20.0 MITIGATION MEASURES AND MONITORIING

This chapter of the EIAR was prepared by Patricia Thornton (BSc. Surv) (MRUP), Director of Thornton O'Connor Town Planning. Patricia is a Corporate member of the Irish Planning Institute and has 22 No. years post-qualification experience. Patricia has experience in preparing and coordinating EIARs for a variety of projects and has also been involved in the coordination of a wide range of developments including residential and commercial developments.

This chapter summarises the mitigation measures proposed in the various chapters throughout this Environmental Impact Assessment Report.

The *Guidelines on the Information to be Contained in Environmental Impact Assessment Reports, 2022* describe mitigation and monitoring measures as follows:

> *"A description of the measures envisaged to avoid, prevent, reduce or, if possible, offset any identified significant adverse effects on the environment and, where appropriate, of any proposed monitoring arrangements (for example the preparation of a post-project analysis). That description should explain the extent, to which significant adverse effects on the environment are avoided, prevented, reduced or offset, and should cover both the construction and operational phases."*

Full details of mitigation and monitoring measures are included within each individual chapter of this EIAR.

20.1 Population and Human Health

The mitigation measures incorporated in Chapter 5 of the EIAR have been broken down under the following headings:

Population Profile and Trends

The development will have a long-term positive impact on population due to the provision of a wide range of dwelling unit types which includes provision for Part V units and will cater for a wide cohort of persons. As noted, during the construction phase the local population may be temporarily impacted due to the influx of construction traffic, noise and dust.

However, we note that these impacts are short-term and mitigation measures will be put in place to minimise such impacts which are discussed in other sections of this EIAR including the implementation of a *Dust Management Plan*, a *Mobility Management Plan* and *Parking Strategy.* Please see further details in Chapter 12 (Air Quality and Climate) (and Section 20.8 of this Chapter 20) and Chapter 15 (Transportation) (and Section 20.11 of this Chapter 20).

Housing

It is considered that the proposed development of 562 No. units will be a positive addition to the availability of housing in the area by providing a wide choice in tenure for a range of persons. The short-term impacts associated with the construction stage are associated with any new development will be lessened once mitigation measures have been implemented, which have been outlined extensively in other sections of this EIAR such as the Noise and Vibration Chapter (Chapter 13) and the Transportation Chapter (Chapter 15) of the EIAR in

addition to the implementation of the *Preliminary Construction Management Plan* and *Outline Construction and Environmental Management Plan* submitted as separate documents. Additional mitigation measures include the implementation of a *Dust Management Plan*, *Mobility Management Plan* and *Parking Strategy*.

Employment/Economy

The proposed development will have a significant positive impact on the economy and employment of the area due to the influx of jobs that will be created at construction and operation stages. We also note that during construction, local businesses will benefit from workers utilising their services and during the operational stage there will be an increased population at the subject lands which will support the local economy. It is considered that the impact that will occur on employment and the local economy will be positive and long-term therefore no specific mitigation measures are proposed.

Local Services and Amenities

The proposed development will benefit the local economy as local shops and other amenities will benefit economically from the construction stage and operational stage. In addition, the significant quantum of public open space and permeable connections proposed will be an attractive addition to the area and represents a key planning gain for the wider neighbourhood.

Although the Social Infrastructure Audit including a *Childcare Demand Assessment* enclosed separately concluded that the development would only generate a demand for 11 No. childcare places, the Applicant has incorporated a crèche into the scheme, which as well as benefiting the future residents of the development, will also cater for the immediate existing residents of the area, thus enhancing the amenity of the area.

The *Community and Social Infrastructure Audit* notes that the Harold's Cross Educate Together School will increase capacity to 1,000 No. pupils, from its current enrolment of 350 No. students in the latest academic year providing additional post-secondary school places for the area. Therefore, the existing schools in the area are considered sufficient to serve the proposed development.

In addition, the provision of a crèche will ultimately increase the capacity of childcare facilities for the area and the significant quantum of public open space and permeable connections proposed will be an attractive and positive addition to the area, particularly as there has never been such provision for public open space or permeable connections at the lands as the public have never enjoyed any right of access to these privately owned lands. In the event that permission is granted, access will be opened up to the public to the 15,023 sq m of public open space to be provided as part of the development.

Health and Safety

Mitigation measures will be put in place to minimise any potential impacts on health and safety. The Contractor shall be responsible for overall management of the site for the duration of the proposed works and must progress their works with reasonable skill, care, diligence and to proactively manage the works in a manner most likely to ensure the safety and welfare of those carrying out construction works. The Contractor shall comply with all relevant Statutory requirements such as the *2005 Safety Health and Welfare at Work Act, The*

Construction Regulations (SI 291 of 2013), the General Application Regulations (SI 299 of 2007), etc. (and any amendments thereof). In addition, the Contractor shall comply with all the reasonable safety requirements of the Client, the Project Supervisor for the Design Process and the Project Supervisor for the Construction Stage. Measures that would be taken under these Statutory requirements include:

- Appointment of a competent project supervisor for the design process, and a competent project supervisor for the construction stage.
- Contractor to ensure that all staff have received site-specific safety induction instruction.
- Appointment of a safety officer.
- Safe means of access to and egress from site are provided and maintained.

To negate any potential impacts during construction stage, a *Dust Management Plan* will be implemented. In addition, the site will be securely fenced off from adjacent properties, public footpaths and roads.

As set out in Chapter 15 of this EIAR 'Transportation':

> "An *Outline Construction and Environmental Management Plan* (CEMP) has been prepared as part of the planning application with an associated *Preliminary Construction Management Plan* (PCMP). The *PCMP* includes an Outline Traffic Management Plan as well as incorporating a range of integrated control measures and associated management activities with the objective of minimising the potential impacts of construction activities associated with the development. The following initiatives will be implemented to avoid, minimise and/or mitigate against the anticipated construction period impacts:
>
> - During the pre-construction phase, the site will be securely fenced off/hoarded off from adjacent properties, public footpaths and roads;
> - Appropriate on-site parking (temporary parking for the duration of construction works) and compound area will be provided to prevent overflow onto the local network;
> - A large proportion of construction workers are anticipated to arrive in shared transport. It is likely that some numbers of the construction team will be brought to/from the site in vans/minibuses, which will serve to reduce the trip generation potential;
> - Delivery vehicles to and from the site will be spread across the course of the working day, therefore, the number of HGVs travelling during the peak hours will be relatively low;
> - Truck wheel washes will be installed at construction entrances;
> - Any specific recommendations with regard to construction traffic management made by Dublin City Council will be adhered to;

- Potential localised traffic disruptions during the construction phase will be mitigated through the implementation of industry standard traffic management measures such as the use of traffic signage. These traffic management measures shall be designed and implemented in accordance with the Department of Transport's Traffic Signs Manual "*Chapter 8 Temporary Traffic Measures and Signs for Roadworks"* and "*Guidance for the Control and Management of Traffic at Roads Works – 2nd Edition*" (2010);
- Site entrance point/s from the public road will be constructed with a bound, durable surface capable of withstanding heavy loads and with a sealed joint between the access and public highway. This durable bound surface will be constructed for a distance of 10m from the public road.
- Material storage zones will be established in the compound area and will include material recycling areas and facilities;
- 'Way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas;
- Dedicated construction haul routes will be identified and agreed with Dublin City Council prior to commencement of activities on-site; and
- On completion of the works, all construction materials, debris, temporary hardstands etc. from the site compound will be removed off-site and the site compound area reinstated in full on completion of the works."

The mitigation measures proposed during the operational stage include the implementation of the *Parking Strategy*, *Mobility Management Plan*, provision of ample cycle parking, junction enhancements and promotion of car sharing, which will encourage the use of sustainable transport modes which will ultimately negate any potential impacts on the health and safety of the population in relation to traffic safety. The scheme is fully in accordance with the *Design Manual for Urban Roads and Streets*.

Furthermore, a Daylight and Sunlight Assessment has been prepared by 3D Design Bureau, which concludes that, notwithstanding some localised adverse effects identified in the assessment, the design approach taken has sought to minimise impacts on daylight and sunlight to neighbouring properties and that, when considered overall, the assessment results are favourable, with the levels of daylight and sunlight within the proposed scheme providing a high-quality level of amenity for the vast majority of future residents. Please see Appendix 5.1 for the review of the *BRE Sunlight and Daylight Assessment* prepared by 3D Design Bureau, which accompanies this EIAR. A full *Daylight and Sunlight Assessment Report* prepared by 3D Design Bureau is also enclosed separately.

Throughout the design phase of the project, and under this new application, various 'reduction' mitigation measures in terms of the design of the scheme were introduced. This was to ensure a favourable performance of the development from a daylight & sunlight point of view. The following are some key items in terms of design reduction mitigation measures that were considered and implemented. For a full list of compensatory design solutions on underperforming units on the SDA study, which have been provided by the project architect, please refer to section 3.2.1 of 3DDB's daylight and sunlight report, page 26. In summary:

- Proposed amenity spaces utilize a strategic landscape design that pairs excellent overall 'Sun on Ground' metrics with a thoughtful mix of sun-filled and naturally shaded settings.
- Glazing size to habitable rooms on the building facades has been optimised for daylight access entering the apartments.
- Balcony sizes and their positions have been carefully considered to balance the need for private outdoor amenity space and obstructions to daylight of the apartments below.
- Positioning and sizing of proposed trees, that have been included in the assessments as per the BRE Guidelines, have been carefully considered, repositioned and resized where needed, in order to minimise any potential impact on the proposed development.
- Numerous other design mitigations were carried out such as reconfiguration of some internal layouts and introduction of additional windows where necessary all contributed to a high level of compliance.

A Risk Management Chapter has been completed by Enviroguide Consulting and is included as Chapter 18 which notes that the design has considered the potential for flooding, road accidents or fire within the design methodology. The vulnerability of the proposed development to major accidents and/or disasters is not considered significant. Control measures will be put in place for health and safety and environmental management in accordance with relevant code of practices and relevant legislation. It is considered that the vulnerability of the proposed development to the risk of major accidents or disasters will not be significant.

Traffic/Commuter Patterns

The scheme will be developed in line with the Transportation Chapter (Chapter 15 of this EIAR), the separately enclosed *Preliminary Construction Management Plan* (PCMP) and *Outline Construction and Environmental Management Plan* (Outline CEMP) to ensure any impacts on local traffic is minimised during the construction stage. Chapter 15 notes that a large proportion of construction workers are anticipated to arrive in shared transport, therefore the encouragement of car sharing will reduce the quantum of vehicles arriving at the site during construction, which will therefore minimize potential impacts on the surrounding road network during construction.

