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## 17 MITIGATION AND MONITORING

### 17.1 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 comments made in Chapter 4 to Chapter 14

### 17.2 Competency of the Authors

This chapter has been prepared by Aisling Jones, Environmental Consultant with DNV. Aisling has a Bachelor of Civil Law degree from University College Dublin and a Master of Science degree in Environmental and Climate Law also from University College Dublin. Aisling has experience preparing Environmental Impact Assessment (EIA) Screening Reports, Windfarm Feasibility Studies, Construction Environmental Management Plans (CEMP)s, Interactions, Mitigation and Monitoring, Material Assets (Waste and Utilities) Chapters of Environmental Impact Assessment Reports (EIAR)s.

This report was reviewed by Grainne Ryan, Principal EIA Consultant at DNV. Grainne is an Environmental Consultant with over 11 years' experience, specialising in EIAs for strategic infrastructure, renewable energy, residential, industrial and pharmaceutical projects. Grainne has a B.A. in Geography, Planning and Environmental Policy, an MSc in Environmental Policy and a Post Graduate Diploma in Project Management.

This chapter has been approved by Catherine Keogan, Technical Director and EIA Lead at DNV. Catherine is an environmental consultant with 37 years' experience in consultancy, specialising in EIAs for large-scale residential, commercial developments, pharmaceutical, BESS and solar projects working closely with a range of developers, planning consultants and architects within the public and private sector. Catherine has a B.Sc. (Hons) in Analytical Science and a Post Graduate Diploma in Renewable Energy Technology Systems.

### 17.3 Summary of Mitigation Measures

#### 17.3.1 Population and Human Health

##### 17.3.1.1 Construction Phase

Mitigation

No specific mitigation measures are required during the construction phase of the Proposed Development in relation to population and human health, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to water quality, air quality, climate, noise and vibration, traffic and landscape and visual are identified in their respective chapters in this EIAR.

#### Monitoring

No specific monitoring measures are required during the construction phase of the Proposed Development in relation to population and human health, given the lack of direct effects resulting from the Proposed Development. However, where required, mitigation measures in relation to water quality, air quality, climate, noise and vibration, traffic and landscape and visual are identified in their respective chapters in this EIAR.

### **17.3.1.2 Operational Phase**

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### **17.3.2 Biodiversity**

#### **17.3.2.1 Construction Phase**

#### **Mitigation**

##### Mitigation Measures for Habitats during Construction Stage

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, 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/hedge-row 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 10 m of any retained trees, hedgerows and treelines
- A qualified arborist shall 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

In the case of the marsh habitat on site, it is not practical to retain the marsh habitat in its current location owing to changes in the ground levels to address site accessibility requirements. Therefore, it is instead proposed to translocate the habitat (comprising approximately 0.05 ha) to another location within the proposed development site. The proposed translocation approach is based on a review of case studies and is considered to be a pragmatic and feasible solution in light of design constraints and has been developed through a multidisciplinary iterative design approach with input from the design team's engineers, hydrogeologist, landscape design team and ecologists. The area identified for habitat translocation and creation is to provide a greater area (0.13 ha) to that being permanently lost to the proposed development. A replacement ratio greater than one-to-one is used in this instance because of the uncertainty inherent in habitat compensation and translocation.<sup>1</sup> This is detailed in the accompanying Marsh Translocation Report (Gannon & Associates, 2025).

Prior to works commencing, a detailed Ecology Site Management Plan specific to the contract programme will be prepared by a suitably qualified ecologist with reference to the construction programme. This may influence the timing and co-ordination of these works and the requirement for storage of soils. The management plan will be issued to the site contractor and team involved in the translocation works and will include a site-specific method statement outlining step-by-step actions for the site contractor to implement within a specified timescale, under the supervision and advice of the ecologist. It will also include a checklist of conditions to be assessed by the ecologist at the receptor site during ecological monitoring to be carried out prior to, during and post translocation works. The requirement for an Ecology Site Management Plan by the Contractor does not reflect any current inadequacy in the information presented here and relied upon in the EIA Report; rather the management plan to be prepared

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<sup>1</sup> CIEEM (2024) Guidelines for Ecological Impact Assessment in the UK and Ireland: Terrestrial, Freshwater, Coastal and Marine V1.3. Chartered Institute of Ecology and Environmental Management, Winchester.

will merely serve to provide more site-specific detail and methodological steps to the principles and proposals already outlined in this report.

Engineering solutions will be implemented as required to complement the site's existing hydrological and hydrogeological regime to create an appropriate degree of waterlogging at the receptor site to allow for habitat establishment and long-term persistence on site. These solutions will include diversion of subsurface drains into the receptor site area and/or creating areas of low elevation or depressions that can be flooded and retain water and/or excavating to the depth of the seasonal water-table<sup>2</sup>. The receptor site will be prepared in conjunction with any required engineering solutions through the removal of surface vegetation and the creation of suitable hollows/depressions to receive the translocated vegetation.

Once the receptor site has been suitably prepared, translocation involves the removal of turves, soil and/or plant species from the impacted donor site to the new receptor site. Turves of habitat will be carefully removed from the chosen donor site using a suitable excavator (*i.e.* with adequate capacity to carefully remove the intact turve). The excavated turves will be temporarily stored in standing water. Some of the underlying soils will then be excavated and used to line the receptor site hollow. Due to the wetness of soils associated with the habitat, it is recommended that, where possible, they are translocated immediately from the donor site to the receptor site. In the event of this not being possible, the duration of storage should be minimal. Soil translocation is useful to introduce chemically and physically suitable substrate for growth of target plant species, as well as a mixture of soil organisms such as bacteria, fungi and invertebrates, and a mixture of wetland vegetation (as seeds, tubers or rhizomes).<sup>3</sup> The turves should be translocated into the receptor site in early spring, at the end of dormancy, just before full growth.

In addition to turves excavated from the existing marsh habitat, supplemental landscape planting on and around the translocated turves of suitable species reflecting those recorded on site and typical of marsh may be implemented during the establishment phase as monitoring identifies gaps where the translocated vegetation may be locally slow to establish. Species that may be used would include those typical of a marsh habitat and is detailed in Marsh Translocation Report. Many of these species have been proposed to be utilised in the ongoing SDCC ICW projects, such as at Tymon Park<sup>4</sup>.

In compensating for the losses of these habitat types, the proposed development is not likely to result in a significant residual effect, at any geographic scale, on marsh (GM1).

#### Prevention of spread of invasive species during construction

Any Third schedule invasive species (*Allium triquetrum* and *Hyacinthoides hispanica*) must be removed from the proposed development site in advance of construction works.

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<sup>2</sup> Gilbert, O.L., and Anderson, P. (1998) *Habitat Creation and Repair*. Oxford University Press.

<sup>3</sup> Taylor N.G., Grillas P., Smith R.K. & Sutherland W.J. (2021) *Marsh and Swamp Conservation: Global Evidence for the Effects of Interventions to Conserve Marsh and Swamp Vegetation*. Conservation Evidence Series Synopses. University of Cambridge, Cambridge, UK.

<sup>4</sup> Nicholas O'Dwyer Ltd. (2019) River Poddle Flood Alleviation Scheme, Volume 4 EIAR: Appendix 5-3 Integrated Constructed Wetland Report.

- A confirmatory pre-construction invasive species survey will be undertaken by an ecologist, arranged by the appointed contractor/client to confirm the absence, presence and / or extent of all Third Schedule non-native invasive species within the footprint of the proposed development site
- During advance works and prior to commencement of construction, any areas where Third Schedule non-native invasive species have been recorded must be clearly fenced off (in order to avoid spreading seeds or plant fragments around or from the site) prior to their excavation and removal off-site to a licenced facility for invasive species by an appointed invasive species management (ISM) contractor which shall be completed prior to the commencement of construction works. Earthworks or machinery movement must be avoided in any areas where non-native invasive species have been identified during the pre-construction surveys, until the relevant stands have been eradicated, by the ISM contractor and/or under the supervision of the ISM contractor.
- All equipment and machinery will be cleaned prior to entry into the proposed development site as biosecurity measures to avoid transfer of invasive species on equipment and machinery which may have been used elsewhere.
- Erection of clear signage will be undertaken at the construction compound (and any discrete construction areas) and inclusion of detail during toolbox talks or similar (environmental induction) for construction staff in respect of the management of Third Schedule non-native invasive species. The signage and notification should be easily understood so that users are aware of the measures to be taken for the locations of non-native invasive species on site
- In consultation with the ISM contractor, identify dedicated access points into and out of fenced off areas. These shall not be breached until such time that the ISM contractor, 1) has confirmed eradication / removal of non-native invasive species, or 2) is present to supervise works to commence the treatment / eradication process;
- Where possible, the locations of dedicated footwear and wheel wash facilities should be identified and updated by the ISM contractor. Where a dedicated / bespoke wheel wash cannot be installed owing to space limitations, the ISM contractor shall, in conjunction with the appointed contractor, ensure that no excavated loose material is allowed offsite from within an exclusion zone. Similarly, where plant that is used to excavate soils, it shall be visually checked for loose soil before movement to another part of site (where possible, the movements of tracked machinery should remain outside the non-native invasive species exclusion zone as defined by the ISM contractor or strictly supervised by the ISM contractor where unavoidable). Loose soil shall be scraped off and the material double-bagged and brought to a clearly demarcated and dedicated quarantine area for disposal to an authorised facility, and a solution of Virkon® (or similar approved disinfectant) applied to machinery to ensure that no obscured seed/root material remains viable.
- Vehicular movements within any exclusion area shall be minimised as far as is practical.

- Machinery which has been used for the transport and / or excavation of infected / suspected infected vector material shall be thoroughly washed down, and the washings captured in a quarantined bunded container for disposal. All such machinery / plant shall not be permitted to commence work elsewhere on or off-site until written confirmation of clearance of vector material has been undertaken.;
- Dedicated wash down and solution capture should be set up in the construction compound. All washings should be stored in a quarantined bunded container that is rated for such storage until such time that they are removed offsite for disposal and a facility that is authorised to accept such waste;
- Except in very particular circumstances, under the guidance of the ISM contractor, there shall be no temporary storage of infected / suspected infected soils on-site;
- Where small volumes e.g., volume capable of being double bagged in quarantine bags such as cut plants, bulbs or loose soil occur, it may be practical to bag and/or containerise the material and bring it to a clearly demarcated and dedicated quarantine area within the construction compound until such time that the material is disposed of to an authorised facility, similar to the process of disposing of bulk excavated infected soil. The temporary storage of small amounts of infected material shall not occur within 50m of any watercourse and any land within an identified flood zone.
- Where the movement of any Third Schedule species is required off-site, a licence will be required from NPWS under Section 49 of the European Communities (Birds and Natural Habitats) Regulations, 2011 (as amended) in advance of any movement to a site/facility licenced to accept such waste.
- In the case of *Allium triquetrum* and *Hyacinthoides hispanica* within the proposed development site, eradication of infestations can be achieved through physical removal. Hand digging of individuals should be carried out when above-ground biomass is visible (i.e. early spring) ensuring that all biomass including bulbs collected.

#### Protection of Vegetation from Dust during Construction

To control dust emissions during construction works standard mitigation measures shall include: spraying of exposed earthwork activities and site haul roads during dry and/or windy conditions; provision of wheel washes at exit points; control of vehicle speeds and speed restrictions (20 km/h on any un-surfaced site road); covering of haulage vehicles; and sweeping of hard surface roads. These procedures will be strictly monitored and assessed on a daily basis.

#### Protection of water quality

Mitigation measures to protect surface water in the receiving environment during construction are described in Chapter 7 of this EIAR, and in the project CEMP, and include the following:

- A riparian buffer zone of 20 metres will be maintained at all waterbodies. Entry to the stream channel by vehicles and/or personnel will not be permitted under normal circumstances. Works will be carried out from the bank side. Where instream works are

proposed however, they will be restricted to the period 1st July through 30th September, inclusive to minimise the risks to any salmonids downstream,

- Road stream crossings will be box culverts in design due to the associated site constraints (i.e. the presence of trunk water mains at the location of the proposed crossings and the requirement for the achievement of greater than minimum vertical separation), the requirement to tie into existing roads, and the narrow width of the watercourse on site. Embedded culverts will be buried to a depth of 500mm below the stream bed at the natural gradient and will be back filled with clean gravel to match the existing stream profile. The culvert will be sized to maintain the natural channel width. The stream crossings will be implemented as per a method statement agreed by the appointed contractor and IFI,
- There will be no direct discharges to surface waters during the construction phase,
- Prior to any machinery working on site for any purpose, the working area will be marked out with wooden stakes and where deemed necessary, hazard tape will be erected to identify the working limits,
- Provision of measures to prevent the release of sediment during the construction work will be installed prior to any site clearance. In respect to works adjacent to the drainage ditches and streams with flowing water, these measures may include but not be limited to the use of silt fences, sedimentation mats etc.,
- Provision of exclusion zones and barriers (sediment fences) between earthworks, stockpiles and temporary surfaces to prevent sediment washing into the receiving water environment,
- Temporary construction surface drainage and sediment control measures will be in place before earthworks commence,
- Working limits to be checked at the end of every day by the Site Manager
- If pouring of cementitious materials is required for the works adjacent to a pond, surface water drainage features, or drainage features connected to same, this will be carried out during dry weather
- Discharge water generated during placement of concrete will be removed off site for treatment and disposal
- Where stockpiling is required, temporary stockpiles will be located >20 metres from any water features. Three sides will be surrounded with silt fences with access from the fourth (uphill) side. Sides will be smoothed and collection of run-off considered i.e. discharging to a settlement pond etc.
- The contractor will avoid work involving moving of soil during heavy rainfall to minimise potential for entrainment of silt. Where forecasts indicate heavy rainfall events, works should be rescheduled accordingly
- Pumped concrete will be monitored to ensure no accidental discharge. Mixer washings and excess concrete will not be discharged to surface water. Concrete washout areas will be located remote from any surface water drainage features to avoid accidental discharge to watercourses
- No storage of hydrocarbons or any polluting chemicals will occur within 50m of the surface water network. Fuel storage tanks will be bunded to a capacity at least 110% of the volume of the storage tank (plus an allowance of 30mm for rainwater ingress). Re-fuelling of plant will not occur within 50m of the surface water network and only in bunded refuelling areas

- Emergency procedures and spillage kits will be available and construction staff will be familiar with emergency procedures
- Implementation of measures to minimise waste and ensure correct handling, storage and disposal of waste
- If any heavily contaminated land is encountered during construction, it will be removed off-site and be disposed of at a licenced waste facility
- Contaminated groundwater, if encountered on site, could result in contaminated waters being discharged from the construction site. Any such contaminated waters will be treated using best practice, appropriate measures/controls dependent on the nature of the contamination prior to discharge to the surface water network
- There will be no direct pumping of contaminated water from the works to the surface water drainage/stream network at any time
- Foul drainage from site offices and compounds, where not directed to the existing wastewater network, will be contained and disposed of off-site in an appropriate manner and in accordance with the relevant statutory regulations, to prevent the pollution of watercourses
- An Emergency Response Plan detailing the procedures to be undertaken in the event of flooding, a spill of chemical, fuel or other hazardous wastes, a fire, or non-compliance incident will be prepared
- Ensure site staff are trained in the implementation of the Emergency Response Plan and the use of any spill control equipment as necessary
- The contractor will employ an environmental specialist who will monitor water quality upstream and downstream of the area of works. Data on pH, conductivity, and suspended solids will be collected as follows:
  - Twice weekly visits during general site works
  - Daily site visits during key construction activities (to be agreed between the environmental specialist and South Dublin County Council), e.g. during installation of the proposed outfall, during and immediately after clearance of on-site vegetation.
  - Event inspection e.g. following heavy rainfall events or during concreting works
- Monitoring will be undertaken for a period of at least two months prior to works commencing and one-month post construction. Trigger concentrations should be agreed at commencement and based on the baseline established in the two months prior to works commencing. Note: Additional measures will be implemented in the event that threshold concentrations are surpassed
- All monitoring data should be collated to show trends for indicator parameters pH, conductivity, suspended solids and hydrocarbons, and will be shared at regular intervals with South Dublin County Council.

