public services will be controlled by the relevant statutory undertaker, in accordance with standard protocols and all services will be reinstated as soon as possible post connection. Potable water networks and foul water sewers will be properly tested prior to connection.

16.2.9.1.2 Monitoring

The monitoring of Construction and Demolition (C&D) waste during the Construction Phase of the Proposed Development is recommended to ensure that impacts are not experienced beyond the site boundary. The Main Contractor will be responsible for monitoring and record keeping in respect of waste leaving the facility and that these records will be maintained on site.

16.2.9.2 Operational Phase

16.2.9.2.1 Mitigation

An OWMP (Enviroguide Consulting, 2024) has been produced for the Proposed Development which outlines measures to be taken to achieve waste prevention, maximum recycling and recovery of waste with a focus on diversion of waste from landfill wherever possible. Waste segregation will be implemented at the Proposed Development to minimise potential cross contamination of waste streams and facilitate subsequent re-use, recycling and recovery. The Management Company will be responsible for the provision of a leaflet to all new tenants encouraging good waste segregation and pictorial information detailing the waste streams that can be placed in each bin. In addition to this, clauses that support waste segregation targets will be included in relevant legal documentation e.g., tenancy agreements where possible. The OWMP also states that the facilities management company must employ suitably permitted or licenced contractors to undertake off-site management of their waste in accordance with all legal requirements. This includes the requirement that a waste contractor handle, transport and reuse / recover / recycle / dispose of waste in a manner that ensures that no adverse environmental impacts occur as a result of any of these activities.

16.2.9.2.2 Monitoring

The building management company, residents, tenants, retail units and creche operators will be required to maintain the bins and storage areas in good condition as required by the DLRCC Waste Bye-Laws. The waste strategy presented in the Operational Waste Management Plan (Enviroguide Consulting 2024) will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated areas for waste storage will provide sufficient room for the required receptacles in accordance with the details of this strategy. The areas will be fitted with CCTV for monitoring.

16.2.10 Materials Assets – Traffic

16.2.10.1 Construction Phase

16.2.10.1.1 Mitigation

Based on the analysis, the traffic impacts associated with construction of the Proposed Development are expected to be negligible. An outline Construction Management Plan provides details of measures proposed to further reduce the impact of construction activity. As the contractor to build the development has not been awarded and the construction programme and methodology may change a detailed construction management plan could be provided and agreed with the Planning Authority prior to work commencing on site.

16.2.10.1.2 Monitoring

Based on the result no monitoring is required.

16.2.10.2 Operational Phase

16.2.10.2.1 Mitigation

It has been determined that the operational phase Traffic impact is not applicable and therefore, no site-specific mitigation measures are proposed.

16.2.10.2.2 Monitoring

Based on the result no monitoring is required.