The promotion of sustainable modes of transport from the site during the operational stage will significantly mitigate against any potential impacts that may arise on traffic in the area. Please see Chapter 15 (Transportation) which details the proposed development further in relation to potential traffic impacts and mitigation measures which include the implementation of a *Parking Management Strategy, Mobility Management Plan*, provision of ample cycle parking, junction enhancements and promotion of car sharing. We note that the scheme has been designed in line with the *Design Manual for Urban Roads and Streets*.

20.2 Archaeological and Cultural Heritage

20.2.1 Mitigation Measures

There are currently no archaeological remains identified within the site. However, it has been established as an area of moderate archaeological potential. In particular, the discovery of human remains adjacent to the site in an adjoining property is significant. The recommendations below are made subject to the approval of the Department of Housing, Local Government and Heritage (DHLGH). As the statutory body responsible for the protection of Ireland's archaeological and cultural heritage resource, they may issue alternative or additional recommendations.

Pre-Construction Phase

Pre-construction assessments (desktop study, walkover survey, geophysical survey and test trench assessment) have been undertaken at the site. No further pre-construction assessment is proposed at this stage.

Recommended Mitigation Measure at Construction Phase

All ground disturbance works across the development site will be monitored by a suitably qualified archaeologist. In the event that archaeological material is recorded during monitoring, further discussion/consultation with the DHLGH will be sought in order to ascertain the appropriate treatment (i.e. preservation by record/preservation in situ) of any additional archaeological remains. Should the DHLGH recommend preservation by record/full archaeological excavation, this work will be undertaken under the appropriate licence. The DHLGH may recommend preservation in situ, should avoidance of any newly discovered archaeological remains be possible.

20.2.2 Monitoring

Construction groundworks will be monitored by a suitably qualified archaeologist. Any future licensed archaeological works will require an application process including approval of proposed methodologies by the National Monuments Service of DHLGH in consultation with the National Museum of Ireland and notification of works.

20.3 Architectural Heritage

20.3.1 Mitigation Measures

Chapter 7 of this EIAR outlines various mitigation measures as follows:

- It is recommended that all the building range's exteriors, interiors and settings be thoroughly recorded. All records will be of a quality meriting inclusion in the Irish Architectural Archives.

- The Sandford Road entrance will be retained to minimise the visual impact on the southward views from the ACA.

- The careful management of the demolition process in the designed temporary protection of extant structures prior to the commencement of their permanent works will ensure that retained buildings are protected from damage, with no direct impacts envisaged. As described in Chapter 6, archaeological investigations will record evidence of earlier embedded structures, if found to exist beneath extant upstanding fabric. New interventions consequential to the loss of physical connections to buildings, which are proposed to be demolished, will be measured and sympathetic to existing architecture.

- Flanking sections of wall will be protected during the removal stage and consolidated to ensure their long-term co-existence with new perforations. Any proposed interventions will be executed using high-quality materials, in a palette to complement the muted tones of the existing wall. The sylvan nature of the existing site will be protected in so far as possible and enhanced by further planting. Flanking sections of retained, early masonry, will be protected during demolitions and consolidated to ensure their continuance as a characterful boundary onto Milltown Road. Modifications to the boundary wall adjoining the entrance will be the sympathetic to the existing entrance in terms of scale and materiality to minimise the visual impact on the established streetscape.

- Potential impacts associated with the construction phase of the development will be considered by way of introducing a range of mitigating measures to protect existing site boundaries and mature trees. On completion of the development, the sylvan screening that presently defines the architectural setting of protected structures in the vicinity of the subject site will be supplemented to overcome possible environmental changes arising from the construction phase of the development. The Sandford Road entrance will be retained to minimise the visual impact on the southward views from the Architectural Conservation Area.

- In respect of the Protected Structures at Nos. 132-138 Sandford Road, the proposal to retain sections of original boundary wall, together with introducing new sections with permeability through the site where its sylvan character will be safeguarded, will lessen visible change from the enclosing urban realm in one sense, whilst enhancing it in revealing the proposed parkland as an extension to the public realm.

- In respect of the Protected Structures at Nos. 1-12 St. James' Terrace, the protection of mature trees and supplementary planting will reduce the visual impact of the new development. Contemporary interventions to the boundary wall will be undertaken using high quality self-finished materials, and selection of a muted colour palette sympathetic to the existing historic context to reduce impact on the streetscape.

Chapter 7 also states the following in relation to the redevelopment of the site:

> *"Development of the existing site is inevitable. The existing building range has evolved in direct response to its religious institutional function and is inseparable architecturally from that function. Its function has now become obsolete and the buildings vacated. An uncertain future for the building range was determined when their original function was permanently lost. In the absence of a corresponding compatible function, their wholescale re-use is architecturally and economically unviable. None of the buildings*

within the grouping are protected structures or included on the NIAH, and not being afforded statutory protection are subject to the same rigours of statutory compliance as new build structures.

As a consequence, the removal of certain buildings to generate a viable residential scheme is not unexpected. Their removal is mitigated in the selected retention and careful presentation of the groupings most significant pair of historic buildings, as has been described in previous sections and in the attached Appendix 7.3. Further mitigations are proposed in the execution of a detailed building inventory, supported with accurately documented survey drawings.

The retention of two buildings for purposeful re-use within the vast building range presents an inherently positive impact for the legibility of the original function of the site.

In their retention, the Chapel and Tabor House are considered to present landmark features within the development and as a consequence must be purposefully used to ensure long term animation in their central position within the masterplan.

Whilst an end user has not yet been identified and the full detail of works to the buildings must yet be resolved, in broad terms, it is intended that the buildings be sensitively conserved, with all interventions arising in changes to accommodate new uses compatible with original compositions and features insofar as possible.

In respect of the masterplan design, the proposed development has emerged in direct response to the positioning, orientation and setting of the retained pair of buildings. The presented integrated approach to this unique site's redevelopment absorbs the challenges of cohesive urbanism to a greater extent than would be possible if it were developed piecemeal.

The scale and positioning of the site affords it special consideration in its capacity to offer a unique urban contribution. In response, the design of the proposed replacement building grouping has evolved in efforts to merge with its established, historic and characterful urban environment."

20.3.2 Monitoring

Archaeological monitoring and recording will follow the demolition of structures and the excavation of the site. The main contractor for the scheme will monitor works in the vicinity of retained historic buildings and enclosing boundary walls on a daily basis, to ensure that protection measures are observed at all times.

Archaeological monitoring and recording will follow the demolition of structures and the excavation of the site. Please refer to Archaeological Impact Assessment (Archer Heritage Planning) - Chapter 6 for further detail.

20.4 Biodiversity

20.4.1 Mitigation Measures

Construction Phase

Mitigation 1: Best Practice Measures during the Construction Phase

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

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

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

Mitigation 2: Reduction of noise-related impacts

Short-term increases in disturbance levels as a direct result of human activity and through increased generation of noise during the Construction/Infill Phase can have a range of impacts depending upon the sensitivity of the ecological receptor, the nature and duration of the disturbance and its timing.

To mitigate this disturbance, the following measures will be implemented:

- Selection of plant with low inherent potential for generating noise.
- Siting of plant as far away from sensitive receptors as permitted by Site constraints.
- Avoidance of unnecessary revving of engines and switch off plant items when not required.
- Keep plant machinery and vehicles adequately maintained and serviced.
- Proper balancing of plant items with rotating parts.

- Keep internal routes well-maintained and avoid steep gradients.
- Minimize drop heights for materials or ensure resilient material underlies.
- Where noise originates from resonating body panels and cover plates, additional stiffening ribs or materials should be safely applied where appropriate.
- Limiting the hours during which Site activities likely to create high levels of noise are permitted.
- Appointing a Site representative responsible for matters relating to noise.
- Monitoring typical levels of noise during critical periods and at sensitive locations.

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

Mitigation 3: Air Quality Control (Dust Reduction)

In order to protect the surrounding environment from dust deposition during earthworks, the following mitigation measures are proposed and included in the accompanying CEMP:

- Dust generation will be controlled through proper placement of stockpiles away from sensitive receptors and taking note of the prevailing wind direction.
- In situations where the source of dust is within 25m of sensitive receptors screens (permeable or semi-permeable) will be erected.
- Stockpiles will be located in sheltered parts of the Site and watered where required.
- Staff will monitor dust levels during working hours.
- Bowsers will be available during dry periods for surface watering to keep unpaved areas moist.
- Any dust emitting works will be postponed during high winds (gales) until winds have subsided.
- Vehicles delivering material will be covered to prevent the escape of dust.
- A wheel washing facility will be installed near the Site compound for use by vehicles exiting the Site.

Mitigation 4: Timing of Vegetation Clearance/Building Renovation

Vegetation Clearance

To ensure compliance with the Wildlife Act 2000 as amended, the removal of areas of vegetation will not take place within the nesting bird season (March 1st to August 31st inclusive) to ensure that no significant impacts (i.e., nest/egg destruction, harm to juvenile birds) occur as a result of the proposed development. Where any removal of vegetation within this period is deemed unavoidable, a qualified Ecologist will be instructed to survey the vegetation prior to any removal taking place. Should nesting birds be found, then the area of habitat in question will be noted and suitably protected until the Ecologist confirms the young have fledged.

Table 8.1 provides guidance for when vegetation clearance is permissible. Information sources include The Herpetological Society of Ireland, the British Hedgehog Preservation Society's *Hedgehogs and Development* and *The Wildlife (Amendment) Act, of 2000*.

The preferred period for vegetation clearance is **within the months of September and October**. Vegetation will be removed in sections working in a consistent direction to prevent entrapment of protected fauna potentially present (e.g., Hedgehog). Where this seasonal restriction cannot be observed, a check for active roosts and nests, as well as signs of amphibians, will be carried out immediately prior to any Site clearance by an appropriately qualified ecologist and repeated as required to ensure compliance with legislative requirements.

Tabor House and Chapel Renovation Works

Should renovation work to The Tabor House roof or loft space be required e.g., insulation, roof repair, grouting etc., further surveys are required to ensure inadvertent impacts to roosting bats do not occur if they are present (please see Section o for details). These surveys will be conducted by a suitably qualified ecologist acting as Ecological Clerk of Works (ECoW).

Demolition or reroofing of buildings must also take place outside of the bird nesting season (March to August inclusive) to avoid impacts to nesting bird species e.g., Herring Gull. If works are to take place in 2026, or years thereafter, they will take place outside of the bird nesting season or the chimneys will be 'bird-proofed' by a specialist contractor prior to nest building/egg laying and a check for breeding birds will be conducted by the ECoW before any demolition works start.

Table 8.1: Seasonal restrictions on vegetation removal. Red boxes indicate periods when clearance/works are not permissible.