These mitigation measures are for the protection of the water quality within the Corbally, Coldwater, and Cooldown streams only, and not for the protection of European Sites downstream as there are no significant effects likely to arise on European sites as a result of water quality impacts associated with the proposed development, as discussed above in Section 6.1.

#### Mitigation Measures for Badgers during Construction Stage

The mitigation measures described below follow the recommendations set out in the Guidelines for the Treatment of badgers during the Construction of National Road Schemes (National Roads Authority, 2006). These guidelines set out the best practice approach in considering and mitigating impacts on badgers during construction works.

As badger could potentially establish new setts in the future within the Zol of the proposed development, a pre-construction check of all suitable habitat within the proposed development boundary will be required within 12 months of any constructions works commencing. Any new badger setts present will be afforded protection in line with the requirements set out in the TII/NRA guidance document as follows:

- Badger setts will be clearly marked and the extent of bounds prohibited for vehicles clearly marked by fencing and signage
- No heavy machinery shall be used within 30m of badger setts; lighter machinery (generally wheeled vehicles) shall not be used within 20m of a sett entrance; light work, such as digging by hand or scrub clearance shall not take place within 10m of sett entrances
- During the breeding season (December to June inclusive), none of the above works shall be undertaken within 50m of active setts, nor blasting or pile driving within 150m of active setts
- Works can be undertaken within these zones following consultation with, the approval of and, if required, under the supervision of a badger ecologist

As the proposed development will not result in the permanent loss of any badger setts, there is no requirement to construct any artificial setts as part of the mitigation strategy.

#### Mitigation Measures for Otter During Construction Stage

The mitigation measures as described above in Section 5.9.1.1 to protect water quality within the local receiving environment, will also mitigate for habitat degradation impacts on otter species.

#### Mitigation for Birds during Construction Stage

Where feasible, vegetation (e.g. hedgerows, trees, scrub and grassland) will not be removed, between the 1st March and the 31st 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.

#### Mitigation for Amphibians during Construction Stage

##### *Disturbance and Mortality Risk*

If works to clear any of the habitat features suitable to support amphibian species are to begin during the season where frogspawn or tadpoles may be present (February – mid-summer), or

where breeding adult newts, their eggs or larvae may be present (mid-March – September), a pre-construction survey will be undertaken to determine whether breeding amphibians are present.

In the case of common frog, any frog spawn, tadpoles, juvenile or adult frogs present will be captured and removed from affected habitat by hand net and translocated to the nearest area of available suitable habitat beyond the Zol of the proposed development by a suitably licensed individual.

In the case of smooth newt, individuals will be captured and removed from affected habitat either by hand net or by trapping and translocated to the nearest area of available suitable habitat, beyond the Zol of the proposed development by a suitably licensed individual. If used, the type and design of traps shall be approved by the NPWS. This is a standard and proven method of catching and translocating smooth nest.

If the size or depth of the habitat feature is such that it cannot be determined whether all amphibians have been captured, it will be drained under the supervision of a suitably experienced ecologist to confirm that no amphibian species remain before it is destroyed or infilled. Any mechanical pumps used to drain the habitat feature will have a screen fitted, and be sited, such that no amphibian species can be sucked into the pump mechanism.

Any capture and translocation works shall be undertaken immediately in advance of site clearance/construction works commencing.

#### *Protection of Water Quality*

The mitigation measures as described above in Section 5.6.1 to protect water quality within the local receiving environment, will also mitigate for habitat degradation impacts on amphibians.

#### Mitigation Measures for White-clawed crayfish during construction stage

The mitigation measures as described above in Chapter 5 Section 5.6.1 to protect water quality within the local receiving environment, will also mitigate for habitat degradation impacts on white-clawed crayfish.

#### Mitigation Measures for bats during Construction Stage

##### *Measures to Protect Bats during the Removal of Roosts*

The following mitigation measures are proposed in relation to trees identified as having potential to support roosting bats (Chapter 5, Figure 5-8). Bats could occupy suitable roosting features at any time prior to the commencement of works. Therefore, there is an inherent risk that bats could be affected by the proposed felling works. The following mitigation procedures will be followed:

- Where possible, felling of confirmed or high suitability potential tree roosts will be undertaken during the periods April – May or September – October as during this period bats are capable of flight and may avoid the risks from tree felling if proper measures are undertaken, but also are neither breeding nor in hibernation. Pre-felling checks of potential roost features to determine if bats are present.

- In advance of felling, a bat emergence survey should be undertaken to confirm absence of roosting bats on the night immediately preceding the felling operation to determine if bats are present. Use of detectors alone may not be sufficient to record bat emergence and re-entry in darkness. Therefore, the emergence survey will be carried out using infra-red illumination and video camera(s) and bat detectors.
- Where it is safe and appropriate to do so for both bats and humans, such trees may be felled using heavy plant to push over the tree. In order to ensure the optimum warning for any roosting bats that may still be present, the tree will be pushed lightly two to three times, with a pause of approximately 30 seconds between each nudge to allow bats to become active. The tree should then be pushed to the ground slowly and should remain in place until it is inspected by a bat specialist
- Trees should only be felled “in section” where the sections can be rigged to avoid sudden movements or jarring of the sections
- Where remedial works (e.g. pruning of limbs) is to be undertaken to trees deemed to be suitable for bats, the affected sections of the tree will be checked by a bat specialist (using endoscope under a separate derogation licence held by that individual) for potential roost features before removal. For limbs containing potential roost features high in the tree canopy, this will necessitate the rigging and lowering of the limb to the ground (with the potential roost feature intact) for inspection by the bat specialist before it is cut up or mulched. If bats are found to be present, they will be removed by a bat specialist licenced to handle bats and released in the area in the evening following capture
- If any bat tree roosts are confirmed, and will be removed by the proposed felling works, then a derogation licence will be required from the NPWS and appropriate alternative roosting sites will be provided in the form of bat boxes.

### Measures to Control and Reduce Light Spill During Construction

During construction, any external lighting to be installed, including facilitating night-time working or security lighting, on the site shall be sensitive to the presence of bats in the area, downlighting, and time limited where possible. Lighting of sensitive wildlife areas and primary ecological corridors (e.g. along the central hedgerow/watercourse, and hedgerow boundaries of the site) and light pollution in general should be avoided.

Lighting of the site during construction is designed in accordance with the following guidance:

- Guidance Notes for the Reduction of Obtrusive Light GN01 (Institute of Lighting Professionals, 2020)
- Guidance Note Bats and Artificial Lighting at Night GN08 (Institute of Lighting Professionals, 2023)
- Bats & Lighting - Guidance Notes for Planners, Engineers, Architects and Developers (Bat Conservation Ireland, December 2010)
- Bats and Lighting in the UK – Bats and the Built Environment Series (Bat Conservation Trust UK, January 2008).

## 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 preconstruction 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 Scheme. Pre-construction surveys for PRFs, invasive species, amphibians, breeding birds and badger will be carried out as described in the respective sections above.

### 17.3.2.2 Operational Phase

## Mitigation

### Mitigation measures for habitat loss

The landscaping plan for the proposed development site includes for the replacement planting of hedgerows and trees throughout the site of native species to compensate for the loss of hedgerow within the site. In the case of the central hedgerow along the Cooldown watercourse, 186 linear metres of hedgerow habitat is to be lost across six separate sections. The landscape planting schedule will include for the planting of an additional 2070 m<sup>2</sup> of hedgerow habitat with 280 trees, thereby mitigating the loss of this habitat. While there will be some habitat loss in the short term during the construction phase of the proposed development, the planting schedule will result in an overall net gain for hedgerow habitat, and therefore the proposed development is not likely to result in a significant residual effect on these habitats, at any geographic scale.

### Prevention of spread of invasive species during operation

The bulk importation of material from offsite could potentially result in the accidental spread of Third Schedule species, as it is uncertain if these site(s) are free from non-native invasive species. This is likely less an issue for road building material. However, in terms of landscaping, if soil is imported to the site for landscaping, infilling or embankments, the appointed contractor shall seek documentation from suppliers confirming that the material is free from invasive species.

Following the construction of the proposed development, there may be ongoing treatment programmes which extend for a number of years into the operational phase. Notwithstanding this fact, it is important that the proposed development site is systematically re-surveyed during its early operational phase, particularly around areas where management / eradication measures were enacted, to determine the success of control measures and to identify areas where invasive plants may be reinvading. This post-construction surveillance should be carried out for at least two years post completion (or as advised by the ISM contractor of all mitigation measures).

The above measures are important for all Third Schedule species, where they occur, as maintenance works associated with landscaping, such as mowing and hedge cutting have the potential to spread these species via the dispersal of very small amounts of plant material.

### Mitigation Measures for Bats during Operation Stage

Any light spill affecting bat use of habitats outside of the proposed development boundary will be minimised, particularly along the boundaries of the site, and along the central boundary. Light levels during construction and operation in these areas will be maintained as close to baseline levels as is practicable.

Ecological input was provided to the lighting design, to ensure the sensitive siting and design of the lighting elements with respect to bats. This includes careful consideration of light placement on buildings, column heights and luminaire design. Luminaires have been selected which do not emit UV light (e.g. metal halide and fluorescent light sources have been avoided), and which are designed using full cut off. These will be mounted horizontally, with no tilt, to ensure there is no direct upward light.

Through the implementation of sensitive lighting design and the use of forward throw luminaires, lux levels on the eastern, western, and central hedgerows (with the exception of road/footpath crossing points) has been kept at or below 1.0 lumen.

### **Monitoring**

It is recommended that post installation monitoring of any bat boxes that need to be installed as part of the mitigation measures outlined in Section 5.6.1 is carried out to determine the efficacy of this measure. These checks will be undertaken in years 1, 3 and 5 post construction with a memo provided to the client following each check.

It is recommended that post-construction monitoring for invasive species should be carried out for at least two years post completion, as outlined above.

It is recommended that monitoring of petrol interceptors installed as part of the SuDS features should be regularly inspected, cleaned, and professionally serviced to prevent pollution to the downstream environment.

Monitoring of the receptor site for Marsh habitat will be carried out by a suitably qualified and experienced ecologist pre-compensation, during and post-compensation as described in Marsh Translocation Report in order to:

- Ensure that potential issues that may deter the success of the compensation are identified at an early stage and addressed through adaptive management measures; and
- Determine the overall success of the habitat compensation.

Adaptive management measures will be targeted to address the specific issues identified by the monitoring and may be varied. For example, they could include translocation of additional turves to replace those that have failed, and/or additional seeding where this is deemed necessary to improve vegetation cover/presence.

This area of habitat should be monitored in years 1, 3 and 5 post-construction by a suitably qualified and experienced ecologist to monitor habitat quality, species richness, as well as potential scrub encroachment and invasive species spread/colonisation.

### 17.3.3 Land and Soils

#### 17.3.3.1 Construction Phase

##### Mitigation

During the construction phase, all works will be undertaken in accordance with the Construction Environmental Management Plan (CEMP) (DNV, 2025a; submitted with the planning application under separate cover) and the Resource and Waste Management Plan (RWMP) (DNV, 2025b; submitted with the planning application under separate cover). Following appointment, the contractor will be required to further develop the CEMP and RWMP to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground and surface water with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001). The CEMP and RWMP 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.

##### Import of Soil, Subsoil and Aggregate Materials

Contract and procurement procedures will ensure that all imported soil, subsoil, and aggregate materials required for the construction phase of the Proposed Development are sourced from reputable suppliers operating in a sustainable manner and in accordance with industry conformity standards, statutory obligations, and the relevant provisions of the RWMP (DNV, 2025b). Where applicable, the importation of soil and stone from other developments will be carried out in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011, ensuring that such materials are not considered waste and are suitable for beneficial use.

All imported materials will be subject to robust management and control procedures, including testing for contaminants, invasive species, and other anthropogenic inclusions, and assessment of their suitability for use in accordance with the engineering and environmental specifications for the Proposed Development. As a result, any unsuitable material will be identified prior to unloading or placement on site, thereby ensuring environmental protection and compliance with regulatory requirements.

##### Airborne Dust Generation

Dust and fine particle generation from construction and demolition activities on the site can be substantially reduced through the selection of adequate mitigation techniques and effective management. The most effective technique is to control dust at source and prevent it from becoming air borne by implementing the following mitigation measures:

- Excavated soils will be carefully managed and maintained to minimise potential effect on soil quality and soil structure.
- Handling of soils and materials will be undertaken in accordance with documented procedures outlined in the CEMP and RWMP 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.