<table>
<tr><th>Ecological Feature</th><th>January</th><th>February</th><th></th><th>April</th><th>May</th><th>June</th><th>July</th><th>August</th><th>September</th><th>October</th><th>November</th><th>December</th></tr>
<tr><td>Amphibians</td><td colspan="2">Vegetation /habitat clearance permissible</td><td colspan="3"><u>Amphibian breeding season (Estimated)</u>
No habitat destruction unless confirmed to be devoid of tadpoles and other signs of amphibians</td><td colspan="6">Vegetation/habitat clearance is permissible if devoid of tadpoles and signs of amphibians.</td></tr>
<tr><td>Breeding Birds</td><td colspan="2">Vegetation clearance permissible</td><td colspan="5"><u>Nesting bird season</u>
No clearance of vegetation or works permitted unless confirmed to be devoid of nesting birds by an ecologist.</td><td colspan="5">Vegetation clearance permissible.</td></tr>
<tr><td>Hibernating mammals (namely Hedgehog, Pygmy Shrew)</td><td colspan="3"><u>Mammal hibernation season</u>
No clearance of vegetation is permitted unless confirmed to be devoid of hibernating mammals by an ecologist.</td><td colspan="6">Vegetation clearance permissible.</td><td colspan="2"><u>Mammal hibernation season</u>
No clearance of vegetation or works to relevant structures is permitted unless confirmed to be devoid of hibernating mammals by an ecologist.</td></tr>
<tr><td>Bats</td><td colspan="7">Tree felling is to be avoided unless confirmed to be devoid of bats by an ecologist</td><td colspan="2">Preferred period for tree-felling</td><td colspan="2">Tree felling is to be avoided unless confirmed to be devoid of bats by an ecologist</td></tr>
</table>

Mitigation 6: Invasive Alien Plant Species Management

Several invasive alien plant species were recorded during ecological surveys carried out on Site. The IAPS Site Assessment and Management Plan Report (Invasive Plant Solutions, 2025) has been updated following the survey in April 2023, to include Three-cornered Leek and Spanish Bluebell in the scope of the IAPS management. This was treated in the 2023

growing season. The most recent survey in October 2025 was carried out, and a further follow up survey scheduled in Spring 2026. Listed below are the measures proposed in this report prepared by Invasive Plant Solutions to mitigate and treat IAPS on Site.

Biosecurity Measures for management and treatment of IAPS on Site:

The following measures will be adhered to, to avoid the introduction or dissemination of medium/low-risk invasive species to and from the Site of the proposed development. For the Construction Phase, the contractor will prepare a project-specific IAPS standard operating procedure document, in advance of work commencement. The document should be prepared by an IAPS specialist and should cover the bio-security measures to be taken, including the maintenance of records, to screen for the introduction of IAPS onsite, and to enable their tracing if such an introduction occurs; and to ensure no transmission of IAPS offsite. These measures to include:

- Based on the outcome of the IAPS Site surveys carried out in December 2020, April and September 2021, April 2022, March 2023 and April 2023, the continuing and expanding presence of IAPS on Site was confirmed, namely Three-cornered Leek and Spanish Bluebell.
- Adopting the precautionary principle, regular Site monitoring is to be maintained, with further IAPS inspections to be scheduled during the 2026 growing period in order to assess the success of the IAS treatment and any new emergence of the IAPs onsite.
- The IAPS Report and Management Plan (including subsequent updates) are to be circulated to any adjoining landowners that may be affected by the IAPS presence and to the relevant authorities, where appropriate.
- The IAPS Site Management Plan should be updated following further IAPS inspections during the growing period in 2026.
- All areas of infestation should remain securely fenced off, including a 5-7m buffer zone, where appropriate. Fencing should be strong and incorporate advisory signage. Where stands are small or have been successfully treated, then advisory signage on a timber post will be sufficient.
- No ground maintenance, opening up or any other ground disturbance is to take place within fenced (infested) areas without prior approval, or consultation and under explicit direction and supervision of an IAPS Specialist, with strict bio-security conditions.
- Where works in the fenced (infested) areas must take place, the activity must first be approved by an IAPS specialist, with the development of a suitable 'Task Specific' method statement, that ensures no viable plant material of rhizome should be disturbed or removed from zones of infestation.
- Where future development proposals could encroach onto the IAPS-infected areas, a Site-specific ground remediation programme (including vertical and horizontal protection) should be developed and deployed to provide for the removal and bio-secure disposal of all infested soils and include any other relevant measures required to ensure strict biosecurity compliance across the Site and works.
- All relevant staff and Site visitors are to be briefed on the identification, risks and dangers of IAPS on Site, as well as the Site-specific protocols in place for the management of same. Specialist advice should be sought where there is uncertainty as to the identity of any plant species encountered.

- The accompanying Management Plan and treatment methodology should be screened for potential impacts on ecological receptors and sensitivities, where they exist per S.I. 155/2012; the European Communities (sustainable use of pesticides) Regulations.
- When using herbicides as part of the Management Plan/remediation programme, consideration must be given to the proximity of ecological receptors and designated sites. Non-residual, aquatic-approved herbicides should be specified for treatment, where herbicide use is deemed suitable.

In addition to the above, the following best practice procedures should be adhered to (As per Section 18 of the IAPS Site Assessment and Management Plan Report (2025)):

- Validation that all machinery/vehicles are free of IAPS, prior to their first introduction to the Site.
- Certification should be obtained from suppliers that all imported soils and other fill/landscaping materials are free of IAPS.
- A regular schedule of Site inspections across the IAPS growing seasons, for the duration of the construction works programme.
- Appropriate and effective Site biosecurity hygiene to ensure that no IAPS are transmitted off-site for the duration of the proposed works.
- The IAPS management plan should be updated as required.

This management and treatment programme will be continued multi-annually, until either eradication has been fully achieved or future development proposals have been approved and scheduled, whichever is sooner.

In the event of development being approved in the short term, this management plan recommends the deployment of an IAPS-infested soil remediation programme, comprising the bio-secure off-site disposal of all IAPS-infested soils, under NPWS licence, to an approved and licenced waste acceptance facility. This process will be based on up-to-date survey information, to validate the full extent of IAPS present, carried out over the intervening period and immediately in advance of the remediation process commencing. The management plan also recommends that the remediation process should be carried out independently of, and in advance of, the primary development works commencing. It should be executed by, or carried out under the direct management of, an IAPS specialist.

In its ongoing implementation, this management plan will ensure that initial bio-security measures are deployed at all IAPS locations, that a structured, multi-annual, Site monitoring and herbicide control programme will be employed across the duration planning consent process, and that, if then necessary, a full IAPS infested soil remediation process will be carried out and completed in advance of the commencement of any proposed development project.

Further information on IAPS on Site can be found in the following document produced by Invasive Plan Solutions: "Invasive Alien Plant Species: Site Assessment Report and Management Plan" (Invasive Plan Solutions, 2025).

Mitigation 7: Ecological Clerk of Works (ECoW) for demolition/tree/PRF removal works

A precautionary approach will be adopted during the demolition of Milltown Park House, the renovation of Tabor House and the Chapel, and the removal of trees with bat roosting potential. A suitably qualified Ecologist will act as an Ecological Clerk of Works (ECoW) for the duration of these works.

Pre-commencement roost surveys/inspections will be conducted by the ECoW of the buildings set for demolition and renovation prior to these works taking place. This will ensure that the baseline bat roosting / breeding bird status of buildings in question is reconfirmed ahead of the works, thus ensuring no impacts to roosting bats / nesting birds should they take up residence in the meantime and no offences being committed under the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477/2011) or the Wildlife Acts 1976 (as amended).

The demolition & renovation methodologies will be developed in consultation with the ECoW, and detailed Method Statements, including any bird and bat-specific mitigation measures, will be agreed with the Local Authority. This will ensure that no bats are present or impacted by the works.

It is also possible that trees can become damaged in the time between the original roost assessment survey and the tree felling taking place, and this can sometimes increase the bat roost suitability of a tree, providing new roost features e.g., cracks, holes etc. Similarly, these features can provide nesting opportunities for small local passerines. As such, a pre-felling check will be conducted by a suitably qualified Ecologist of all trees to be felled at the Site prior to felling taking place. This may entail an endoscope check from ground level/ or mobile elevated work platform (MEWP).

Trees will be felled during the start or end of the hibernation period (so either in September/October or February/March) following a thorough check for bats and nesting birds. The felling of trees during this period will ensure that bats are likely to have entered hibernation or will soon be coming out of it and will reduce the likelihood of them either not having enough energy or a food source if they happen to be disturbed and take flight. It is also outside of the breeding bird season and so unlikely to come across active nests. Felling in this period will further reduce the likelihood of bats having transitioned between roosts overnight, should felling not be carried out immediately following the bat survey.

Felling must be carried out no later than 24 hours after the bat survey is complete and once the ECoW can confirm no roosting bats are present. Should a roosting bat be found within trees or the buildings at the Site, no felling of the tree in question or works on the building in question will take place and a derogation licence will be obtained from the NPWS to proceed. The area around the roost will be protected with an appropriate buffer to prevent disturbance of the bat(s).

Where demolition / felling works cannot take place outside of the bird nesting season, pre-commencement checks by a suitably qualified ecologist will be required to confirm no breeding birds are present.

Should a nesting bird be found at the Site, no felling of the tree or demolition of the building in question or works on the building in question will take place and the nest will be protected until the young birds have fledged, as confirmed by a suitable qualified ecologist. The area

around the nest will be protected with an appropriate buffer to prevent disturbance of the bird(s).

It is important to note that permission for the Proposed Development can be granted without any reliance on the potential grant of a derogation licence, and that any references to the potential need to obtain a licence for bats are purely precautionary, as detailed above, and therefore not integral to the decision on whether to grant permission.

Similarly, vegetation clearance will follow a precautionary protocol to avoid impacts on breeding or hibernating Hedgehogs within woodland habitats. Prior to machinery use, the ECoW will visually inspect the Site. Clearance will proceed on a rotational basis, retaining scrub patches to maintain cover and foraging opportunities for Hedgehogs.

In addition, during the Construction Phase, piles of dead wood and brash will be created in undisturbed areas to provide refuges and enhance habitat complexity for invertebrates and small mammals.

Mitigation 8: Construction Phase Lighting Regime

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

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

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

Mitigation 9: Tree Protection

Prior to the commencement of any construction activities, protective fencing will be installed around all retained trees in strict accordance with BS 5837:2012 - Trees in Relation to Design, Demolition and Construction: Recommendations. This fencing will safeguard both the canopy and the Root Protection Areas (RPAs) from accidental damage during site works. The installation must be inspected and formally signed off by a qualified arborist before construction begins to ensure compliance with the standard.