- Vehicles travelling on any unsurfaced site roads will have their speed restricted to 20 kph.
- Footpaths immediately around the site will be cleaned by hand regularly, with damping as necessary.
- High level walkways and surfaces such as scaffolding will be cleaned regularly using safe 'wet' methods, as opposed to dry methods.
- Vehicle waiting areas or hard standings will be regularly inspected and kept clean by brushing or vacuum sweeping and will be regularly sprayed to keep moist, if necessary.
- Dust dispersal over the site boundary will be minimised using static sprinklers or other watering methods as necessary.
- Equipment and techniques for cutting / grinding / drilling / sawing / sanding etc, which minimise dust emissions and which have the best available dust suppression measures, will be employed
- Prior to commencement, the main contractor will identify the construction operations which are likely to generate dust and to draw up action plans to minimise emissions, utilising the methods highlighted above. Furthermore, the main contractor will prepare environmental risk assessments for all dust generating processes which are envisaged.
- The main contractor will allocate suitably qualified personnel to be responsible for ensuring the generation of dust is minimised and effectively controlled.
- The name and contact details of a person to contact regarding air quality and dust issues will be displayed on the site boundary, this notice board will also include head/regional office contact details.

Potential effects 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 to assessment of suitability for use in accordance with engineering and environmental specification for the Proposed Development. This will include:

- Defining the criteria by which the suitability of the soils for reuse will be assessed (e.g., analytical parameters and limits, the engineering requirements such as geotechnical parameters for the material to be used within the works).
- Delineation of areas where excavated soil is intended for disposal offsite as waste, and where it is intended for reuse onsite.
- Identification and recording of the location from where the soil will be excavated and its proposed reuse location and function.
- Engineering assessment to confirm its suitability for reuse.
- Any proposed treatment or processing required to enable its reuse, as well as any associated treatment permits, or licences required.

### **Management and Control of Soils and Stockpiles**

Segregation and storage of soils for re-use onsite or removal offsite and waste for disposal offsite will be segregated and temporarily stored onsite pending removal or for reuse onsite in

accordance with the CEMP (DNV, 2025a) which will be updated by the main contractor in advance of construction works commencing.

Where possible, stockpiling of soil and stone 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 (i.e., watercourses). 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.

When a stockpile has been sampled for re-use or waste classification purposes, it will be considered to be complete, and no more soil will be added to that stockpile prior to removal. An excavation/stockpile register will be maintained on-site.

The reuse of suitable excavated soil and subsoil for the Proposed Development (i.e., landscaping or engineering) will be undertaken in accordance with the engineered design and landscape plan for the Proposed Development. Surplus or unsuitable soils will be removed offsite.

Surplus material, not suitable for reuse or awaiting reuse onsite, will be segregated, and stockpiled appropriately in accordance with the measures outlined in the CEMP (DNV, 2025a). To minimise the overall effect on soils arising during the construction works, the following mitigation measures will be adhered to.

- A designated temporary storage area will be identified and clearly marked on site.
- All stockpiles will be assigned a unique stockpile identification number for traceability.
- Materials will be segregated by type and destination, including those identified for reuse on site, reuse off site, and waste. All segregation, storage, and stockpiling locations will be clearly delineated on site drawings.
- Soil stockpiles will be covered to prevent surface water run-off and the generation of windblown dust.
- Topsoil will not be stored in piles exceeding 2 metres in height to prevent degradation of the soil structure. It will be kept as dry as practicable and reused as soon as possible to minimise deterioration from prolonged storage or excessive handling.
- Any waste materials temporarily stored or stockpiled will be placed on impermeable surfaces, such as high-grade polythene sheeting, hardstand areas, or in skips, to prevent cross-contamination with underlying soils or other materials.
- Regular watering will be undertaken to maintain adequate moisture content in exposed soils, enhancing stability and suppressing dust emissions.
- Stockpile volumes will be kept to a minimum and, where feasible, located away from sensitive receptors such as residential areas.
- Where necessary, stockpiles will be sheeted or dampened to further control dust and erosion.
- Earthworks and excavations will be kept damp where necessary and reasonably practicable, particularly during dry or windy conditions.
- All stockpiles will be located a minimum of 20 metres from any watercourse to reduce the risk of sediment run-off and protect surface water quality.

All surplus materials and any waste generated from construction activities 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 reuse, recycling and recovery.
- Prevent hazards to site workers and the general public during the construction phase (largely noise, vibration and dust).

### Soil Structure

To mitigate potential impacts on soil structure during construction, the following measures will be implemented:

- The extent of the required work area and the bulk excavation footprint will be minimised where practicable to avoid unnecessary disturbance of soil. This includes reducing tracking over undisturbed soil and subsoil outside designated excavation zones, thereby limiting compaction and rutting from construction traffic.
- Topsoil and subsoil will be segregated and stored separately in accordance with best practice to preserve their structure and quality, ensuring suitability for reuse on site.
- Disturbed subsoil layers will be stabilised as soon as practicable, through activities such as backfilling of service trenches, construction of road capping layers, building foundations, and landscaping. The duration of exposure of subsoil will be minimised to reduce the risk of degradation from weathering (e.g. drying, erosion, or waterlogging).
- Stockpiles of excavated soil and subsoil will be protected for the duration of the works and strategically located to minimise double handling. Topsoil and subsoil stockpiles will be clearly separated and identified.

These measures are designed to maintain the physical integrity, fertility, and drainage characteristics of the soil, supporting its reuse and minimising environmental impact in line with good construction and environmental management practices.

### Export of Resource (Soil and Subsoil) and Waste

All surplus materials and any waste will be removed offsite in accordance with the requirements outlined in the CEMP (DNV, 2025a) and the RWMP (DNV, 2025b) and will be managed in accordance with all legal obligations.

It will be the contractor's responsibility to either; obtain a waste collection permit or, to engage specialist waste service contractors who will possess the requisite authorisations for the collection and movement of waste offsite.

Where appropriate, excavated soil and material intended for recovery or disposal offsite will require appropriate waste classification in order to select an appropriate receiving facility. Assessment of the excavated material will be carried out with due regard to the following guidance and legislation:

- Environmental Protection Agency document entitled Waste Classification; List of waste and determining if waste is Hazardous or Non-Hazardous.
- EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002).
- Environmental Protection Agency documented entitled Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities.
- Environment Agency, 2018. Technical Guidance WM3: Guidance on the classification and assessment of waste.

- Any other guidance or legislation that might be applicable or relevant at the time of disposal.

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/permited) 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.

Waste bins, containers, skip containers and storage areas will be clearly labelled with waste types which they should contain including photographs as appropriate.

Materials and waste will be documented prior to leaving the site. All information will be entered into a waste management register kept onsite. Waste collection permits for registered hauliers and certs of registration/ licenses/permits for authorised waste facilities will be kept on file at the head office.

All site personnel and sub-contractors will be instructed about the objectives of the CDWMP and informed of their responsibilities as a consequence of its provisions.

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. Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads.

### **Concrete Works**

The use of cementitious grout during the construction phase of the Proposed Development will be managed to avoid any risk of ground contamination, through the implementation of appropriate design measures and construction methods by the appointed contractor, in accordance with the CEMP (DNV, 2025a) and relevant industry standards.

The following mitigation measures will be adhered to when using concrete and cement-based materials:

- All ready-mixed concrete will be delivered to the site by truck.
- Concrete batching will take place off-site only.
- Wash-down and wash-out of concrete trucks will occur in a controlled, bunded area, with wash water collected in a container and disposed of via a licensed waste contractor, in accordance with relevant waste management legislation.
- Excess concrete will not be disposed of on-site under any circumstances.

- Pouring of cement-based materials will only be carried out in dry conditions, and pumped concrete will be actively monitored to prevent accidental discharge.
- A site-specific risk assessment for wet concreting will be completed prior to works commencing.
- Concrete pouring will not be permitted within 50 metres of any watercourse during adverse weather conditions, to prevent potential contamination of surface waters.

Weathering forecasting should be utilised to plan dry days for concrete pours. Prior to pours, the designated area of the site shall be free of standing water and plastic covers will be ready in the case of sudden rainfall event.

### **Handling of Fuels, Chemicals and Materials**

Fuelling and lubrication of equipment will be carried out in accordance with the procedures outlined in the CEMP (DNV, 2025a), in a designated area of the site away from any watercourses and drains (where not possible to carry out such activities offsite) and contained within constructed impermeable and bunded areas.

Any diesel, fuel or hydraulic oils stored onsite will be stored in designated areas. These areas will be located within a designated area placed furthest away from adjacent watercourses / drains and contained within constructed bunded areas

Bunds will have regard to current best practice for oil storage (Enterprise Ireland, BPGCS005) and Environmental Protection Agency guidelines 'Amendment to IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities' (EPA, 2013). 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.

Environmentally friendly materials will be used during the construction process including the use of biodegradable lubricants and hydraulic fluids for machinery and equipment.

Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised onsite is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the site. Only emergency breakdown maintenance will be carried out onsite. Drip trays and spill kits will be available onsite to ensure that any spills from vehicles are contained and removed offsite.

There may also be the requirement for use of portable generators or similar fuel containing equipment during the construction phase of the Proposed Development, which will be placed on suitable drip trays. Regular monitoring of drip tray content will be undertaken to ensure sufficient capacity is maintained at all times

The appointed contractor will maintain an emergency response action plan and emergency procedures will be developed by the appointed contractor in advance of any works commencing. Construction staff will be familiar with the emergency response plan.

Spill kits will be made available onsite and identified with signage for use in the event of an environmental spill or leak. A spill kit will be kept in close proximity to the fuel storage area for

use in the event of any incident during refuelling or maintenance works. Heavy machinery used on the site will also be equipped with its own spill kit

### **Emergency Procedures**

Emergency procedures will be developed by the appointed contractor in advance of works commencing and spillage kits will be available onsite including in vehicles operating onsite. Construction staff will be familiar with emergency procedures 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. The following mitigation measures will be adhered to as follows:

- Any required emergency 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 Proposed Development site and compliantly disposed of offsite. 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 in the event of accidental fuel spillages.
- All construction works staff onsite 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 land, soil and geology associated with the construction stage 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 offsite to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations 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 Uisce Eireann (UE).

### **Monitoring**

During the Construction Phase of the Proposed Development, the following monitoring measures will be implemented where appropriate:

- Routine inspections of construction activities will be carried out daily by the contractor staff to ensure all controls to prevent environmental effect, relevant to the construction activities taking place at the time, are in place. Environmental inspections will ensure

that the works are undertaken in compliance with the CEMP (DNV, 2025a) and that the requirements of the Grant of Planning and associated documentation are being adhered to during construction.

- Routine monitoring and inspections during refuelling and concrete works to ensure no adverse effects and compliance with avoidance, remedial and mitigation measures.
- The excavation and reuse of soil onsite will be subject to control procedures which will include soil quality testing to ensure suitability for onsite use in accordance with engineering and environmental specification for the Proposed Development that will be determined during the detailed design phase.
- Where the material is not suitable for re-use and considered a waste, additional sampling and assessment of soil and materials may be required to ensure that the materials are managed and removed offsite in accordance with waste management legislation. The waste classification of sample results will be based on the following method:
  - Soil sample collection and analysis in accordance with relevant industry standards including but not limited to:
    - EPA guidance document 'List of Waste & Determining if Waste is Hazardous or Non-hazardous and Waste Classification' (EPA, 2018); and
    - BS 10175:2011 Investigation of potentially contaminated sites - Code of practice (BSI, 2011).
  - Assessment of results to determine if the sample is a hazardous or non-hazardous waste and assigning a List of Waste (LoW) Code to the sampled material in accordance with EPA guidance 'Waste Classification – List of Waste & Determining if Waste is Hazardous or Non-Hazardous' (EPA, 2018).
  - The material will also be assessed to determine if the material meets the waste acceptance criteria for authorised landfills and soil recovery facilities as follows:
    - Screening the sample analytical results against the waste acceptance criteria (Landfill WAC) set out in the adopted EU Council Decision 2003/33/EC establishing criteria and procedures for the acceptance of waste at landfills pursuant to Article 16 and Annex II of Directive 1999/31/EC (2002); and
    - Screening the sample analytical results against the Maximum Concentrations and/or Soil Trigger Levels set out in the Environmental Protection Agency (2020) "Guidance on Waste Acceptance Criteria at Authorised Soil Recovery Facilities" (SRF WAC).
- The appointed contractor will monitor excavations to ensure consistency with the descriptions and classifications according to waste acceptance criteria testing carried out as part of the site investigations which will be undertaken in advance of construction works commencing.
- A dust deposition monitoring programme will be implemented during the construction phase in order to verify the continued compliance with relevant standards and limits. Where required, the appointed contractor will undertake dust monitoring at a range of nearest sensitive receptors during the construction phase of the Proposed Development with the Technical Instructions on Air Quality Control (TA Luft) dust deposition limit set at 350 mg/m<sup>2</sup>/day, averaged over one year and applied as a 30-day average.
- 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

### **17.3.3.2 Operational Phase**

#### **Mitigation**

Taking account of the design of the Proposed Development, it is concluded that there will be no likely significant effects on the receiving land, soil, or geological environment during the operational phase. The predicted effects are considered to be imperceptible and not significant in the context of the EIA Directive. Therefore, there is no requirement for mitigation measures for the operational phase.

#### **Monitoring**

There are no monitoring requirements specifically in relation to land, soil and geology during the operational phase of the Proposed Development

### **17.3.4 Hydrology**

#### **17.3.4.1 Construction Phase**

#### **Mitigation**

A Construction Environmental Management Plan (CEMP) has been prepared by DVN (DNV, 2025a; submitted with the planning application under separate cover). The CEMP will address construction environmental management during the construction phase of the Proposed Development. Following appointment, the contractor will be required to further develop the CEMP to provide detailed construction phasing and methods to manage and prevent any potential emissions to ground and surface water with regard to the relevant industry standards (e.g., Guidance for Consultants and Contractors, CIRIA-C532', CIRIA, 2001).

The CEMP will take cognisance of measures outlined in the EIAR and will be implemented for the duration of the construction phase, covering construction 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. The measures will address the main activities of potential impact which include:

- Control and management of water and surface runoff.
- Control and management of shallow groundwater during excavation and dewatering
- Management and control of soil and materials.
- Control of management of in-stream or near stream works.
- Control of management of materials from off-site sources.
- Control and management of piling.
- Appropriate fuel and chemical handling, transport and storage.
- Management of accidental release of contaminants at the site.