Once erected, these exclusion zones will remain in place for the duration of the works. No ground clearance, excavation, earthworks, stockpiling of materials, or movement of machinery will be permitted within the fenced areas. This approach ensures the long-term health and stability of retained trees and prevents soil compaction or root disturbance.

Mitigation 10: Bat Boxes

The Proposed Development will result in the loss of some trees with bat roost suitability. Twenty trees were considered to be of low roosting suitability i.e., containing 'PRF-I' features capable of supporting individual bats, during the PBRA surveys of the trees to be felled on Site. Two trees on Site were identified as having 'PRF-M' features, capable of supporting multiple roosting bats.

To compensate for the loss of the above potential roosting habitat at the Site, 10 No. bat boxes will be erected on suitably sized trees at the Site under the guidance of a suitably qualified Ecologist. These bat boxes will be of the durable woodcrete variety and capable of supporting multiple crevice- dwelling bat species e.g., the Shwegler 2F bat box.

Suitably locations will be established within the mature woodland habitats in the north and east of the Site, within the dark buffer zone area. These boxes will provide an important roost habitat for bat species which may be using the Site and will work in tandem with the following, to ensure that the proposed development will not result in a significant adverse effect on bat species:

- The reinstatement of grassland habitat and wildflower meadows along edge habitat (e.g., woodland/scrub/hedgerow edges);
- The reinstatement of scrub and hedgerow habitat, with low intervention hedgerow management;
- The planting of multiple tree species within the Site;
- The bat friendly lighting plan (including dark corridor along Site margins with high value habitat for bats); and
- The planting of green roofs on select buildings to provide additional foraging and commuting habitat.

Operational Phase Mitigation Measures

Mitigation 11: Bat-friendly Lighting

The proposed development will see a shift from baseline lighting levels within the Site, owing to the fact that the Site, in its current state, is largely disused and experiences low levels of maintenance. As such mitigation measures must be incorporated to ensure that there is no significant adverse effect on bats and other nocturnal species that may be using the Site.

Therefore, a bat friendly lighting plan has been developed in collaboration with DNV and the lighting Consultants, Themis Pritchard, to ensure that significant impact from same, on bat species which may be using the Site, will not occur. There are three key elements to the lighting plan which are considered and discussed below. These are:

- Light emitted from the proposed buildings;
- Light emitted from public lighting proposed as part of the development works; and
- Light emitted from external sources, e.g., traffic on Milltown Road.

It is considered that light emitted from the proposed buildings is unlikely to impact on commuting and foraging bat species as they will be located predominantly within the centre of the Site, whereas the commuting and foraging habitat for bats is largely associated with

the linear features of the Site which occur contiguous to the Site boundary (with the exception of the western extent) and the adjacent grassland/wildflower meadows. However, the following measures are proposed to further ensure that light spill from the proposal will not occur; night-time light spill via windows/entrances; and the levels of spill/glare from outdoor lighting in place on the building exterior and throughout the Site will be minimised through selective lighting measures, such as fittings set back into the room (**Figure 8.1**), particularly those utilised for units facing towards the buffer zone (discussed further).

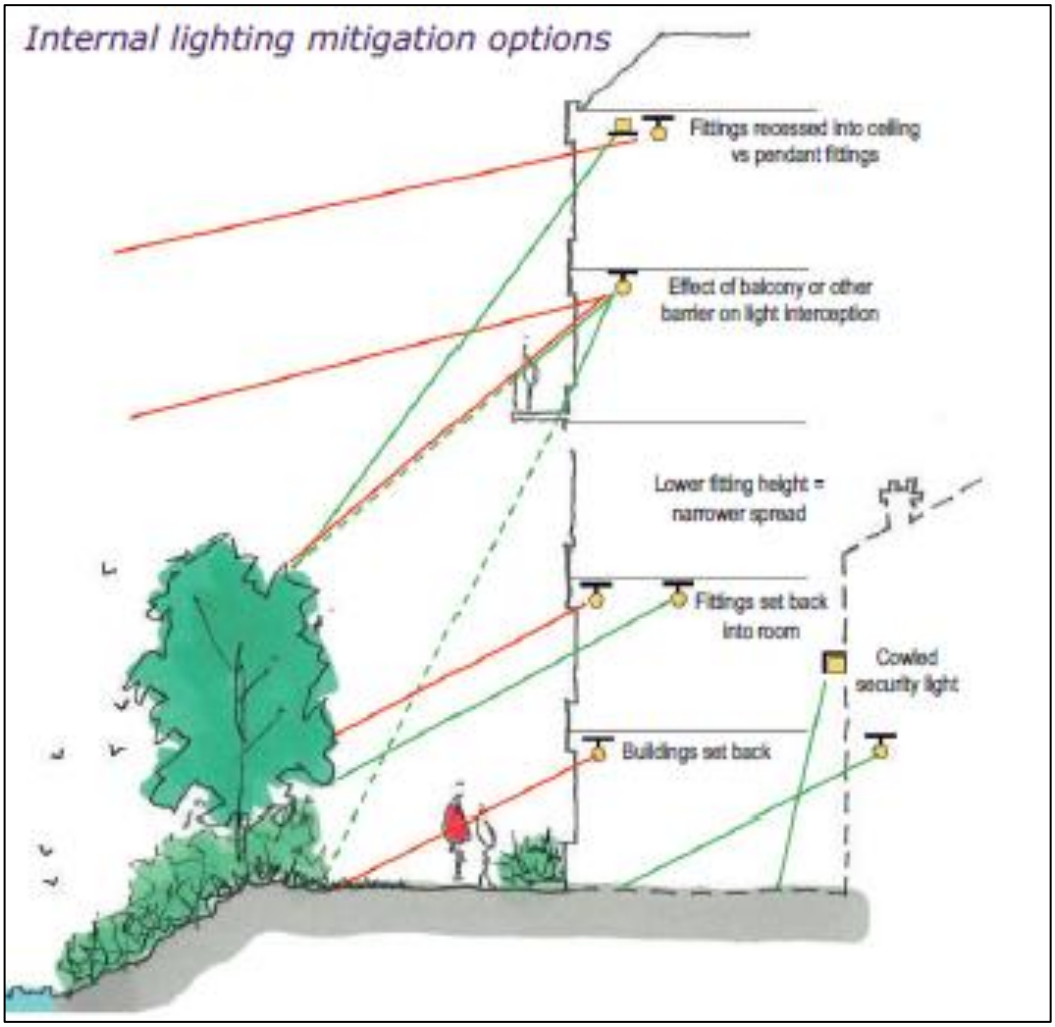

Figure 8.1: Mitigation options for internal lighting (Source: ILP, 2018)

Regarding public lighting at the proposed development, the following design mitigation is incorporated into the Lighting Report and Drawings prepared by Pritchard Themis (2025) which will alleviate the risk of light disturbance to bats:

Hours of illumination:

Feature lighting of trees and on the west side facades of Tabor House and the Chapel will be turned off at curfew 22:30 all year round. Lighting in the secret garden area behind the chapel will be set to turn off at this curfew during summer months May to September inclusive

Light levels and type:

The specification and colour temperature of light treatments is chosen based on their tolerability by bats. UV-free LED luminaires will be used as they are ideal due to their sharp cut-off, lower intensity, and dimming capability. A warm white spectrum (no higher than 3000K) will be used to reduce the blue light component. The LED luminaires will also feature peak wavelengths higher than 550nm to avoid the component of light most disturbing to the Bats. Bollards that sit within the buffer zone of the dark corridor will have a light output set to a down-rated driver to ensure a lower lux level.

Light fittings that occur in the buffer zones of the dark zone will have lower output levels pre-set within the drivers to ensure levels comply with the lower lux levels required. These levels shall still be acceptable for any road or pathway that they light and still in compliance with the levels and band of performance defined for such areas in standard EN: 13201-2. Column heights of lamp posts and direction of light. Any light sources located within these buffer zones will also be 2700k colour temperature or warmer with a registering peak spectral wavelength of 550nm or higher.

Additionally, as bats most likely forage and commute in the unlit areas surrounding the Site, the following measures are in place to reduce the amount of light spillage where it is not needed:

- The height of lamp columns will be 6m or less with a 2700 kelvin warm white LED light source.
- Lighting will be directed away from retained vegetation that provide foraging and commuting potential for bat species on site, i.e., the woodland habitat along the north and eastern boundaries.
- The use of uplighting will be restricted to the central route between the proposed buildings. Any uplighters will be fitted with cowls and controlled light optics to control light spill. Downlighting will be used in locations close to the woodland and retained vegetation. Uplighting of trees and west side facades of Tabor House and the Chapel will be turned off at 22:30 during summer months.
- Along secondary pedestrian pathways a shorter, 4 metre high column provides illumination to key access points within the site. In areas to the south of the site, where ecology buffer zones are crossed by these paths, lights will be set with lower outputs to provide for the lower lux levels required.
- Bollards with a height of 800mm will be used on tertiary pedestrian routes, including the footpath along the woodland. The bollards along the woodland will have a spacing of 9-13m apart. The footpath surface will be of a natural material which does not create a reflection, minimising any potential upward reflection of the light.

A dark corridor is also proposed as part of the lighting plan, whereby the areas identified as of high importance/value for foraging and commuting bats will not be subject to any artificial lighting, thereby maintaining suitable light levels for the bat species. The dark corridor will encompass a core dark zone, and a buffer area with limited lighting, and will include the woodland habitat to the north and eastern extent of the Site as well as the southern section of the Site around the existing buildings (**Figure 8.2**). Planting is proposed along these routes to provide foraging opportunities for bats and will comprise native wildflower meadows and fruit trees, which will replace the commuting and foraging areas lost to the development e.g., the holly treeline in the centre of the site and the meadow grassland to the west of Tabor

House, whilst the open spaces will be subject to the above listed mitigations from public and building lighting, and will provide a significant buffer habitat between the proposed dark corridor and the built area.

Furthermore, landscaping on site has been designed in such a way that it maintains connectivity not just throughout the site, but also to the surrounding areas and the wider urban landscape.