The construction works will be managed in accordance with all statutory obligations and regulations and with standard international best practice. Good construction management practices will minimise the risk of pollution from construction activities at the subject site including but not limited to:

- Construction Industry Research and Information Association (CIRIA), 2001. Control of Water Pollution from Construction Sites, Guidance for Consultants and Contractors.
- CIRIA, 2015. Environmental Good Practice on Site (C741).
- Enterprise Ireland Oil Storage Guidelines (BPGCS005).
- Environmental Protection Agency (EPA), 2013. IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities.
- CIRIA, 2007. The SuDS Manual (C697).
- UK Environment Agency, 2004. UK Pollution Prevention Guidelines (PPG).
- CIRIA, 2006. Control of Water Pollution from Linear Construction Projects: Technical Guidance (C648).
- Inland Fisheries Ireland (2016). Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters.

### **Control and Management of Instream Works and Works Adjoining Watercourses**

All open waterbodies at the site including the Corbally, Coldwater, and Cooldown will be protected for the duration of the works.

A 20m buffer will be retained at all open waterbodies. Site traffic will only be permitted within this buffer to facilitate instream and near stream works for the construction of the proposed headwalls to receiving waterbodies (i.e., Corbally, Coldwater, And Cooldown Streams), overflow to the Translocated Marshland Area and bridge crossings to facilitate vehicular, pedestrian and cyclist connections to adjoining developments at Corbally Heath and Corbally Glade to the east and Carrigmore Green to the north, and pedestrian/cyclist access into Carrigmore Park to the east.

Buffer zones will be established by erecting a silt fencing or bunding along the length of the open waterbodies (i.e., Corbally Stream, Coldwater Stream, and Cooldown Stream) with cognisance to Inland Fisheries Ireland (IFI) Guidelines on Protection of Fisheries during Construction Works in and Adjacent to Waters (IFI, 2016). Silt fencing will comprise wooden posts and double walled geotextile membrane buried in an 'L' shape to a minimum depth of 250mm. The silt fencing will act in filtering any potential surface water run-off from the site generated during the proposed works and will be retained in place for the duration of the construction phase until the development is complete. Heras fencing will be installed in front of the silt fencing at the Site to prevent "Site creep", the progressive movement of site activities towards this silt fence. The project specific CEMP (which will be prepared by the main contractor in advance of construction works commencing) will identify how this silt curtain is to be installed and maintained throughout the construction phase.

The silt fences will be monitored to ensure that they remain functional throughout construction of the Proposed Development. Where necessary, maintenance will be carried out on the fences to ensure that they continue to be effective. This will be particularly important after heavy rainfall events. The checks will be undertaken by the Environmental Manager. The frequency of monitoring will depend on the stage of works, and local environmental conditions. Daily checks may be appropriate during the initial site clearance, during works in the vicinity of the open waterbodies and during and after storm events. Weekly or bi-weekly checks may be appropriate at other times.

All instream works or works carried out in or adjacent to the the Corbally, Coldwater, and Cooldown Streams will adhere to the Inland Fisheries Ireland (IFI) Guidelines on Protection of

Fisheries during Construction Works in and Adjacent to Waters (IFI, 2016), the Transport Infrastructure Ireland (TII) Guidelines for the Crossing of Watercourses during the Construction of National Road Schemes (TII, 2008) and CIRIA C648 Control of Water Pollution from Linear Construction Projects (CIRIA, 2006).

All instream works will include the following measures:

- Road stream crossings will be box culverts in design due to the associated site constraints (i.e., the presence of trunk watermains at the location of the proposed crossings and the requirement for the achievement of greater than minimum vertical separation), the requirement to tie into existing roads, and the narrow width of the watercourse on site. Embedded culverts will be buried to a depth of 500mm below the stream bed at the natural gradient, and will be back filled with clean gravel to match the existing stream profile. The culvert will be sized to maintain the natural channel width. The stream crossings will be implemented as per a method statement developed by the appointed contractor in advance of construction works commencing and agreed with IFI as required.
- All works for the proposed translocation will be undertaken in accordance with the method statement prepared by Gannon & Associates Landscape Architecture (Gannon & Associates Landscape Architecture, 2025. Marsh Translocation Report; submitted with the planning application under separate cover). These works will be undertaken in advance of other construction works commencing and the contractor will ensure that appropriate temporary rewatering is utilised as appropriate until the proposed drainage network is established.
- A suitably qualified Ecological Clerk of Works (ECoW) will be present on-site during works for the construction of the overflow to the Translocated Marshland Area.
- Entry to the Corbally Stream by vehicles will be avoided, while vehicle usage along the banks will be restricted as much as practicable. Any machines working in close proximity of the watercourse must be protected against leakage or spillage of fuels, oils, greases and hydraulic fluids.
- Works will be carried out from the bank side, as best practice in-stream works will be restricted to the period 1<sup>st</sup> July through 30<sup>th</sup> September, to comply with the seasonal restrictions in salmonid rivers.
- Temporary diversion of water flow may be required to maintain continuous flow and prevent flooding during the connection process.
- Silt traps will be staggered along the length of the overflow, and not only at the lower reaches towards its outflow into the translocated wetland. Silt trap design can vary, from depressions added to the watercourse bed, to log sections laid lengthways into the drain, to the use of geotextile barriers. Once silt traps and silt fences become functional, they will be checked regularly and maintained as necessary, in order to ensure continued effectiveness throughout operations.
- Additional silt fences and other sediment control measures will be utilised as required to prevent sedimentation in the Corbally Stream.
- Regular monitoring of water quality upstream and downstream of the works area will be undertaken by the ECoW to detect any changes and take corrective actions if necessary.
- Existing vegetation will be preserved where possible and replant disturbed areas promptly to stabilize soil and reduce erosion.

Furthermore, works during the construction of the outfalls to the Corbally, Coldwater, and Cooldown Streams will include the following measures:

- The outfall headwalls will be constructed from precast concrete to allow their construction off site, while hoisting of the structure will be carried out from the site side of the riverbank.
- Once excavations for the outfall trenches are complete, the base and sides of the trenches will be seeded with a native wetland wild flora seed mix which will be allowed to establish for a 6–8-week period prior to the outfall trench becoming operational and receiving surface waters from the onsite drainage network. This is a grass mix with some wildflower elements which will aid the overall biodiversity approach/green infrastructure and provide “green” erosion prevention of the outfall channel and prevent siltation of the Corbally, Coldwater, and Cooldown Streams.

The contractor will employ an Environmental Clerk of Works (EnCoW) who will monitor water quality upstream and downstream of the area of works. The programme of water quality monitoring and locations of sampling will be agreed with SDCC in advance of construction works commencing. However, it is anticipated that data on pH, electrical conductivity, and turbidity, suspended solids and hydrocarbons will be collected as follows:

- Twice weekly visits during general site works
- Daily site visits during key construction activities (to be agreed between the environmental specialist, the appointed contractor and SDCC (e.g., during the construction of the translocated wetland, during installation of the proposed outfalls and stream crossings, during and immediately after clearance of on-site vegetation)).
- Event inspection (e.g., following heavy rainfall events or during concrete pours).

Monitoring will be undertaken for a period of at least two months prior to works commencing and one-month post construction. Trigger concentrations will be agreed at commencement and based on the baseline established in the two months prior to works commencing. It is noted that where a deterioration in water quality is observed downstream of the site this will be brought to the attention of the contractor by the Environmental / Ecological Clerk of Works, and any suitable contingency measures will be instigated.

All monitoring data will be collated by the EnCoW to show trends for indicator parameters pH, conductivity, turbidity or suspended solids and hydrocarbons, and will be shared with SDCC as requested.

### **Control and Management of Water and Surface Runoff**

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

Surface water runoff management will be required to prevent runoff entering excavations during construction. Surface water will require diversion around the open excavations using standard temporary drainage methods to ensure that surface water is effectively conveyed around works areas and with no adverse effects to the overall existing surface water flow regime.

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 OCEMP (DNV, 2025), the project specific CEMP and regulatory consents to minimise the potential impact on the local groundwater flow regime within the soil and bedrock.

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 (e.g., settlement ponds, silt traps, silt busters, silt socks and / or hydrocarbon interceptors). Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to temporary onsite settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge at a controlled rate.

As mentioned in Chapter 7 Section 7.7.1.1, silt fencing or bunding will be installed along the boundaries of all onsite and adjoining waterbodies including the Corbally Stream, Coldwater Stream, and Cooldown Stream.

Stockpiles of loose materials pending re-use onsite or removal offsite will be located as far as feasible from the Corbally Stream, Coldwater Stream, and Cooldown Stream (a minimum set back of 20m from watercourses will be maintained) and will be appropriately sealed / covered and a silt fence or bunding will be installed around it to ensure no soils and sediments are washed out overland to the receiving surface waterbodies. The silt fence or bunding will be installed on three sides of the stockpiled material with access from the fourth (up-hill) side.

The performance of all surface water management measures including settlement ponds and silt fences will be monitored to ensure that they remain functional throughout construction of the Proposed development. Where necessary, maintenance will be carried out to ensure that the measures continue to be effective. This will be particularly important after heavy rainfall events.

Unauthorised discharge of water (groundwater / surface water runoff) to ground, drains or watercourses will not be permitted. 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 Uisce Eireann (UE) under Section 16 of the Local Government (Water Pollution) Acts and Regulations for any water discharges to sewer or from South Dublin County Council (SDCC) under Section 4 of the Local Government (Water Pollution) Act 1977, as amended in 1990 for discharges to surface water.

Under no circumstances will any untreated wastewater generated onsite (from equipment washing, road sweeping etc.) be released to ground or to drains. Existing surface water drainage located along public roads will be protected for the duration of the works to ensure that any untreated wastewater generated onsite does not enter the public sewers.

There may be a temporary increase in the exposure of the underlying shallow groundwater during excavation works. Where necessary, surface water runoff will be prevented from entering open excavations with sandbags or other approved methods proposed by the appointed contractor. Furthermore, the appointed contractor will ensure that machinery does not enter the groundwater if encountered during construction.

The appointed contractor will avoid work involving moving of soil during heavy rainfall to minimise potential for entrainment of silt.

A regular review of weather forecasts of heavy rainfall will be conducted, and a contingency plan will be prepared for before and after such events to minimise any potential nuisances. As

the risk of the break-out of silt laden runoff is higher during these weather conditions, no work will be carried out during such periods where possible.

Public roads outside the site will be regularly inspected for cleanliness, as a minimum on a daily basis, and cleaned as necessary. Trucks entering / leaving the site will pass through a wheel washing system. The wheels of all lorries will be cleaned prior to leaving the site so that traffic leaving the site compound will not generate dust or cause the build-up of aggregates and fine material in the public domain. This will be carried out in a dedicated wash down zone with dedicated site personnel. The correct use and management of these will be undertaken by the appointed contractor to ensure that there is no harm or impact to the receiving water environment.

Discharge from any vehicle wheel wash area is to be directed to an onsite settlement tank for discharge to the UE foul network (subject to receipt of the relevant consent from UE) or by tankering of waste offsite by an appropriately authorised contractor. Any debris or sediment within the wheel-wash will be emptied periodically for disposal offsite at a licenced facility.

### **Concrete Works**

The use of cementitious grout during the construction of footpaths and other site infrastructure will be required. Any potential impact to water quality will be avoided through the use of appropriate design and methods that will be implemented by the appointed contractor and in accordance with the project specific CEMP (DNV, 2025a) and relevant industry standards.

Where possible precast concrete will be used for concrete works. However, where cast-in-place concrete is required (i.e., foundations, footpaths etc.), all work will be carried out to avoid any contamination of the receiving water environment. All work must be carried out in dry conditions and be effectively isolated from any groundwater and surface water.

The following mitigation measures will be implemented.

- All ready-mixed concrete will be delivered to the site by truck.
- Concrete batching will take place off-site only.
- Wash-down and wash-out of concrete trucks will occur in a controlled, bunded area, with wash water collected in a container and disposed of via a licensed waste contractor, in accordance with relevant waste management legislation.
- Excess concrete will not be disposed of on-site under any circumstances.
- Pouring of cement-based materials will only be carried out in dry conditions, and pumped concrete will be actively monitored to prevent accidental discharge.
- A site-specific risk assessment for wet concreting will be completed prior to works commencing.
- Concrete pouring will not be permitted within 50 metres of any watercourse during adverse weather conditions, to prevent potential contamination of surface waters.

Weathering forecasting should be utilised to plan dry days for concrete pours. Prior to pours, the designated area of the site shall be free of standing water and plastic covers will be ready in the case of sudden rainfall event.

### **Piling**

The project specific CEMP (which will be prepared by the main contractor in advance of construction works commencing) will identify how the proposed piling methodology will minimise the potential for the introduction of any temporary conduit between any potential

sources of contamination at the ground surface and underlying groundwater. The piling method will include procedures to ensure any potential impact to water quality is prevented, including preventing surface runoff or other piling/drilling fluids from entering the pile bores and surrounding formation. Where there is a requirement to use lubricants, drilling fluids or additives, the contractor will use water-based, biodegradable, and non-hazardous compounds under controlled conditions.

### **Handling of Fuels and Hazardous Materials**

Fuelling and lubrication of equipment will be carried out in a designated area of the site away from any watercourses and drains (where not possible to carry out such activities offsite).

Any diesel, fuel or hydraulic oils stored onsite will be stored in designated areas, these areas will be bunded and located away from surface water drainage and features. It is noted that the use of cleaning chemicals will be kept to a minimum. There will be clear labelling of containers so that appropriate remedial measures can be taken in the event of a spillage. Adequate security will be provided by the appointed contractor to potential pollutants against vandalism.

Bunds will have regard to Environmental Protection Agency guidelines 'Amendment to IPC Guidance Note on Storage and Transfer of Materials for Scheduled Activities' (EPA, 2013). 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.

All fuel storage areas will be bunded in the site compound and will be clearly marked. The bund will be at least 50m away from open waterbodies. A designated impermeable refuelling area will also be established with all plant brought to this point for filling. Spill kits will be kept in these areas in the event of spillages. Site crew will be trained in appropriate refuelling techniques. Equipment will not be left unattended during refuelling.

Strict supervision of contractors will be adhered to in order to ensure that all plant and equipment utilised on-site is in good working condition. Any equipment not meeting the required standard will not be permitted for use within the Proposed Development Site. Only emergency breakdown maintenance will be carried out on-site. Drip trays and spill kits will be available on-site to ensure that any spills from vehicles are contained and removed off-site.

There may also be the requirement for use of portable generators or similar fuel containing equipment during the construction phase of the Proposed Development, which will be placed on suitable drip trays. Regular monitoring of drip tray content will be undertaken to ensure sufficient capacity is maintained at all times.

### **Emergency Procedures**

Emergency procedures will be developed by the appointed contractor in advance of works commencing and spillage kits will be available onsite including in vehicles operating onsite. Construction staff will be familiar with emergency procedures through induction, toolbox talks, and method statements to ensure that all staff members are well-prepared and knowledgeable about the necessary steps to take in the event of an emergency (e.g., 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 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 offsite. 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 in the event of accidental fuel spillages.
- All construction works staff onsite 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 land, soil and geological environment associated with the construction phase of the Proposed Development.

### **Infrastructure**

All below ground foul drainage infrastructure will be constructed in accordance with current UE requirements to ensure that there are no potential effects to groundwater quality.

### **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 offsite to a licensed facility. All waste from welfare facilities will be managed in accordance with the relevant statutory obligations 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.

### **Removal of Surplus Materials and Waste**

All surplus materials and any waste will be removed offsite in accordance with the requirements outlined in the CEMP (DNV, 2025a) and the RWMP (DNV, 2025b) and will be managed in accordance with all statutory 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 (referred to hereafter as Article 27).

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.

### **Monitoring**

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

- An ECoW and EnCoW will be appointed to ensure best practices are carried out during critical stages of the construction works associated with surface water in particular works for the overflow to the translocated marshland area, construction of the proposed headwalls and bridge crossings.
- The ECoW will be present on-site during works for the construction of the overflow to the Translocated Marshland Area.
- The EnCoW will undertake visual inspection and monitoring (pH, electrical conductivity, turbidity, suspended solids and hydrocarbons) prior to, during and post overflow, headwall and bridge crossing construction works to ensure minimum disturbance of water quality in the receiving environment.
- The programme of water quality monitoring and locations of sampling will be agreed with SDCC in advance of construction works commencing. However, it is anticipated that monitoring will be undertaken for a period of at least two months prior to works commencing and one-month post construction and during works as follows:
  - Twice weekly visits during general site works
  - Daily site visits during key construction activities (to be agreed between the environmental specialist, the appointed contractor and SDCC (e.g., during the construction of the translocated wetland, during installation of the proposed outfalls and stream crossings, during and immediately after clearance of on-site vegetation)).
  - Event inspection (e.g., following heavy rainfall events or during concrete pours).
- All monitoring data will be collated by the EnCoW to show trends for indicator parameters pH, conductivity, turbidity or suspended solids and hydrocarbons, and will be shared with SDCC as requested. Where a deterioration in water quality is observed downstream of the site this will be brought to the attention of the contractor by the Environmental / Ecological Clerk of Works, and any suitable contingency measures will be instigated.
- Inspection records and summary reports from site supervision by the ECoW and EnCoW will be made available to SDCC upon request.
- Inspections will be undertaken by the contractor's appointed Environmental Manager or delegate during excavations and other groundworks to ensure that measures are protective of water quality outlined in this EIAR are fully implemented and effective and are in compliance with the CEMP (DNV, 2025a) and that the requirements of the Conditions of Planning, the NIS and associated documentation are being adhered to during construction.
- All surface water control measures including silt traps, silt fences and settlement ponds will be checked regularly and maintained by the Environmental Manager or delegate as necessary, in order to ensure continued effectiveness throughout the construction phase.
- Only suitably trained staff will undertake environmental site inspections.
- Discharges of groundwater and/or water pumped from excavations to surface water or foul sewers will be monitored where required in accordance with statutory consents (i.e., discharge license). This may include sampling and laboratory analysis of treated water prior to discharge.

- Routine monitoring and inspections will be undertaken during refuelling, concrete works to ensure no impacts and compliance with avoidance, remedial and mitigation measures

#### **17.3.4.2 Operational Phase**

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.

#### **Mitigation**

Based on the design of the Proposed Development there are limited potential sources of contamination during the operational phase.

Surface water will be managed in accordance with the principles and objectives of SuDS and the GDSDS to treat and attenuate water prior to discharging offsite. 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 effects on water quality and quantity (flow regime) during the operational phase of the Proposed Development.

Standard design and construction measures will be implemented to mitigate potential impacts associated with shallow groundwater. These include the incorporation of groundwater drainage systems around impermeable subsurface structures, such as building foundations, attenuation tanks, and temporary construction barriers. These measures will minimise the risk of groundwater mounding on the upgradient side of structures and reduce the potential for buoyancy-related issues.

Where building foundations and utility infrastructure intersect the groundwater table, appropriate structural design and perimeter drainage will be employed to prevent groundwater ingress and maintain the integrity of below-ground assets.

Stream crossings have been designed in accordance with OPW requirements, with soffit levels at least 500mm above the 1% Annual Exceedance Probability (AEP) flood level. Two vehicular crossings meet road level constraints and have received OPW Section 50 consent.

To manage shallow groundwater and reduce surface-level flood risk, a network of land drains will be installed across the site. These drains are designed to intercept and convey groundwater, discharging to the Corbally Stream, Coldwater Stream, and Cooldown Stream. As documented in the HRA (DNV, 2025c), the proposed drainage system has been designed with sufficient capacity to accommodate the total estimated 26.07 m<sup>3</sup>/day of intercepted shallow groundwater. This confirms that the system is appropriately engineered to manage anticipated volumes under steady-state conditions, while also contributing to flood risk reduction and the long-term viability of the translocated wetland habitat.

Foul water during the operational phase of the Proposed Development will ultimately discharge via the Ringsend WWTP to the Liffey Lower Estuary transitional waterbody. The Ringsend WWTP is operated in accordance with relevant statutory approvals issued by UE. Foul water from the site will only be discharged to the UE network under the appropriate consents from UE, and therefore, the Proposed Development will not cause a potential effect at any Natura 2000 sites associated with discharges from the site.

There is no other requirement for mitigation measures for the operational phase of the Proposed Development.

## 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.

### 17.3.5 Air Quality

#### 17.3.5.1 Construction Phase

##### Mitigation

Construction site dust control measures and good construction site management and practice is capable of effectively mitigating the potential for significant impact of fugitive dust emissions. Therefore, the potential for fugitive dust emission effects at the nearest sensitive receptors will be controlled to ensure impacts are of negligible significance.

The IAQM Guidance recommends that significance is only assigned to the effect after considering the construction activity with mitigation. Therefore, the detailed mitigation measures have been defined in a form suitable for implementation by way of a planning condition and will be included in a Construction Environmental Management Plan.

There are 18 sensitive residential properties <20m from the site boundary. Using the IAQM methodology for the assessment of air quality impacts from construction activities as shown in Table 8-8-16 has indicated that the risk of dust soiling for demolition is negligible and high risk for earthworks, construction and trackout. The impacts on human health are negligible for demolition and low risk for earthworks, construction and trackout. The ecological impacts are negligible for demolition and low risk for earthworks, construction and trackout.

In accordance with the IAQM Guidance, the highest risk category should be applied when determining proposed mitigation measures. Therefore, the mitigation measures applicable to a high risk site will be applied:

##### General Measures

###### *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.

###### *Dust Management*

- Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The DMP may include monitoring of dust deposition, dust flux, real-time PM<sub>10</sub> continuous monitoring

and/or visual inspections.

Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m<sup>2</sup>\*day) during the monitoring period between 28 - 32 days.

#### *Site Management*

- Record all dust and air quality complaints, identify cause(s), take appropriate measures to reduce emissions in a timely manner, and record the measures taken.
- Make the complaints log available to the local authority when asked
- Record any exceptional incidents that cause dust and/or air emissions, either on or offsite, and the action taken to resolve the situation in the logbook.
- Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary if applicable, 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.

#### *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 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. If they are being re-used on-site cover as described below
- 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.

- Impose and signpost a maximum-speed-limit of 15 mph on surfaced and 10 mph on unsurfaced haul roads and work areas.
- Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.

#### *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.
- 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.

The IAQM Guidance Mitigation Measures applicable to the specific works undertaken are as follows:

#### *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.
- Only remove the cover in small areas during work and not all at once.

#### *Measures specific to construction*

- Avoid scabbling (roughening of concrete surfaces) if possible
- Ensure sand and other aggregates are stored in bunded areas and are not allowed to dry out, unless this is required for a particular process, in which case ensure that appropriate additional control measures are in place.
- Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overflowing during delivery.
- 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 logbook.
- 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.

#### **Monitoring**

Monitoring of air quality and dust related impacts will be required during the construction stage only of the Proposed Development. The monitoring activities are to:

- 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 windowsills 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 local authority when asked
- Increase the frequency of site inspections by the person accountable for air quality and dust issues on site when activities with a high potential to produce dust are being carried out and during prolonged dry or windy conditions
- Monitoring of construction dust deposition along the site boundary to nearby sensitive receptors during the construction phase of the proposed development is recommended to ensure mitigation measures are working satisfactorily. This can be carried out using the Bergerhoff method in accordance with the requirements of the German Standard VDI 2119. The Bergerhoff Gauge consists of a collecting vessel and a stand with a protecting gauge. The collecting vessel is secured to the stand with the opening of the collecting vessel located approximately 2m above ground level. The TA Luft limit value is 350 mg/(m<sup>2</sup>\*day) during the monitoring period between 28 - 32 days.

### **17.3.5.2 Operational Phase**

#### **Mitigation**

There is no requirement for mitigation measures relating to the operational phase. The development has been shown to be not significant in terms of air quality. Future proposed engine improvements and a transition to electric vehicles will result in continued improvement in urban air quality into the future.

In terms of space heating, the proposal is expected to utilise electric heating for both hot water and space heating. Therefore, there will be no pollutant emissions to atmosphere from traditional combustion sources, such as oil or gas boiler heating systems.

#### **Monitoring**

No operational monitoring is required.

### **17.3.6 Climate**

#### **17.3.6.1 Construction Phase**

#### **Mitigation**

#### **Climate Resilience Avoidance, Remedial & Mitigation Measures**

During the construction stage specific climate resilience measures should focus on ensuring durability, water management, and energy efficiency while mitigating risks associated with extreme weather. Regarding the development's resilience to climate change, the Contractor will be required to mitigate the effects of extreme weather, such as heavy rainfall, flooding, windstorms, and temperature fluctuations, through site risk assessments and method statements.

Here are key Avoidance, Remedial & Mitigation Measures:

#### **Foundation & Site Preparation**

- Flood Resilient Foundations: Use raised foundations, elevated platforms, or piling where necessary in flood-prone areas.
- Sustainable Drainage Installation: Implement permeable surfaces, drainage channels, and attenuation tanks early in construction.
- Soil Stabilisation: Prevent erosion with silt fences, geotextiles, and retaining structures to withstand heavy rainfall.

#### **Structural Reinforcement**

- Wind-Resistant Framing: Use reinforced concrete or steel frames with proper anchoring to withstand storms.
- Secure Roof Fixings: Ensure hurricane straps, reinforced trusses, and mechanically fixed roof tiles to prevent wind damage.
- Impact-Resistant Windows & Doors: Install reinforced glass or shutters to reduce storm-related damage.

#### **Water & Moisture Management**

- **Damp-Proofing Measures:** Use high-quality damp-proof membranes (DPM) and damp-proof courses (DPC) in walls and floors.
- **Proper Drainage on Site:** Ensure temporary drainage solutions (e.g., trenches, sumps) to manage rainwater during construction.
- **Weatherproofing Structures:** Apply breathable but water-resistant membranes on external walls before cladding installation.

### **Material Selection & Handling**

- **Use Climate-Resilient Materials:** Opt for treated timber, marine-grade plywood, concrete with low permeability, and corrosion-resistant steel.
- **Storage & Protection of Materials:** Keep materials covered and off the ground to prevent water damage or degradation.
- **Low-Carbon Concrete & Insulation:** Use alternatives like GGBS (Ground Granulated Blast-furnace Slag) concrete and eco-friendly insulation.

### **Energy Efficiency & Passive Design Implementation**

- **High-Performance Insulation Installation:** Ensure proper fitting to avoid thermal bridging and moisture ingress.
- **Airtightness Testing During Construction:** Conduct interim blower door tests before final finishes to confirm air sealing effectiveness.
- **Green Roof Base Layers:** Install waterproofing and root barriers early if a green roof is part of the design.

### **On-Site Climate Adaptation Measures**

- **Construction Scheduling Considerations:** Plan for extreme weather events, avoiding major excavation or external works in heavy rain seasons.
- **Cold/Hot Weather Plan:** Strategies such as planned road gritting, thermal protection, chemical accelerants, temporary enclosures, and alternative heating/cooling solutions enable builders to overcome these obstacles and achieve successful project outcomes.
- **Temporary Wind & Rain Barriers:** Use tarpaulins, scaffolding covers, and temporary roofing to protect partially built structures.
- **Emergency Power Supply:** Have generators or battery backups on site to maintain critical construction processes.

### **GHG Resilience Avoidance, Remedial & Mitigation Measures**

Embodied carbon of materials and construction activities is the primary source of climate impacts during the construction phase. 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.

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:** Deploy modern, low-emission or electric machinery. Maintain equipment regularly to ensure optimal performance and reduced fuel use.
- **Renewable Energy:** Use renewable sources, such as solar panels or battery units, to power site operations where feasible.
- **Reduce Idling:** Enforce a no-idling policy for all vehicles and machinery to cut unnecessary emissions.
- **Sustainability Awareness:** Include carbon reduction in site inductions, toolbox talks, and reporting. Provide training for contractors and appoint sustainability champions to lead on-site initiatives.
- **Sustainable Transportation:** Promote carpooling, public transport, and electric vehicle use among site workers.
- **Monitoring and Reporting:** Track site emissions through fuel and energy use. Conduct regular checks and share findings to ensure compliance and continuous improvement.
- **Maintenance:** Keep all plant and machinery in good working order through scheduled inspections and servicing.

- **Waste Management:** Apply the waste hierarchy to reduce, reuse, and recycle materials. Avoid over-ordering and manage waste through a Construction and Demolition Waste Management Plan.
- **Sustainable Procurement:** Source low-carbon, locally available materials with environmental certifications to reduce embodied emissions.

## Monitoring

We recommend the following monitoring strategies to ensure compliance with the environmental objectives outlined in this EIA. These strategies are essential for effectively managing the environmental impacts associated with the demolition and construction phases, with a particular focus on resource recovery, waste management, and the reduction of GHG emissions.