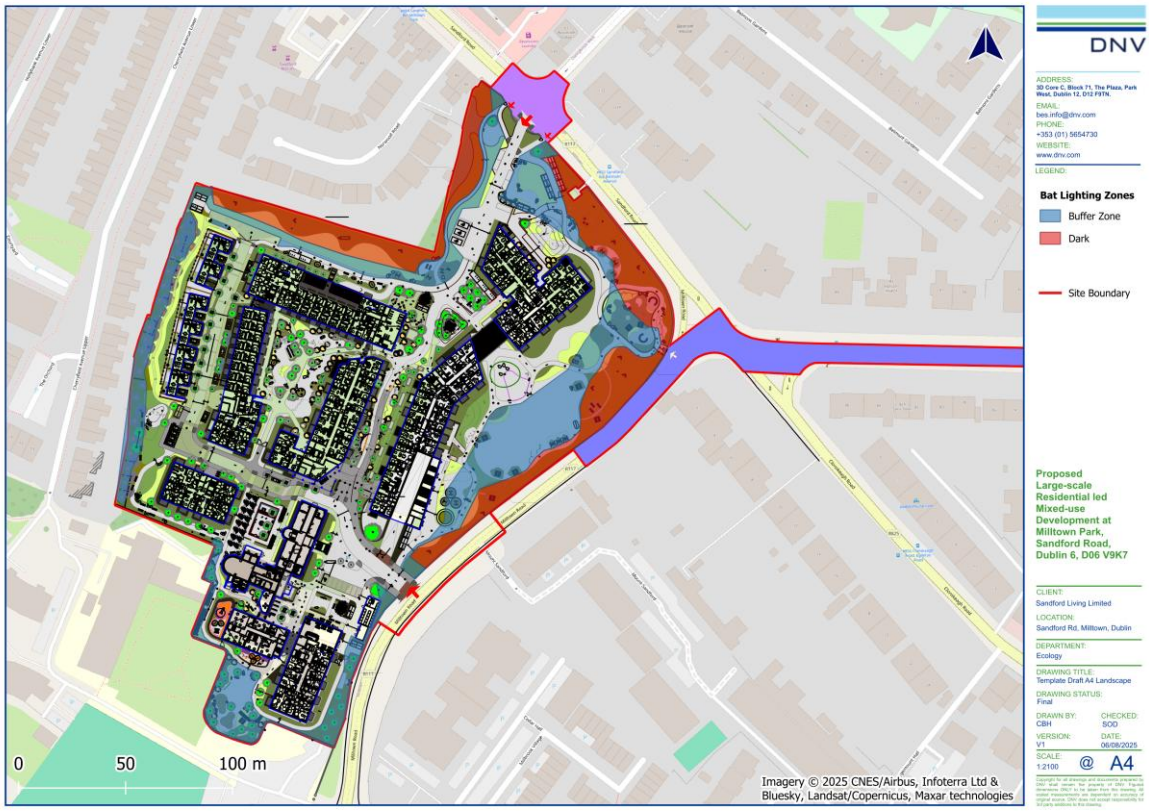

Figure 8.2: **Dark corridor for bats including key habitat where no artificial lighting or restricted lighting in summer is provided. The supporting habitat will act as a buffer zone where restrictions to lighting are incorporated**

(Source: **DNV, Cameo & Partners, Pritchard Themis, and QGIS)**

Finally, lighting from the surrounding environment, particularly at Milltown Road, could have the potential to impact on the commuting and foraging habitat for bats to the east. Particularly where the existing old stone wall will be lowered in parts. However, dense planting of native vegetation is to be planted here along the wall and under the existing mature tree canopy of the woodland, which will prevent any significant increase in light to the area, thus maintaining the dark corridor as proposed.

Proposed Enhancement Measures

A suite of enhancement measures are proposed at the Site. the below sections provides information on each, while further information on the landscape design, and the below enhancement measures can also be found in the Biodiversity Enhancement Plan (BEP), and Habitat Management Plan (HMP) that accompany this report under separate cover.

Enhancement by Design

The Landscape Plan incorporates native planting throughout the open green spaces of the Proposed Development. This will take the form of trees, hedgerow, shrubs, grasses and wildflower meadow. The planting schedule can be found in full in the Landscape Report, along with specifications for plant material, the requirements of the Landscape Contractor and proposals for monitoring establishment of green spaces.

Enhancement 1: Wildflower Meadows

The Landscape Plan includes areas of wildflower meadow. A prominent section will be present in the north of the Site, referred to as a 'woodland glade' area in the Landscape Design Statement (Cameo + Partners Ltd., 2025a), and will run along the woodland section at this location. Smaller islands and linear strips of meadow are proposed throughout the Site, particularly in the east and north-east. Spread among areas of woodland understorey planting and amenity grassland, these areas will be managed using a low-intervention approach with a reduced mowing regime (1-2 cuts per year).

Should reseeding by local flora not be possible; all wildflower seeds to be used in the installation of the wildflower meadow areas will be Irish Provenance Certified Seed, from a reputable source such as Design by Nature (Wildflowers.ie). To maximise the biodiversity value of the landscaping at the Site, consideration has been made to the All-Ireland Pollinator Plan planting code (NBDC, 2022).

The proposed wildflower meadows will serve to provide nectar and pollen for pollinators (bees, butterflies), seeds for birds, and habitat for invertebrates. They also improve soil health and contribute to carbon storage, and can offer cover for small mammals from predation, as well as foraging opportunities.

Enhancement 2: Biodiverse Roofs

Green roofs are proposed across the majority of buildings within the development to deliver significant biodiversity gains and integrate nature-based solutions into the urban fabric. In line with the Landscape Plan, these roofs will be planted exclusively with native wildflower species of Irish origin, ensuring seasonal nectar and pollen availability for pollinators such as bees and butterflies. This approach supports invertebrate diversity and provides additional foraging opportunities for birds and bats, particularly in an otherwise built environment where such resources are limited.

Beyond ecological benefits, green roofs contribute to stormwater attenuation as part of the Sustainable Drainage Systems (SUDS) strategy, reducing surface water runoff and improving water quality. They also enhance microclimate regulation, mitigate the urban heat island effect, and improve building energy efficiency. By embedding these features into the design, the development promotes habitat connectivity, supports pollinator networks, and aligns with best practice in green infrastructure and climate resilience.

Enhancement 3: Native Planting

The Landscape Plan also includes the reinstatement of trees, scrub, and hedgerows lost due to Construction works. Whilst higher value trees will be retained, the majority of trees planted

as part of the proposed development will be native species and will comprise a mix of species already present on Site.

There are currently six elm trees on Site comprising 5 No. *Ulmus Procera* & 1 No. *Ulmus glabra* species. Following pre-planning application consultations with Dublin City Council (in the previous SHD application) it was recommended to consider the importance of retaining elm trees extant on the Site where possible.

As such, tree protection of this species has been a key tenet of the proposed design. Tag #220 *Ulmus procera* & tree tag #214 *Ulmus glabra* present on Site are to be retained. It is proposed that the elms removed will be replaced with trees with better long-term prospects, as advised by CMK, due to the limited long-term potential of elm as a result of Dutch Elm Disease, which has had a significant impact on the native elm tree population.

The planting of native shrubs in the ground layer of the woodland habitat will provide cover and nesting opportunities for birds and small mammals. While the mixed planting of wildflowers, heritage lawn, fruit trees and green roofs will attract insects which is a food resource for multiple species including birds, bats, and hedgehog.

Enhancement 4: Bird Box/Swift Brick Scheme

A bird box/Swift brick scheme is proposed to be installed at the Site of the proposed development and should be implemented with the landscape plan so as to enhance the potential bird nesting habitat in the area during its Operational Phase.

A total of 10 No. bird boxes are proposed to be installed on suitable trees around the Site, to provide nesting habitat for breeding birds that may be using the Site. The location of bird boxes will be advised by a suitably qualified ecologist.

In addition, and as part of this scheme, it is proposed to include 70 No. Swift bricks. These nest bricks will be installed at least 5 metres above the ground, in safe areas where they will not be disturbed. As the bricks tend not to overheat, they can be placed on any aspect, N, S, E, W. Care will be taken to ensure no obstacles or plate glass windows are located below the bricks.

The Swift bricks are installed side by side, in sets of 10 on each block, as Swifts are a social nesting species, on suitable buildings within the proposed development. Potential suitable locations on the buildings for the Swift bricks include:

- Lower Continuous Façade - Install boxes on the main vertical wall below the recessed section, ensuring they remain at least 5 m above ground.
- Under Eaves or Overhangs - If the recess creates an overhang, boxes can be mounted underneath for shelter. (unlikely possible in this scenario)
- Side Elevations - Use gable ends or side walls that remain flush and unobstructed.
- Swift Bricks - Integrate swift bricks into the recessed wall during construction for a discreet solution.
- Balcony Underside - If the recess creates a terrace, the underside of that slab can host boxes, provided they are protected.

It is advised to install a Swift calling system (one per block) where Swift bricks will be located to attract Swifts and encourage them to take up residence at a new site. A Swift calling system is a small speaker set-up that plays Swift calls during the summer. It should be located close to the brick entrances and has been seen to greatly increase the chances of Swifts using the Swift boxes/bricks. Solar powered options are possible.

An Ecologist will be instructed to set up the Swift calling system once the construction of the Proposed Development is complete. This can be with the help of active local Swift groups as required (e.g., Dublin Swift Conservation Group), who can help and advise as to the best set-up etc.

Guidelines for the bird box scheme should also follow guidelines published by Swift Conservation Ireland, and those published by Birdwatch Ireland entitle "Saving Swifts" (2009/2010).

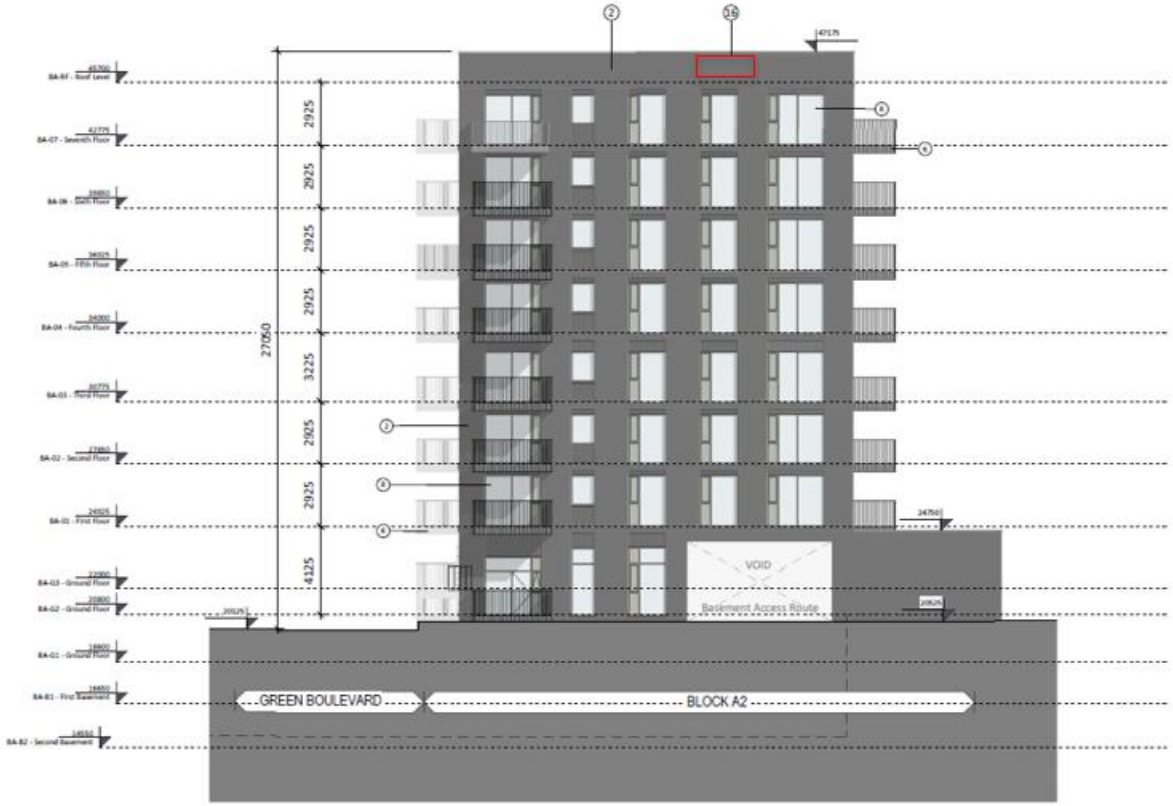

Figure 8.3: Example of Swift Bricks (item no.16) incorporated into the south elevation of Block A2.