### Monitoring of Demolition Waste Reuse and Recycling

To optimise the reuse and recycling of demolition materials, we recommend implementing the following:

- **Material Reuse Tracking System:** A digital tracking system could be established to monitor materials identified for reuse or recycling. This system will log details such as quantities, conditions, and intended applications within the new construction areas. It is important that this system is regularly updated to reflect ongoing recovery efforts.
- **Weekly Progress Reports:** It is suggested that the demolition contractor be required to submit weekly progress reports. These reports should provide detailed metrics on the volumes of materials recovered, reused, and recycled, alongside any challenges encountered. This approach will allow for the early identification of issues and timely adjustments to the recovery plan.
- **Regular On-Site Inspections:** It is suggested that regular inspections are conducted to verify that materials earmarked for reuse are being properly stored and handled. These inspections should ensure that materials remain in suitable condition for their intended use in the new build areas.

### Competency and Performance of Demolition Contractor

To ensure that the demolition process aligns with the project's environmental goals, we propose the following monitoring measures:

- **Verification of Pre-Demolition Audit:** The pre-demolition audit conducted by the appointed contractor should be thoroughly reviewed to confirm that all materials and components suitable for reuse or recycling have been accurately identified. This review will ensure that the audit reflects best practice in resource recovery.
- **Periodic Contractor Performance Reviews:** We suggest conducting periodic performance reviews of the demolition contractor. These reviews should focus on their adherence to the resource recovery plan, the accuracy of material identification, and their overall compliance with project timelines without compromising environmental standards.

### Compliance with EU Taxonomy for Circular Economy

Given the project's commitment to meeting EU taxonomy requirements, we recommend the following:

- **Comprehensive Documentation and Reporting:** It is essential to maintain detailed records that document compliance with the circular economy principles outlined in the EU taxonomy. This documentation should include logs of all recycled materials, percentages of materials reused on-site, and detailed descriptions of how circular economy practices are being implemented.
- **Independent Third-Party Audits:** It is suggested that an independent auditor is engaged to periodically assess the project's compliance with the EU taxonomy. The audit should verify the accuracy of reported data and ensure that the circular economy requirements are fully adhered to throughout the project.

### **Monitoring of GHG Emissions Reduction Measures**

To mitigate the project's impact on climate change, the following monitoring activities are proposed:

- **Appoint sustainability champions** to ensure that the project continues to perform in a sustainable manner including monitoring and reporting of performance on site.
- **Idle Time Monitoring for Vehicles and Machinery:** It is suggested that GPS or telematics systems are installed on all vehicles and machinery used on-site to monitor engine idling times. Automatic alerts should be set up to notify site managers when idling exceeds a specified threshold, enabling prompt corrective action to reduce unnecessary emissions.
- **Maintenance Logs for Plant and Machinery:** Implementing a digital maintenance log system to track the inspection and maintenance of all on-site equipment is recommended. This system should record inspection dates, maintenance activities, and any identified issues, ensuring that all machinery operates efficiently and with minimal emissions.
- **Material Waste Minimisation Tracking:** A monitoring system should be developed to track material orders and usage. This system should identify trends in over-ordering or inefficient material use, enabling the project team to take corrective actions that will help minimise the embodied carbon footprint of the site.

### **Application of Waste Hierarchy**

To optimise waste management on-site, the following monitoring protocols are suggested:

- **Waste Segregation Audits:** Regular audits should be conducted to ensure that waste is being properly segregated according to the waste hierarchy (reduce, reuse, recycle). These audits will help identify opportunities for improving waste management practices and reducing overall waste generation.
- **Monthly Waste Management Reports:** It is suggested that monthly reports are generated detailing the volume of waste reduced, reused, and recycled. These reports should be compared against predefined targets to assess the effectiveness of the waste management strategies and to identify areas for improvement.

### **Local Sourcing of Materials**

To reduce transport-related emissions and support local suppliers, the following measures are suggested:

- **Supplier Distance Monitoring:** A database of suppliers should be developed, documenting the distance of each supplier from the construction site. This database should be used to monitor and minimise the carbon footprint associated with material transportation, prioritising local suppliers wherever possible.
- **Transport-Related Carbon Footprint Analysis:** Conducting a carbon footprint analysis for the transportation of all materials to the site is recommended. This analysis should inform the selection of suppliers, with a preference for those within a closer radius to reduce CO2 emissions.

These monitoring recommendations are designed to ensure that the project adheres to its environmental commitments, particularly in the areas of resource recovery, waste management, and greenhouse gas emissions reduction. By implementing these strategies, the project will not only comply with regulatory requirements but also contribute to broader environmental sustainability goals. Regular reporting, on-site inspections, and third-party audits will be critical to maintaining compliance and achieving the desired environmental outcomes.

### **17.3.6.2 Operational Phase**

#### **Mitigation**

A number of 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 9.7.3).

The Proposed Development has been designed to reduce the impact on climate as a result of energy usage during operation. The Energy Report prepared by BBSC and building lifecycle report prepared by MCORM Architecture and Urban Design and submitted under separate cover with this planning application details a number of incorporated design mitigation measures included in 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 is designed to comply with the Near Zero Energy Building (NZEB) standards, in accordance with Part L (2021) of the Building Regulations.
- A Building Energy Rating (BER) of A2/A3 is targeted for all dwellings, with energy performance assessed using the SEAI DEAP methodology.
- The development incorporates high-performance building fabric, including low U-values, improved air permeability, and minimized thermal bridging, to reduce heat loss and improve energy efficiency.
- Renewable energy technologies, including photovoltaic (PV) solar panels and air source heat pumps, are planned to meet the renewable energy contribution required under Part L.
- All internal and external lighting will utilize energy-efficient LED luminaires, with automatic controls such as motion sensors in common areas to enhance efficiency.

- Mechanical ventilation systems, including heat recovery ventilation (MVHR), are considered to improve indoor air quality while minimizing energy use.
- No fossil fuel-based heating systems will be used; instead, electric air source heat pumps will provide space and water heating.
- Occupants will receive a comprehensive Home User Guide with information on building systems, appliances, and energy-saving features to support informed and efficient operation of their homes.

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.

## Monitoring

Environmental Management Plan that incorporates adaptive management principles.

Ensure climate change resilience plans are robust; continued monitoring of trends in weather events; and continued review of resilience measures related to interdependencies.

We recommend the following monitoring strategies to ensure that the Proposed Development meets its environmental objectives. These strategies focus on mitigating the impacts of climate change, enhancing energy efficiency, and promoting sustainable transport, all of which are aligned with best practices outlined in ISEP guidelines.

## Monitoring of Climate Change Mitigation Measures

- **Attenuation and Drainage Systems Monitoring:** Consistent with ISEP's guidance on climate resilience, regular inspections should be undertaken to verify the functionality of the attenuation and drainage systems. These inspections should be conducted during construction, after significant rainfall events, and periodically thereafter to ensure long-term effectiveness in preventing flooding.
- **Climate Vulnerability Assessment Review:** In accordance with ISEP's recommendation to periodically reassess climate risks, we suggest reviewing the climate vulnerability assessment (as detailed in Section 9.7.3) at regular intervals. This review should incorporate the latest climate projections to ensure the mitigation measures remain adequate and effective.

## Monitoring of Energy Efficiency and Climate Impact Reduction

To minimise the impact of the development on climate through energy use during operation, the following monitoring activities are recommended:

- **NZEB Compliance Verification:** Continuous monitoring during the construction phase should ensure that the development complies with the Near Zero Energy Building (NZEB) Standards. This includes verifying that all building components and systems meet the NZEB criteria.
- **EU Taxonomy Alignment Monitoring:** Ensure that the development achieves energy performance that is at least 10% lower than the NZEB requirements. Regular energy

performance assessments should be conducted to confirm alignment with the EU Taxonomy for sustainable development.

- **Renewable Energy Ratio (RER) Compliance:** Monitor the implementation of renewable energy systems, such as solar panels and air source heat pumps, to ensure that the development achieves a Renewable Energy Ratio (RER) of 20%, in line with Part L (2021) of the NZEB regulations. Post-installation, periodic checks should be performed to verify ongoing compliance.
- **Building Energy Rating (BER) Target Achievement:** Regular energy audits should be carried out to monitor the building's energy performance, ensuring that the targeted Building Energy Rating (BER) of A2/A3 is achieved. This includes verifying the efficiency of insulation, windows, HVAC systems, and other energy-related components.
- **Thermal Performance Monitoring:** Continuous monitoring during construction should ensure that the building achieves the improved thermal transmittance (U-Values), air permeability, and thermal bridging standards specified in the design. Post-construction thermal imaging surveys and air tightness tests should be conducted to confirm that these standards have been met.

### Monitoring of Renewable Energy Systems

To ensure the successful implementation and operation of renewable energy systems, the following monitoring measures are recommended:

- **Air Source Heat Pump Performance:** Regular inspections and maintenance checks should be conducted on the air source heat pumps to ensure they are operating efficiently and contributing effectively to the building's energy needs. Performance metrics such as Coefficient of Performance (COP) and Seasonal Performance Factor (SPF) should be tracked and compared against the expected values.
- **Occupant Sustainability Information:** Consistent with ISEP's emphasis on stakeholder engagement, it is important to ensure that all building occupants receive comprehensive sustainability information. This should include guidance on energy conservation practices and how to use renewable energy systems effectively. Feedback mechanisms, such as surveys, should be used to assess the impact of this information on occupant behaviour.

### Monitoring of Sustainable Transport Initiatives

To promote sustainable transport and reduce transport-related emissions, the following monitoring strategies are suggested:

- **Electric Vehicle (EV) and Bicycle Parking Usage:** Regular monitoring should be carried out to assess the usage of electric vehicle charging stations and bicycle parking facilities within the development. This will help gauge the effectiveness of these measures in promoting sustainable transport modes. Usage data can inform whether additional facilities or adjustments are needed.
- **Transport Emissions Impact Assessment:** Periodic assessments should be conducted to evaluate the impact of the provided sustainable transport facilities on

reducing overall transport emissions. This could include monitoring the uptake of electric vehicles by residents and the corresponding reduction in GHG emissions.

These monitoring recommendations are designed to ensure that the development's climate change mitigation measures, energy efficiency initiatives, and sustainable transport provisions are effectively implemented and maintained throughout the lifecycle of the project. By adhering to these strategies, the development will not only comply with relevant regulatory requirements but also contribute to broader environmental sustainability goals. Regular inspections, energy performance assessments, and occupant engagement will be crucial to achieving the desired environmental outcomes.

### **17.3.7 Noise and Vibration**

#### **17.3.7.1 Construction Phase**

##### **Mitigation**

Best practice measures for noise and vibration from construction sites are found within BS 5228 (2009+A1:2014) part 1 and part 2. Construction noise effects are expected to vary during the construction phase of the Proposed Development; this effect will depend on the distance between the construction activities and noise sensitive receptors. The contractor will ensure that all best practice noise control measures will be used, to ensure any negative noise effects at noise sensitive locations are minimised. The mitigation measures outlined in this chapter will be incorporated into the CEMP.

The best practice measures set out in BS 5228 (2009) Part 1 and 2 includes guidance on several aspects of construction site mitigation measures, this includes the:

- Selection of quiet plant and equipment;
- Noise control at source of the noise;
- Screening; and
- Public liaison.

##### **Selection of Plant and Machinery**

The noise effect of all plant and machinery shall be assessed prior to selection of the plant for the project. All plant used onsite will comply with S.I. No. 632/2001 - European Communities (Noise Emission by Equipment For Use Outdoors) Regulations, 2001.

##### **Noise Control at Source**

Where replacing a noisy item of plant is not viable or practical, noise shall be controlled at source. This includes modifying the piece of plant or machinery to generate less noise, using dampening to control vibration induced noise or rattling. Example best practice mitigation measures to be used are as follows:

- All plant and equipment to be switched off when not in use to prevent idling;
- The use of white noise reversing alarms;
- Restriction on the dropping and loading of materials to less sensitive hours;
- The use of local screening for noisy activities or works with hand tools;
- Not dropping materials onto hard surfaces and using rubber mats etc for the dropping of materials; and

- Ensure all plant and equipment is well maintained and cleaned, all lubrication should be in line with manufacturers guidelines.

### Vibration Control

Vibration monitoring will be implemented during the demolition and substructure stages of the construction phase to ensure vibration effects are monitored and controlled adequately as to not cause significant effect at the surrounding sensitive receptors. Suitable locations for vibration monitoring are at NSL1 and NSL4.

### Screening

Screening will be used to reduce the construction noise effect on the NSLs. The use of site hoarding and careful selection of areas for noisy works, using buildings on the site, site offices and the building being constructed to screen noise from the works.

Local screening of noisy works with the use of temporary acoustic barriers, examples are as follows:



Chapter 10 Figure 10-1 Temporary Construction Noise Barrier © Ventac

### Public Engagement

A public liaison officer shall be put forward by the contractor to liaise with the local residents on matters relating to noise. Residents shall be informed of any noise works scheduled where there is the potential to generate high levels of construction noise or if specialist works etc need to be conducted out of the working hours. This person shall also be the point of contact for all complaints and be responsible for reviewing the noise monitoring results and exceedances.

This is crucial as the construction of the development is proposed to be a phase construction and occupancy approach with the construction of phase 1A and phase 1B being constructed, with phase 2A and 2B beginning shortly after occupancy of phase 1A and 1B. A public liaison officer shall be appointed by the contractor to liaise with the occupants of phase 1A and 1B regarding matters of noise and vibration disturbance.

### Site Specific Recommendations

The calculations set out in Table 10-9 of Section 10.5.2.1 are based on assumed site construction works and a combination of the plant operating at the same time i.e. a worst-case scenario. While this may not reflect actual site conditions, the assessment has been carried out on a conservative basis. Table 10-36 - Table 10-41 outlines the required attenuation for each construction stage.