(Source: OMP, 2025, extract from Drawing: 19037C – OMP – ZZ – ZZ - M3 – A - 0002)

Enhancement 5: Insect Hotels

The Landscape Plan incorporates the installation of two insect hotels within the Site during the operational phase, providing valuable microhabitats for pollinators and other beneficial invertebrates. These structures will be strategically located in areas intended to remain undisturbed, such as perimeter zones where dense scrub vegetation is proposed. Positioning

insect hotels in sheltered, low-disturbance areas maximizes their ecological function by offering nesting and overwintering opportunities for solitary bees, ladybirds, lacewings, and other species that contribute to pollination and natural pest control.

In addition to supporting invertebrate diversity, insect hotels play an important role in strengthening the Site's ecological network by creating food resources for birds and small mammals. Their integration into the landscape complements other biodiversity measures, such as native planting and green roofs, ensuring a holistic approach to habitat creation. Clear signage and community engagement initiatives can further enhance awareness and stewardship of these features, promoting long-term ecological benefits.

Enhancement 6: Understorey with Woodland

In order to preserve the boundary woodland, which comprises multiple species in the canopy layer, it is proposed to include a dense understory layer along the perimeter of the Site in the northern and eastern boundaries where the woodlands are located. Said understory is to comprise of native species such as Bramble (*Rubus fructicosus)*, Common Dogwood (*Cornus sanguinea)*, Common Hawthorn (*Crataegus monogyna)*, Common Holly, Elder and Guelder Rose (*Viburnus opulus)*.

These will provide a great source of nectar and pollen further enhancing biodiversity within the Site, and limit access to these wilder areas, whilst also providing an aesthetic function. In addition, the understory will provide suitable habitat for small mammals to commute and forage safely, whilst also connecting the Site to the wider ecological landscape.

Enhancement 7: Log Piles for Invertebrates and Fauna

Piles of logs and woody vegetation arising from tree felling will be retained in secluded, undisturbed margins of the Site. These features will provide essential refuges and foraging opportunities for a range of species, including Common Frog and small mammals such as Hedgehog and Pygmy Shrew.

In addition to supporting larger wildlife, these areas of woody debris will benefit local invertebrate communities by offering shelter and food sources, thereby enhancing the Site's ecological complexity. Over time, the gradual decomposition of logs will enrich soil organic matter, supporting fungi and detritivores, which in turn provide prey for birds and small mammals.

By embedding these features into the construction phase, the development promotes biodiversity, strengthens habitat connectivity, and aligns with best practice for ecological enhancement in urban landscapes.

Enhancement 8: Low Intervention Woodland Understorey Management

The existing woodland understorey areas proposed to be retained within the Site within the woodland along its outer margins, will be managed in a way that maximises the ecological value they provide at the Site, with habitat connectivity maintained along the margins of the Site; connecting the various in the area.

This connectivity is vital for wildlife such as birds, bats, mammals, and insect pollinators in a human landscape such as that which will be provided by the proposed development.

Additionally, by managing scrub/understorey areas more naturally, they will provide more in terms of biodiversity; through increased plant diversity, increase provision of food resources and higher quality shelter to wildlife inhabiting and commuting through the area.

It is acknowledged that there will be significant landscaping undertaken at the Site, resulting in changes to the nature of some of the woodland understorey habitats found on Site. For the woodland understorey areas running along the outer margins of the Site, the following management approach is proposed to maximise their biodiversity value and offset the loss of any sections of existing understorey/scrub habitat at the Site.

- The woodland understorey located along the outer boundaries of the Site will, as much as is practicable, link up with each other. The provision of an almost continuous vegetative margin around the Site; through planted scrub and trees, will maintain habitat connectivity with the surrounding environment.
- The understorey areas along the outermost sections of the Site will be maintained in a wild state as dense, scrub habitat with minimal intervention. This will recreate the natural scrub habitat conditions present within the existing woodland.
- Where trimming of dense scrub understorey needs to occur, delay trimming as late as possible – until January and February as the surviving berry crop will provide valuable food for wildlife. The earlier this is cut; the less food will be available to help birds and other wildlife survive through the winter. Any scrub/understorey cutting will be done **outside of the nesting season (March 1st-August 31st)** and due consideration of the Wildlife Act 1976 (as amended) needs to be taken.
- Where possible, minimise the frequency woodland understorey areas are cut, if at all, (as cutting annually stops the scrub species flowering and fruiting) and cut in a three year rotation rather than all at once - this will ensure some areas of dense vegetation will always flower (Blackthorn in March, Hawthorn in May etc.).
- Where they occur naturally, Bramble and Ivy should be allowed to grow, as they provide key nectar and pollen sources in summer and autumn.

Methods to Avoid:

Woodland understorey will not be over-managed. Tightly cut vegetation means there are fewer flowers and berries, thus reducing available habitats, feeding sources and suitable nesting Sites.

Scrub/understorey vegetation will not be cut between March 1st and August 31st inclusive. It is both prohibited (except under certain exemptions) and very damaging for birds as this is the period, they will have vulnerable nests containing eggs and young birds. Red-listed bird species such as Yellowhammer in particular nest up until the end of August.

20.4.2 Monitoring

Pre-construction Phase Monitoring

Ecologist – Pre-construction Phase Bat Roost Assessment

A precautionary approach will be adopted to ensure compliance with wildlife legislation and best practice. Pre-construction bat roost assessment surveys will be conducted by a suitably qualified Bat Ecologist 2-3 months before site clearance during an appropriate season for bat activity.

These surveys will confirm the current status of the Site with respect to bat roosts and identify any changes since previous assessments.

The focus will be on structures with the highest potential for roosting, particularly Tabor House, the Chapel and other buildings scheduled for demolition. In addition, all trees proposed for removal will be re-assessed for roost potential, as tree condition can deteriorate over time, increasing the likelihood of features such as cracks, cavities, or loose bark that may support roosting bats.

This proactive approach ensures sufficient time to comply with NPWS licensing requirements and implement any necessary mitigation measures before works commence. Should evidence of bats be found, works will cease immediately, and NPWS will be consulted to agree appropriate actions. By embedding this process into the project timeline, the development safeguards bat populations and demonstrates adherence to ecological best practice.

Construction Phase Monitoring

Ecologist – Building Watching Brief for Bats

An Ecologist will be instructed as an Ecological Clerk of Works to supervise the renovation of the Chapel and Tabor House in the event that bats are found during works on the roofs and loft spaces in particular. Should any bats be found, all works in that area will cease and a derogation licence may be required.

Operational Phase Monitoring

Bat Ecologist – Public Lighting

Once the development has been completed a suitably qualified bat ecologist will be required to assess the night-time lighting in place at the site and will make recommendations where required to mitigate any impacts to local bats. The bat ecologist will consult this report to understand the priority areas for bat commuting/foraging at the site.

Bat Ecologist – Bat Monitoring Surveys

Following guidelines form NPWS (2016) and Marnell et al. (2022), bat use of the Site will be monitored post-construction to evaluate the effectiveness of implemented measures for foraging, commuting habitat, and roosting sites. Monitoring will be carried out by a qualified ecologist during the summer months (May - September) and will include activity surveys such as transects and automatic static detectors. The detailed scope will be agreed with Dublin City Council Biodiversity Department. In line with Marnell et al. (2022), monitoring should also consider ongoing maintenance of mitigation features and adaptive management where necessary to ensure long-term functionality.

Bats	Operational Phase	Bat Ecologist	Once the development has been completed a suitably qualified bat ecologist will be required to conduct bat surveys at the Site **for one-year post construction** to evaluate implemented measures to provide foraging and commuting habitat and roosting sites for bats. The monitoring will take place in the summer months May – September in the form of activity surveys including transects and automatic static detectors.

20.5 Landscape and Visual Impact

20.5.1 Mitigation Measures

Construction Phase

Apart from (a) the measures incorporated in the proposed design (see 9.6.2 of the main EIAR chapter), (b) the measures for tree protection (as recommended in the Tree Protection Strategy prepared by CMK Horticulture & Arboriculture Ltd) and biodiversity protection (as recommended in Chapter 8), and (c) standard best practice construction site management (e.g. erection and maintenance of site hoarding, orderly storage of materials and vehicles, etc.), no additional mitigation measures are proposed for townscape and visual effects.

Operational Phase

The proposal has been subject to detailed environmental impact assessment, including of potential townscape and visual effects, throughout the design and pre-planning process – for the previous SHD and LRD applications and the current application. Informed by this assessment, the proposal has been designed to avoid causing any significant negative townscape and visual effects. Important mitigation measures built into the proposal from the outset include:

- The retention of the tree/ woodland belt inside the north and east boundaries as part of the scheme's main open space. (Not all of the trees would be retained, but most of the better quality trees – a sufficient volume to retain the tree belt as a feature of the landscape – would be retained.)

- The retention of tree lines inside the northern boundary (shared with Norwood Park), and the west boundary (Cherryfield Avenue).

These measures would (a) retain the site's 'parkland' character in views from Sandford Road and Milltown Park, (b) provide screening of the buildings, and (c) lend maturity, character and landscape/ visual amenity to the new neighbourhood.

- The positioning of Block A1 well back from Sandford Road and Milltown Road. This allowed for the tree/woodland belt to the retained, and limited the visual impact of the building on these roads and the houses across the roads.