*Table 10-1 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 1A.*

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	0	0	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	2	0	0
NSL7	65	0	0	0	0

*Table 10-2 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 1B.*

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	0	0	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	2	0	0
NSL5	65	0	0	0	0
NSL6	65	0	2	0	0
NSL7	65	0	0	0	0
Phase 1A	65	0	0	0	0

*Table 10-3 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 2A.*

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	0	0	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	0	0	0
NSL7	65	0	0	0	0
Phase 1A	65	0	0	0	0
Phase 1B	65	0	0	0	0

*Table 10-4 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 2B.*

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	0	0	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	0	0	0
NSL7	65	0	0	0	0
Phase 1A	65	0	0	0	0
Phase 1B	65	0	0	0	0

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
Phase 2A	65	0	0	0	0

*Table 10-5 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 3A.*

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	4	1	0
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	0	0	0
NSL7	65	0	0	0	0
Phase 1A	65	0	0	0	0
Phase 1B	65	0	0	0	0
Phase 2A	65	0	0	0	0
Phase 2B	65	0	0	0	0

*Table 10-6 Attenuation Required at Each Stage Based on the Construction Noise Predictions for Phase 3B.*

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL1	65	0	3	0	0

Location	Noise Limit dB (A)	Noise reduction required at each stage of works to meet criteria (dBA)			
		Site Set Up	Substructure	Superstructure	External Finishes
NSL2	65	0	0	0	0
NSL3	65	0	0	0	0
NSL4	65	0	0	0	0
NSL5	65	0	0	0	0
NSL6	65	0	2	0	0
NSL7	65	0	0	0	0
Phase 1A	65	0	0	0	0
Phase 1B	65	0	0	0	0
Phase 2A	65	0	0	0	0
Phase 2B	65	0	0	0	0
Phase 3A	65	0	6	3	0

Table 10-42 outlines the recommended site-specific noise mitigation measures.

*Table 10-7 Mitigation Measures Required During Construction Phase*

Construction Stage	Recommended Noise Mitigation Measures
Site Setup	<p>Erect a minimum 2.4m high site hoarding that blocks the line of sight between noise source and receiver.</p> <p>Example construction for the site hoarding would be as follows: A 2.4m high and 9mm plywood (4.5 kg/m<sup>2</sup>). Barrier must be solid and not contain gaps at the bottom or between adjacent panels</p> <p>Local screening are required around hand tools in addition to hoarding.</p> <p>An absorptive lining shall be considered for screening around hand tools will need to have an absorptive lining to avoid reflections increasing noise at other receivers.</p> <p>On this project 8 NSL's have been identified, It is recommended that a noise monitor shall be placed on the boundary of the nearest noise sensitive locations closest to the works i.e. NSL1 and NSL8/NSL9 during phase 2 in this case.</p>
Substructure	<p>Site hoarding to block line of sight. Local screening around noisy plant and equipment.</p> <p>Noise and vibration monitoring as above</p>
Superstructure	<p>Local screening around saws/hammers where possible. Use external new building to screen noise from works where possible.</p>

Construction Stage	Recommended Noise Mitigation Measures
	Noise and vibration monitoring as above
External finishes	Local screening around hand tools. Noise and vibration monitoring as above

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## Monitoring

Noise and vibration monitoring will be implemented during the construction phase of the Proposed Development, particularly during the substructure works when piling operations are likely to occur. Given the proximity of multiple NSLs to the site, monitoring equipment shall be installed at NSL 4 during phase 1A/B and NSL3 during phase 2A/B and NSL1 during phase 3A/B, as these locations are closest to the anticipated construction activities.

### 17.3.7.2 Operational Phase

## Mitigation

### Noise Mitigation Measures

The assessment conducted on the operational phase of the Proposed Development takes into account the operation of the public and communal open spaces, car parking and creche outdoor play area. The predicted results of the operational noise assessment predict that there will be no significant noise effect on the surrounding sensitive receptors, therefore no mitigation measures are required to control operational noise levels from the proposed development.

At design development stage, when the final plant and equipment schedule developed, noise levels for each piece of equipment shall be reviewed by an Acoustic Consultant to ensure compliance with the limits set in this chapter and to protect the amenity of the future residents of the Proposed Development.

### Vibration Mitigation Recommendations

There are no predicted vibration sources during the operational phase, therefore, mitigation measures are not required to control operational phase vibrations. This shall be reviewed as part of the design review once the final plant and equipment selections are known.

## Operational Phase – Inward Impact

### Building Envelope Specification

This section outlines the building envelope requirements based on the measurements outlined in Chapter 10 Section 10.3.2. Facade, wall, glazing, roof and ventilation specifications have been determined to achieve the internal noise level criteria for the development. The specification has been determined in accordance with EN ISO 12354-3: 2017 based on the predicted façade day and night noise levels. The specification outlined in this section is based on the measured noise levels at the site and has taken into consideration aircraft noise. Consideration has also been given to the internal roads within the site.

The building envelope specification should be confirmed by the acoustic consultant at design stage once the internal layouts and design development has been completed. Any changes to the assumed ventilation strategy and glazing requirement should be considered as part of the review and it should be based on the internal noise levels cited in this report.

The glazed elements and ventilation openings are typically the acoustically weakest elements of any façade. The required sound insulation performance of façade glazed elements and ventilation openings is outlined in Table 10-43.

It is required that the glazing, frame and seals as a whole achieve the performance when the window is in the closed position. The performance requirements outlined in Table 10-43 are considered to provide adequate sound insulation to achieve the relevant day and night internal design goals respectively.

*Table 10-8 Sound Insulation Performance for Glazed Elements and Ventilation*

Façade	Glazed Elements (Frame & Glazing) Sound Insulation Requirements (Indicative requirements equal or approved)							Façade Ventilation Requirement <sup>2</sup>
	Octave Band Frequency Requirements <sup>1</sup> R dB						Glazing Acoustic Performance dB RW	
	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz		
<b>RED</b>	28	20	28	35	40	42	32dB Rw	35dB D <sub>n,e,w</sub> (1) Natural Ventilation or Mechanical Ventilation
<b>All other Facade</b>	Standard Double Glazing <sup>3</sup>							Standard passive ventilation

- 1) Natural ventilation assumed throughout. Should this change to mechanical ventilation the above specification may be reduced. An acoustic consultant should be engaged to assess the level of reduction appropriate to maintain the internal noise level criteria.
- 2) The calculation assumes a maximum of 1 ventilation opening per bedroom at the specification outlined in the Acoustic Design Statement.
- 3) Standard double glazing assumes a construction of two panes of 3mm glass with a 10mm cavity achieving a minimum 29dB R<sub>w</sub>, equal or approved. Similarly, standard natural ventilation assumes a performance of 29dB D<sub>n,e,w</sub>.



Figure 10-2 Façade Specification Markup Detailing the Glazing Specification

It is important to note that the requirements outlined above are minimum requirements for the glazed element as a whole. The octave band values are indicative and specific to the assessed glazing type, equal or approved to meet the minimum project requirements is acceptable.

We understand the ventilation strategy for the development has not been confirmed at this stage of the design. It has been assumed that ventilation will be provided via natural ventilation system. Should the ventilation strategy change to mechanical ventilation strategy Wave Dynamics should be notified. Typically, the use of a natural ventilation strategy will lead to an enhanced glazing specification compared to a sealed mechanical ventilation system. This assessment is based on the windows in closed position.

### External Wall Construction

The façade wall construction has been assumed to achieve a minimum sound insulation performance of 56dB  $R_w$ . Typical façade construction such as concrete, blockwork, timber frame and brick offer high levels of sound insulation and will meet this requirement.

### Roof Construction

The roof construction has been assumed to achieve a minimum sound insulation performance of 50dB  $R_w$ . Any skylights and glazing in the roof system to corridor or communal areas should be of standard double-glazed construction to meet a performance of minimum 29 dB  $R_w$ . If there are any skylights to habitable bedrooms Wave Dynamics should be informed to provide specific guidance in each case.

## External Amenity Space

Measured daytime noise levels across the Proposed Development lands were generally found to be below the external amenity criterion of 55 dB(A) as outlined in ProPG:2017, indicating that the existing acoustic environment is compliant with external amenity criterion. While marginally elevated levels were recorded at location L1 closest to existing road infrastructure, these values reduce significantly with distance into the site. As the development is constructed, the introduction of new buildings will provide substantial screening from surrounding noise sources. Consequently, external amenity spaces located deeper within the site are expected to experience further reductions in noise levels, benefiting from screening effects and resulting in an improved overall acoustic environment for future occupants.

## Monitoring

Noise and vibration monitoring is not required during the operational phase of the Proposed Development as the predicted noise levels during the operational phase fall within project criteria, and there are no predicted sources of operational vibration proposed for the development.

### 17.3.8 Landscape and Visual Amenity

#### 17.3.8.1 Construction Phase

##### 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 and landscaping as outlined in the architectural drawings and sections and the landscape proposal and report. By responding to the site topography, modulation of the buildings, façade articulation and suitable landscaping for the situation, the buildings are absorbed into the surrounding landscape as demonstrated in sections, verified views and CGI images. A range of materials and building typologies are used to complement the existing types found in the surrounding built environment and landscape.

##### Monitoring

To ensure the successful implementation of the landscape proposals, detailed tender drawings and specifications will be prepared in line with best practice standards. These documents will outline procedures for tree works, soil handling, planting techniques, and maintenance requirements. All landscape works will be overseen by a qualified landscape architect to ensure compliance with the design intent and quality standards. Planting operations will be scheduled to take place during the appropriate planting season, following the completion of the main civil engineering and construction activities.

#### 17.3.8.2 Operational Phase

##### Mitigation

As the proposed landscaping matures the larger growing tree species can be expected to grow in this location to significant heights of approximately 10-15m and will grow to be significant landscape features in themselves that will counter balance the tallest part of the development. The smaller growing tree species can be expected in this location to reach 5-10m in height and will counterbalance the smaller scale parts of the proposed development.

The retention and reinforcement of most hedgerows will further help mitigate visual and landscape impacts.

## **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/specifications 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

### **17.3.9 Archaeology and Cultural Heritage**

#### **17.3.9.1 Construction Phase**

##### **Mitigation**

All topsoil stripping will be subject to archaeological monitoring by a qualified archaeologist under licence from National Monuments Service. Where possible topsoil should be stripped using a flat-edged bucket to facilitate the identification of any potential archaeological remains. This is a requirement of the National Monuments Services licencing process. Should any features of archaeological potential be identified, further mitigation may be required in consultation with the National Monuments Service of the Department of Housing, Local Government and Heritage. This may include preservation *in situ* or by record (excavation).

Proposed intervention points along the townland/ parish/ barony boundary forming the eastern perimeter of the site will be fully recorded by photographic and written record, including measured survey of indicative sections, prior to removal at construction phase. Any subsurface remains of the boundaries exposed during topsoil stripping/excavation will be recorded during the programme of archaeological monitoring. In addition, the proposed landscaping scheme will indicate the former alignment of the townland boundaries, where partial removal is required. Furthermore, the retained townland boundaries will be bolstered by additional planting.

The developer has committed to carrying out the above archaeological strategy as part of the proposed development.

##### **Monitoring**

No further monitoring mitigation is required.

#### **17.3.9.2 Operational Phase**

##### **Mitigation**

No mitigation measures during operation are required.

##### **Monitoring**

There is no further mitigation required during this phase of works.

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### **17.3.10 Material Assets Traffic**

#### **17.3.10.1 Construction Phase**

##### **Mitigation**

The successful completion of the Proposed Development will require significant coordination and planning, and a comprehensive set of mitigation measures will be put in place before and during the construction phase to minimise the effects of the additional traffic generated by the Proposed Development. The range of measures will include the following which are also set out in the Construction Traffic Management Plan:

- A detailed Construction Traffic Management Plan (CTMP), incorporating all the mitigation measures set out in the TMP submitted as part of the CTMP, will be finalised and agreed with the relevant road authorities and An Garda Síochána prior to construction works commencing on site. The detailed TMP will include the following:
  - Traffic Management Coordinator – a competent Traffic Management Co-ordinator will be appointed for the duration of the project and this person will be the main point of contact for all matters relating to traffic management.
  - Communications: Local residents in the area will be informed of any upcoming traffic related matters e.g., temporary lane/road closures (if required), via letter drops and door knocks. In-formation will include the contact details of the Contract Project Co-ordinator, who will be the main point of contact for all queries from the public or Local Authority during normal working hours. An "out of hours" emergency number will also be provided.
  - Travel Plans – Given the site location, the assessment above has assumed the worst case i.e., that construction workers will drive to the site. The Main Contractor will be required to provide a travel plan for construction staff, which will include the identification of routes to / from the site and identification of an area for parking.

##### **Monitoring**

The proposed construction material haul routes will be monitored throughout the construction phase to identify any potential damage arising from construction traffic.

To ensure effective monitoring, the Main Contractor, in conjunction with South Dublin County Council, will undertake the following measures:

- Pre-construction condition surveys:

Additional inspections and reviews of the designated haul routes will be undertaken at least one month prior to commencement of construction to record the existing condition of these roads.

- Baseline documentation:

Surveys will include, as a minimum, video footage and photographic records confirming the condition of the carriageway surface, boundary treatments, and any overhead services along the haul routes. Visual inspections and photographic surveys will also be undertaken of bridges and culverts along the haul roads.

- Pavement condition assessment:

Where requested by the Local Authority, a pavement condition survey will be undertaken to establish the baseline structural condition of the haul routes prior to commencement of works.

- Ongoing monitoring and maintenance:

Throughout the construction phase, regular visual inspections will be carried out to identify any deterioration or damage caused by construction traffic. Where such damage occurs, the Local Authority will be notified, and repairs will be arranged promptly to restore the road to an acceptable standard and minimise disruption.

- Post-construction surveys:

Upon completion of the construction phase, the pre-construction condition surveys will be repeated and a comparative assessment undertaken. Where deterioration attributable to construction traffic is identified, appropriate remedial works will be carried out by the Contractor to the satisfaction of the Local Authority.

### **17.3.10.2 Operational Phase**

#### **Mitigation**

The mitigation measures proposed for the operational phase are based on the following criteria:

- Severance
- Pedestrian, cyclist and equestrian delay.
- Pedestrian, cyclist and equestrian amenity.
- Fear and intimidation.

#### **Driver and passenger delay**

Vehicular access to the development will be via 3 no. access points, as follows: (i) from the north via Carrickmore estate, (ii), to the east via Corbally estate and (iii), to the south via Boherboy Road. The proposed development includes for pedestrian and cyclist connections and accesses to adjoining lands to the north, east and west, and includes for cycling and pedestrian routes and infrastructure throughout the development.

Dedicated infrastructure will be provided for pedestrians, cyclists and other vulnerable road users. Where possible, this infrastructure will separate vehicles from pedestrians, cyclists and other vulnerable road users reducing the possibility of a road traffic collision occurring.

Where vehicles interact with pedestrians, cyclists and other vulnerable road users it will be done in a controlled manner. To that end, the proposed development includes a number of controlled crossings such as the signal-controlled junction from the Link Street to Oldcourt Road and Bohernabreena Road. Along the Link Street, a signal-controlled crossing has also been provided, linking the southern side of the development to the northern side.

Dedicated separated cycle infrastructure is provided along the Link Street with controlled crossings provided to accommodate cycling desire lines including to adjoining developments. Cyclist will share road space in areas of low traffic volume and low speed.

A number of uncontrolled crossings are provided throughout the development for pedestrians. These uncontrolled crossings have been designed to accommodate persons with visual impairments and mobility impairments. Pedestrians are given priority across junctions from the Link Street along the cycle track.

An Outline Travel Plan has been produced for future occupants of the proposed development.

A Travel Plan can be described as a transport demand management mechanism, that seeks to provide for the transportation needs of residents and visitors of the Proposed Development. The aim is to reduce demand for and use of cars by increasing the attractiveness and practicality of other modes of transport.

The Travel Plan includes measures to promote and improve the attractiveness of using public transport, cycling, walking, carsharing, flexible working or a combination of these as alternatives to drive-alone journeys to/from the development.

It should be considered as a dynamic process where a package of measures and campaigns are identified, piloted and monitored on an on-going basis.

The impact of these measures should be reviewed against a set of agreed targets, principally in relation to:

- A reduction in car journeys to and from the work site
- An increase in the number of people who share their journeys by car
- A reduction in the need to travel, especially during the rush-hour periods
- Enabling residents and visitors use alternative modes of transport

A Statement of Compliance with DMURS, has been included as part of the planning documentation.

Central to the overall design approach is the need to ensure that pedestrians and cyclists are given the higher priority and more direct linkage than the private car. The proposed site layout and pedestrian and cycle links seek to give connectivity to the wider area to ensure that many local trips can be made using these sustainable travel modes through the provision of access to the canal tow path, which provide linkage to the surrounding area.

Vehicular access to the development shall be provided through a singular entrance and exit to the north-west of the site. Three further vehicle entrance points are located along the southern access road. Access to the site from these points shall be strictly limited to emergency services and maintenance vehicles. A new cycle lane shall run adjacent to the entrance road of the development and shall link Greenhill's Road to the north to the existing southern access road to the south. Design of the cycle infrastructure shall be based on guidance within the National Cycle Manual and DMURS for low speed and low use roads. Ample cycle parking is provided throughout the development.

The Proposed Development has been the subject to a Stage 1/2 Road Safety Audit. Road Safety Audit (RSA) involves the evaluation of road schemes during design and construction to identify potential hazards to all road users. All issues raised and proposed mitigation measures proposed, have been adopted within the development proposals.

## Monitoring

Given the nature of the Proposed Development as a residential scheme, no specific traffic monitoring is required during the operational phase beyond that undertaken as part of standard local authority network management and maintenance programmes.

However, any future review of mobility management performance or Travel Plan implementation may include monitoring of mode share, car parking utilisation, and uptake of sustainable transport modes to ensure continued compliance with the National Sustainable Mobility Policy (2022) and DMURS principles.

### **17.3.11 Material Assets Waste and Utilities**

#### **17.3.11.1 Construction Phase**

##### **Mitigation**

##### **Surface Water**

Specific avoidance, remedial and mitigation measures to be taken during the construction phase with respect to surface water drainage are detailed within Chapter 7 Hydrology and Hydrogeology of this EIAR. All works will be carried out in accordance with the Construction and Environmental Management Plan (CEMP) prepared for the Proposed Development and the Irish Water Code of Practice for Water Infrastructure (July 2020) and the Irish Water Code of Practice for Wastewater Infrastructure (July 2020). The construction of any watermains infrastructure will be in accordance with Uisce Éireann standards.

##### **Wastewater Drainage**

Specific avoidance, remedial and mitigation measures to be taken during the construction phase with respect to foul water are detailed within Chapter 7 Hydrology and Hydrogeology of this EIAR. All works will be carried out in accordance with the Construction and Environmental Management Plan prepared for the Proposed Development and the Irish Water Code of Practice for Water Infrastructure (July 2020) and the Irish Water Code of Practice for Wastewater Infrastructure (July 2020). The construction of any wastewater infrastructure will be in accordance with Uisce Éireann standards.

##### **Water Supply**

Confirmation of Feasibility has been received by Uisce Eireann. Uisce Éireann have issued a Confirmation of Feasibility letter Ref.CDS24005491 for this planning application noting that the water connection is “feasible without infrastructure upgrade” and the wastewater connection is “feasible subject to upgrades”. (Roger Mullarkey & Associates, 2025)

As part of the previous applications on this site, extensive consultations were held Uisce Éireann, and detailed design and/drawing drawings were submitted and UÉ subsequently confirmed their approval in issuing the Statement of Design acceptance letter (Ref.CDS20004359) dated 19/08/21. (Roger Mullarkey & Associates, 2025)

Further agreements with UÉ will be made at Connection Application stage in relation to this latest planning application on this site. Prior to lodgement of this current application, full submission documentation has been lodged with UÉ regarding the details of the proposed crossing of the trunk watermains which are similar to that previously approved by UÉ. Upon a

successfully grant of planning on the subject site and prior to commencement of development, the Applicants will agree with Uisce Éireann all the necessary protection details as part of the Connection Application process. (Roger Mullarkey & Associates, 2025)

Utilities providers will be responsible for the management and any required upgrades of water supply and as such no mitigation measures are required. (Roger Mullarkey & Associates, 2025)

### **Electricity**

New connections for electricity supply will be coordinated with the relevant utility provider and South Dublin County Council and will be carried out and tested by approved contractors, as per standard protocols and as such no mitigation measures are required.

### **Gas**

There is no gas supply proposed and as such no mitigation measures are required.

### **Telecommunications**

Any new connections required for telecommunications will be coordinated with the relevant utility provider and South Dublin County Council and will be carried out and tested by approved contractors, as per standard protocols and as such no mitigation measures are required.

### **Waste**

The waste management objective will be to prevent waste arising in the first place, and to re-use, recycle or recover waste materials where possible. The following mitigation measures are recommended for the construction phase of the Proposed Development regarding waste management:

- Waste materials will be separated at source and will follow the Resource and Waste Management Plan (RWMP) and Contractor(s) Construction Environmental Management Plan (CEMP);
- Prior to the commencement of the construction phase detailed calculations of the quantities of topsoil, subsoil and green waste will be prepared, and soils will be tested to confirm they are clean, inert or non-hazardous;
- A policy of 'as needed' ordering and strict purchasing procedures will be implemented to prevent waste arisings as far as possible;
- The Contractor will vet the source of aggregate, fill material and topsoil imported to the site in order to ensure that it is of a reputable origin and that it is "clean" (i.e., it will not contaminate the environment).
- The Contractor and/or Council will implement procurement procedures to ensure that aggregate, fill material and topsoil are acquired from reputable sources with suitable environmental management systems as well as regulatory and legal compliance;
- The waste materials generated during the construction phase will be stored in suitably size receptacles and transferred offsite for appropriate processing, recycling and recovery;

- Waste materials generated from the construction phase that are unsuitable for reuse or recovery will be separately collected;
- Disposal of construction generated wastes will be considered a last resort and only after recycling or recovery options have been ruled out;
- A suitably competent and fully permitted waste management company will be employed to manage waste arising for the construction phase. The appointed waste contractor must have the relevant authorisations for the collection and transport of waste materials, issued by the National Waste Collection Permit Office (NWCPO);
- All waste materials will be transported to an appropriately authorised facility, which must have the relevant authorisations for the acceptance and treatment of the specific waste streams, i.e., a Certificate of Registration (COR) or a Waste Facility Permit (WFP) as granted by a Local Authority, or a Waste/Industrial Emission Licence as granted by the Environmental Protection Agency;
- It is not envisaged that there will be any hazardous waste generated throughout the construction works however, in the event that hazardous soil, or historically deposited waste is encountered during the site bulk excavation phase, the contractor will notify South Dublin County Council 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 authorised waste collector(s). Only authorised facilities will be used and as a result of this, the potential effects at any authorised receiving facility sites will have been adequately assessed and mitigated as part of the statutory consent procedures;
- Waste generated by construction workers will be stored in wheelie bins on site and it will be collected by an appropriately authorised waste collector. All wastes generated on site will be sent for recycling, recovery, or disposal to a suitably licensed or permitted waste facility; and
- All waste quantities and types will be recorded and quantified, and records will be retained onsite for the duration of the construction phase.

These mitigation measures will ensure that the waste arising from the construction phase of the Proposed Development is dealt with in compliance with provisions of the Waste Management Act 1996, as amended, associated Regulations and Litter Pollution Act 1997, and The National Waste Management Plan for a Circular Economy 2024-2030. The mitigation measures will also ensure optimum levels of waste reduction, reuse, recycling and recover are achieved and will promote more sustainable consumption of resources.

The Contractor will have the responsibility to record resource and waste management at the site in line with the Resource and Waste Management Plan (RWMP). Some of the principal duties and responsibilities of this role include:

- Report to Project Manager on the management of resources and waste at the site;
- Identify all destinations for resources taken off-site;
- Address end-of-waste and by-product notifications with the EPA, where applicable;

- Maintain full records of all resources (both wastes and other resources) for the duration of the project;
- Delegate responsibility to sub-contractors, where necessary;
- Coordinate with suppliers, service providers and sub-contractors; and
- Prioritise waste prevention and resource salvage.

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## Monitoring

The site control measures to manage and minimise waste include:

- Signage on the site office/welfare bins to separate them as environmental/domestic waste bins; and
- Briefing for all sub-contractors via induction handouts.

During the construction phase, a procedure for waste auditing will be in place as per the RWMP which has been prepared for the planning application and is submitted under separate cover. The purpose of the waste auditing is to identify any problems with the site's waste procedures and also the benefits of prevention and minimisation that is in place. The audit will be a 'self-audit' process carried out by the Resource Manager (RM) and/or appointed team member/contractor. The RM will create an Audit Plan and identify the appropriate frequency at which the audits are to be conducted over the course of the construction phase. The waste audit will document details of the quantity, type and composition of all waste removed from the site. The audit findings will highlight any corrective actions that may need to be taken in relation to waste management procedures or site practices. These corrective actions will be tracked in order to identify root- causes as appropriate (DNV, 2025).

### 17.3.11.2 Operational Phase

## Mitigation

### Surface Water

Due to the incorporated design measures relating to surface water, no additional mitigation measures are required. Following planning application stage, connection agreements will be made with Uisce Éireann to ensure water supply to the site and foul water discharge off site and no additional mitigation measures will be required.

### Wastewater Drainage

Due to the incorporated design measures relating to foul / wastewater, no additional mitigation measures are required. Following planning application stage, connection agreements will be made with Uisce Éireann to ensure water supply to the site and foul water discharge off site and no additional mitigation measures will be required.

### Water Supply

Confirmation of Feasibility has been received by Uisce Eireann. Utilities providers will be responsible for the management and any required upgrades of water supply and as such no mitigation measures are required.

### Electricity

Utilities providers will be responsible for the management and any required upgrades of electricity supply and as such no mitigation measures are required.

### **Gas**

There is no gas supply proposed and as such no mitigation measures are required.

### **Telecommunications**

Utilities providers will be responsible for the management and any required upgrades of telecommunications and as such no mitigation measures are required.

### **Waste**

As previously stated, an Operational Waste Management Plan (OWMP) has been prepared by DNV (2025) for the Proposed Development. A waste strategy is presented in the OWMP which considers legal requirements, policies, and best management guidelines. This plan also demonstrates that the Waste Storage Area (WSA) has been incorporated within the design of the Proposed Development.

Implementation of the OWMP will ensure that a high level of recycling, reuse, and recover at the Proposed Development during the operational phase. All materials that are considered recyclable will be segregated and separated at source to reduce costs from the waste collector and ensure maximum diversion of material from landfill. The waste strategy presented in the OWMP will provide sufficient storage capacity for the estimated quantity of segregated waste. The designated WSA will provide sufficient room for the required receptacles in accordance with the details of this strategy.

As outlined in the OWMP, it is intended to ensure that the highest possible levels of waste reduction, waste reuse and waste recycling are achieved for the Proposed Development. Specifically, the OWMP will aim to achieve waste prevention, maximum recycling and recovery of waste with a focus on diversion of waste from landfill wherever possible.

It will be a condition of any management contract at the development that adequate budgets are in place for the provision of all required waste management services including a four-bin system for the collection of separate Organic (food) Waste, Dry Mixed Recyclables (DMR), Mixed Municipal Waste (MMW) / General Waste and Glass from the apartments and duplexes.

The Management Company appointed will be required to continually monitor the performance of the waste management system. This will include routine visual checks of the WSAs to ensure that all bins collected are returned to the WSAs and to ensure this area is maintained so as not to cause any environmental nuisance to residents. These checks will also assess if the bins are in good condition or need to be replaced where damage is identified.

Provision for bin cleaning will be included in the contract with the waste management contractor appointed to ensure the provision of bin cleaning services or replacement of clean bins by the waste contractor.

The Management Company will review all annual waste reports from the Waste Collection Company appointed to ensure that the waste collected is in line with the European recycling targets. Where poor recycling rates are noted information leaflets will be recirculated to all residents which will include information on what materials can be recycled and the waste streams that can be placed in bins. Residents will also be reminded of legal obligations where

applicable. Further communication strategy to engage tenants and owner occupiers in good waste management practices will be adopted if deemed necessary.

Contingency policies will be in place to ensure continuity of service.

Each appointed Waste Contractor must hold a valid waste collection permit to transport waste which is issued by the National Waste Collection Permit Office (NWCPO). Waste treatment facilities must also be appropriately permitted (Waste Facility Permit or Certificate of Registration) or licensed by the Local Authority or Environmental Protection Agency to accept the waste. The Management Company appointed will be responsible for ensuring that all Waste Contractors hold the appropriate authorisations.

The OWMP has reviewed policy alongside best practice guidance and recommendations for sustainable waste and recycling management arrangements for the Proposed Development and ensures a high level of recycling, reuse and recovery at the development and also ensures that waste management is carried out in accordance with the requirements of the South Dublin County Development Plan 2022-2028 and Ireland's National Waste Policy.

### **Monitoring**

The building management company and future residents will be required to maintain the bins and storage areas in good condition. The waste strategy presented in the OWMP 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.

### **17.4 Conclusion**

The mitigation and monitoring measures outlined in this chapter provide a comprehensive framework to minimize potential environmental impacts during both construction and operational phases. These measures ensure compliance with regulatory requirements and promote best practice standards across all relevant disciplines. Ongoing monitoring will verify the effectiveness of mitigation actions and support adaptive management where necessary to safeguard environmental quality.