- The positioning of Block C well back from the boundary shared with Norwood Park. This allowed for the retention of the tree line inside the boundary. This provided a visual buffer/ screen for the neighbouring estate. The height of the northern volume of Block C was limited to 4/5 storeys, as an additional measure to avoid excessive visual impact on the houses.

- The positioning of a row of two storey, flat-roofed houses (Block E) and a small apartment building of 3-5 No. storeys (Block D) inside the west boundary to the rear of the neighbouring houses on Cherryfield Avenue. These buildings provide a buffer/ transition in scale between Cherryfield Avenue and the taller buildings within the site. Both Blocks D and E are set back from the shared boundary with Cherryfield Avenue behind a 12m+ 'biodiversity corridor', which includes a row of retained trees and a large number of new trees for additional visual screening.

- The retention of Tabor House and the Chapel on the site. The dual intention was to (a) preserve these assets in the interest of cultural/ architectural heritage conservation, and (b) to lend maturity, character and landscape/ visual amenity to the new neighbourhood.

- High quality design and materials. The proposed scheme is conceived as a high density neighbourhood of the highest architectural and landscape quality, commensurate with the qualities of the context. Therefore, even when visible from the surroundings (as a higher density development unavoidably would be from some vantage points), the buildings and landscape would be attractive. The townscape character and views would change, but their quality would be maintained.

No further mitigation measures are recommended.

20.5.2 Monitoring

The retention of existing trees on site is an important element of the proposal. Any unplanned loss of trees beyond that considered and designed for in the subject application could result in negative townscape and visual impacts.

The planning application is accompanied by a Tree Protection Strategy prepared by CMK Horticulture & Arboriculture Ltd., which includes the requirement for (a) a Site Arborist tobe appointed for the project, (b) the monitoring of tree protection measures by the Site Arborist throughout construction, (c) supervision by the Site Arborist of all works in the vicinity of trees, and (d) the specification by the Site Arborist of remedial works in the event of any damage to trees. The strategy also requires a re-survey of the retained trees post construction to ensure their survival in optimum condition.

20.6 Land, Soils and Geology

20.6.1 Ameliorative, Remedial or Reductive Measures

Construction Phase

Stripping of Topsoil

Stripping of topsoil will be carried out in a controlled and carefully managed way and coordinated with the proposed staging for the development. As noted in Chapter 11, approximately 40% of stripped topsoil will be reused on site (incorporated into landscaping) with remaining topsoil reused on another site as a by-product in accordance with Regulation 27 of the EC (Waste Directive) Regulations (2011) or disposed of at a licensed waste receiving facility (subject to the approval of the facility operator in accordance with their facility permit or licence).

At any given time, the extent of topsoil strip (and consequent exposure of subsoil) will be limited to the immediate vicinity of active work areas.

Topsoil stockpiles will be protected for the duration of the works and not located in areas where sediment laden runoff may enter existing surface water drains.

Topsoil stockpiles will also be located so as not to necessitate double handling.

Excavation of Subsoil Layers

The need to excavate existing subsoil layers has been minimised as the proposed ground floor levels and external pavement levels have been designed to follow the natural topography of the site. The basement excavation has also been minimised in as far as the structural and functional constraints will allow.

Disturbed subsoil layers will be stabilized as soon as practicable (e.g. backfill of service trenches, construction of road capping layers, concrete blinding of the basement excavation, construction of building foundations and completion of landscaping). The duration that subsoil layers are exposed is to be minimised in order to mitigate against weather effects.

Similar to comments regarding stripped topsoil, stockpiles of excavated subsoil material will be protected for the duration of the works. Stockpiles of subsoil material will be located separately from topsoil stockpiles.

Measures will be implemented to capture and treat sediment laden surface water runoff (e.g. surface water inlet protection and earth bunding adjacent to open drainage ditches).

Imported Fill

importation of fill to site will be required. Materials imported to site for use as fill will be natural stones sourced from locally available quarries or materials that have been approved as by-products by the EPA in accordance with the EPA's criteria for determining a material is a by-product, per the provisions of Regulation 27(1) of the European Communities (Waste Directive) Regulations, 2011.

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

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

Construction Traffic

Earthworks plant and vehicles delivering construction materials to site will be confined to predetermined haul routes around the site and designated delivery areas. This mitigates the risk of rutting and deterioration of the topsoil layer and any exposed subsoil layers.

Vehicle wheel wash facilities will be installed in the vicinity of any site entrances and road sweeping implemented as necessary in order to maintain the road network in the immediate vicinity of the site.

Dust suppression measures (e.g. dampening down) will be implemented as necessary during dry weather periods.

Accidental Spills and Leaks

In order to mitigate against spillages contaminating underlying soils, all oils, fuels, paints and other chemicals will be stored in a secure bunded hardstand area.

Refuelling and servicing of construction machinery will take place in a designated hardstand area (when not possible to carry out such activities off site).

A response procedure will be put in place to deal with any accidental pollution events and spillage kits will be available and construction staff will be familiar with the emergency procedures and use of the equipment. Concrete batching will take place off site when possible to minimise the risk of ground contamination on site during the concrete batching process.

Geological Environment

No mitigation measures are proposed in relation to the geological environment.

Risks to Human Health

- Contractor / Project Supervisor Construction Stage (PSCS) to implement safe systems of construction including but not limited to battering the sides of trench excavations and installation of excavation shoring systems.

- Full precautions to be taken when working in vicinity of boundary structures for protection of same. Method and sequence of construction to be agreed with design team prior to commencement of work. Contractor's Temporary Works Designer to prepare Method Statement and Temporary Works Cert to ensure stability of excavations and adjacent structures.

- Contractor to obtain utility company network plans and arrange observation as required.
- Contractor to locate and record all services on site prior to commencement of excavations.
- Contractor to prepare and implement a Construction Traffic Management Plan that will be agreed with the Design Team and local authority and which will ensure the safety of the public during construction (note, an outline Traffic Management Plan is included in the Preliminary Construction Management Plan).
- Contractor must supervise vehicle movements to and from the site during construction in order to ensure that this traffic management plan is fully implemented. Plan to include deliveries to the site, staff parking, works outside the defined site such as utility connections.
- Public pedestrian routes to be established at site entrance as required.
- All personnel using machinery/plant to have undergone training on the use of said machinery/plant. Ongoing site supervision to be undertaken to ensure all use of machinery/plant is in accordance with the training undertaken.
- Contractor's employees to be provided with all required PPE in accordance with Safety, Health and Welfare at Work Act, 2005.
- Contractor to prepare a Dust Minimisation Plan with reference to the mitigation measures outlined in Chapter 12.0 (Air Quality and Climate).

Operational Phase

On completion of the construction phase, no further mitigation measures are proposed as there will be no further impact on soils and the geological environment.

20.6.2 Monitoring

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

- Adherence to Construction Management Plan (note, a *Preliminary Construction Management Plan* and *Outline Construction and Environment Management Plan* are included with the planning application documents which must be adhered to).
- Construction monitoring of the works (e.g. inspection of existing ground conditions on completion of cut to road formation level in advance of placing capping material, stability of excavations etc.).
- Inspection of fuel / oil storage areas.

- Monitoring cleanliness of adjacent road network, implementation of dust suppression and provision of vehicle wheel wash facilities.

- Monitoring of contractor's stockpile management (e.g. protection of excavated material to be reused as fill, protection of soils for removal from site from contamination).

No ongoing monitoring is proposed on completion of the construction phase.

20.7 Water-Hydrology

20.7.1 Ameliorative, Remedial or Reductive Measures

Construction Phase

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

Character of Potential Impact	Mitigation Measure
Construction Phase	
Damage to existing underground and overground infrastructure and possible contamination of the existing systems with construction related materials.	A *Preliminary Construction Management Plan* and *Construction Environmental Management Plan* have been prepared as part of this planning application and will be implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the *Preliminary Construction Management Plan* and *Construction Environmental Management Plan*.
Contamination of surface water runoff due to construction activities.	Surface water runoff from areas stripped of topsoil and surface water collected in excavations will be directed to on-site settlement ponds where measures will be implemented to capture and treat sediment laden runoff prior to discharge of surface water at a controlled rate. Concrete batching (for use in in situ concrete pours) will take place off site and wash down and wash out of concrete trucks will take place off site (at authorized concrete batching plant in full compliance with relevant planning and environmental consents). In order to mitigate against spillages contaminating the surrounding surface water and hydrogeological environments, all oils, fuels, paints and other chemicals will be stored in a secure bunded hardstand area. Refuelling and servicing of construction machinery will take place in a designated hardstand area (where not possible to carry out such activities off site).

Improper discharge of foul drainage from contractor's compound.	The construction compound will include adequate staff welfare facilities including foul drainage and potable water supply. Foul drainage discharge from the construction compound will be tankered off site to a licensed facility until a connection to the public foul drainage network has been established.
Cross contamination of potable water supply to construction compound.	The construction compound's potable water supply shall be protected from contamination by any construction activities or materials. The contractor shall obtain a temporary connection from the existing water supply network along Milltown Road / Sandford Road in accordance with Irish water requirements for same.
Meteorological impacts due to seasonal weather variations	Weather conditions and typical seasonal weather variations will also be taken account of when planning stripping of topsoil and excavations with an objective of minimizing soil erosion.
Damage to existing utilities.	Contractor to prepare Method Statement detailing the proposals for works in the vicinity of existing utilities (method statement to be agreed with Project Supervisor Design Process (PSDP)). Contractor to locate and record all services on site prior to commencement of excavations. A GPR utility survey has been carried out along Sandford Road, Milltown Road and Eglinton Road to confirm the location of power, gas and telecommunications infrastructure. This survey is to be supplemented with slit trench investigation as required by the contractor in advance of commencing works along Sandford Road, Milltown Road and Eglington Road. Contractor to obtain utility company network plans and arrange observation as required.
Potential loss of connection to the existing utility infrastructure while carrying out works to provide service connections.	Connections to the existing surface water, foul sewer and water supply networks will be coordinated with the relevant utility provider and carried out by approved contractors. Contractor to comply with HSA Code of Practice for Avoiding Danger from Underground Services.
Unsafe working conditions due to untrained personnel.	All personnel using machinery/plant to have undergone training on the use of said machinery/plant. Ongoing site supervision to be undertaken to ensure all use of machinery/plant is in accordance with the training undertaken.
Unsafe conditions (for site personnel and the public) due to improper site traffic management.	Contractor to prepare and implement a Construction Traffic Management Plan that will be agreed with the Design Team and local authority, and which will ensure the safety of the public during construction (note, an outline TMP is included in the *Preliminary Construction Management Plan*).

Operational Phase

Character of Potential Impact	Mitigation Measure
Operational Phase	
Pluvial flood risk due to climate change, causing severe inclement weather conditions.	• Attenuation storage design allows for a 20% increase in rainfall intensities. • Drainage system design allows for a 20% increase in flows. • Provision of min. freeboard (500mm) from 1% AEP as required by GDSDS (mitigation against impact of climate change). • The design of proposed site levels (roads, FFL etc.) has been carried out to ensure the proposed development is elevated and set in such a way as to avoid concentrating additional surface water flow in any location. Following the Site-Specific Flood Risk Assessment, it has been determined that the proposed development is located in Flood Zone C as defined by the Guidelines i.e. proposed development is considered to have the required level of flood protection up to and including the 1% AEP flood event. • Overland flow routes, directed towards open space areas, are identified / established in the event of storms exceeding the 1% AEP design capacity of the attenuation system (also refer to DBFL Report 190226-DBFL-XX-XX-RP-C-0003, Site Specific Flood Risk Assessment).
Reduced local ground water recharge due to increase in impermeable surfaces, potentially increasing surface water runoff.	35.3% of the proposed development is landscaped green area that is permeable. Groundwater recharge is still possible after the construction of the proposed development, although at a slower rate than when it was predominantly a greenfield site with minimal development.
Interference with existing groundwater regime.	The development's basement shall not have an adverse effect on the existing ground water regime as the basement extends into the low porosity boulder clays (refer to Ayesa's Basement Impact Assessment for the proposed development). In areas of high groundwater levels where SuDS are proposed, the SuDS features will be lined to avoid infiltration and prevent groundwater flooding.
Accidental hydrocarbon leaks and subsequent discharge into piped surface water drainage network (e.g. along	All surface water runoff draining to the piped network will pass through a petrol interceptor (Klargester or equivalent), before discharging into the existing public surface water network along Eglinton Road.

Character of Potential Impact	Mitigation Measure
roads and in driveway areas).	
Contamination of surface water runoff from foul sewer leaks.	All new foul drainage lines will be pressure tested and will be subject to a CCTV survey in order to identify any possible defects prior to being made operational (in accordance with Irish Water's QA Field Inspection Requirement Manual).
Contamination of potable water from foul sewer leaks.	No additional mitigation measures are proposed in relation to water supply; however, water conservation measures such as dual flush water cisterns and low flow taps will be included in the design.
Blockages in surface water drainage network causing flooding	A contract will be entered into with a suitably qualified contractor for maintenance of the attenuation system, green roof installations, Hydrobrake and full retention fuel / oil separator noted above.
Increased demand on existing foul network.	Irish Water have confirmed that based on the capacity currently available in the foul drainage and water supply networks and subject to a valid connection agreement being put in place the proposed connections can be facilitated (refer to Irish water correspondence in Appendix 11.3).

20.7.2 Monitoring

Proposed monitoring during the construction phase in relation to the water and hydrogeological environment are as follows:

- Implementation of measures included in the *Preliminary Construction Management Plan* and *Outline Construction and Environment Management Plan* included in application documents).
- Inspection of fuel / oil storage areas.
- Monitoring cleanliness of adjacent road network, implementation of dust suppression and vehicle wheel wash facilities.

During the operational phase an inspection and maintenance contract are to be implemented in relation to the proposed drainage network, Class 1 full retention fuel / oil separator, hydrobrakes and attenuation devices).

20.8 Air Quality and Climate

20.8.1 Avoidance, Remedial and Mitigation Measures

Construction Phase

Mitigation Measure	Action
Communications	
Develop and implement a stakeholder communications plan that includes community engagement before work commences on site.	Highly Recommended
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.	Highly Recommended
Display the head or regional office contact information	Highly Recommended
Develop and implement a Dust Management Plan (DMP), which may include measures to control other emissions, approved by the Local Authority. The level of detail will depend on the risk and should include as a minimum the highly recommended measures in the IAQM Guidance. The desirable measures should be included as appropriate for the site. The DMP may include monitoring of dust deposition, dust flux, real-time PM_{10} continuous monitoring and/or visual inspections.	Highly Recommended
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.	Highly Recommended
Make the complaints log available to the local authority when asked.	Highly Recommended
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.	Highly Recommended
Hold regular liaison meetings with other high risk construction sites within 500 m of the site boundary, to ensure plans are co-ordinated and dust and particulate matter emissions are minimised. It is important to understand the interactions of the off-site transport/deliveries which might be using the same strategic road network routes.	Highly Recommended
Monitoring	
Undertake daily on-site and off-site inspection, where receptors (including roads) are nearby, to monitor dust, record inspection results, and make the log available to the local authority when asked. This should include regular dust soiling checks of surfaces such as street furniture, cars and windowsills within 100 m of site boundary, with cleaning to be provided if necessary.	Highly Recommended
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	Highly Recommended
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.	Highly Recommended

Mitigation Measure	Action
Agree dust deposition, dust flux, or real-time PM_{10} continuous monitoring locations with the Local Authority. Where possible commence baseline monitoring at least three months before work commences on site or, if it a large site, before work on a phase commences. Further guidance is provided by IAQM on monitoring during demolition, earthworks and construction.	Highly Recommended
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.	Highly Recommended
Erect solid screens or barriers around dusty activities or the site boundary that are at least as high as any stockpiles on site.	Highly Recommended
Fully enclose site or specific operations where there is a high potential for dust production and the site is actives for an extensive period.	Highly Recommended
Avoid site runoff of water or mud.	Highly Recommended
Keep site fencing, barriers and scaffolding clean using wet methods.	Highly Recommended
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.	Highly Recommended
Cover, seed or fence stockpiles to prevent wind whipping.	Highly Recommended
Operating vehicle/machinery and sustainable travel	
Ensure all vehicles switch off engines when stationary – no idling vehicles.	Highly Recommended
Avoid the use of diesel- or petrol-powered generators and use mains electricity or battery powered equipment where practicable.	Highly Recommended
Impose and signpost a maximum-speed-limit of 24 kmph on surfaced and 16 kmph on unsurfaced haul roads and work areas (if long haul routes are required these speeds may be increased with suitable additional control measures provided, subject to the approval of the nominated undertaker and with the agreement of the local authority, where appropriate)	Highly Recommended
Produce a Construction Logistics Plan to manage the sustainable delivery of goods and materials.	Highly Recommended
Implement a Travel Plan that supports and encourages sustainable travel (public transport, cycling, walking, and car-sharing)	Highly Recommended
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.	Highly Recommended
Ensure an adequate water supply on the site for effective dust/particulate matter suppression/mitigation, using non-potable water where possible and appropriate	Highly Recommended
Use enclosed chutes and conveyors and covered skips.	Highly Recommended
Minimise drop heights from conveyors, loading shovels, hoppers and other loading or handling equipment and use fine water sprays on such equipment wherever appropriate.	Highly Recommended

Mitigation Measure	Action
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.	Highly Recommended
Avoid bonfires and burning of waste materials.	Highly Recommended
Measures Specific to Demolition	
Soft strip inside buildings before demolition (retaining walls and windows in the rest of the building where possible to provide a screen against dust.	Highly Recommended
Ensure effective water suppression is used during demolition operations. Handheld sprays are more effective than hoses attached to equipment as the water can be directed to where it is needed. In addition, high volume water suppression systems, manually controlled, can produce fine water droplets that effectively bring the dust particles to the ground.	Highly Recommended
Avoid explosive blasting, using appropriate manual or mechanical alternatives.	Highly Recommended
Bag and remove any biological debris or damp down such material before demolition.	Highly Recommended
Measures Specific to Earthworks	
Re-vegetate earthworks and exposed areas/soil stockpiles to stabilise surfaces as soon as practicable	Desirable
Use Hessian, mulches or trackifiers where it is not possible to re-vegetate or cover with topsoil, as soon as is practicable.	Desirable
Only remove the cover in small areas during work and not all at once.	Desirable
Measures Specific to Construction	
Avoid scabbling (roughening of concrete surfaces) if possible.	Desirable
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.	Highly Recommended
Ensure bulk cement and other fine powder materials are delivered in enclosed tankers and stored in silos with suitable emission control systems to prevent escape of material and overfilling during delivery.	Desirable
For smaller supplies of fine powder materials, ensure bags are sealed after use and stored appropriately to prevent dust.	Desirable
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.	Highly Recommended
Avoid dry sweeping of large areas.	Highly Recommended
Ensure vehicles entering and leaving sites are covered to prevent escape of materials during transport.	Highly Recommended
Inspect on-site haul routes for integrity and instigate necessary repairs to the surface as soon as reasonably practicable.	Highly Recommended
Record all inspections of haul routes and any subsequent action in a site logbook.	Highly Recommended

Mitigation Measure	Action
Install hard surfaced haul routes, which are regularly damped down with fixed or mobile sprinkler systems, or mobile water bowsers and regularly cleaned.	Highly Recommended
Implement a wheel washing system (with rumble grids to dislodge accumulated dust and mud prior to leaving the site where reasonably practicable).	Highly Recommended
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.	Highly Recommended
Access gates to be located at least 10 m from receptors where possible.	Highly Recommended

Operational Phase

No site-specific mitigation measures are proposed for the operational phase as impacts are predicted to be not significant.

20.8.2 Monitoring

Construction Phase

- Undertake daily on-site and off-site inspections, where receptors (including roads) are nearby, to monitor dust, record inspection results in the site inspection log. 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.

- 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/m²/day during the monitoring period of 30 days (+/- 2 days). Monitoring shall ensure that the dust mitigation measures are working satisfactorily as construction works progress.

Operational Phase

There is no monitoring recommended for the operational phase of the development.

20.9 Noise and Vibration

20.9.1 Mitigation Measures

Construction Stage

With regard to construction activities, best practice control measures for noise and vibration from construction sites are found within BS 5228 (2009 +A1 2014) Code of Practice for Noise and Vibration Control on Construction and Open Sites Parts 1 and 2. Whilst construction noise and vibration impacts are expected to vary during the construction phase depending on the distance between the activities and noise sensitive buildings, the contractor will ensure that all best practice noise and vibration control methods will be used, as necessary in order to ensure impacts at off-site Noise Sensitive Locations are minimised.

The best practice measures set out in BS 5228-1 and BS 5228-2 includes guidance on several aspects of construction site mitigation measures, including, but not limited to:

- selection of quiet plant;
- noise control at source;
- screening; and,
- liaison with the public.

Construction activities will vary depending on the phase of construction. The following matrix identifies which mitigation measures are applicable to the various phases.

Construction Phase		Mitigation Measure			
		Selection of quiet plant	Noise control at source	Piling	Screening
Site Preparation		X	X		X
Demolition		X	X		X
Foundations	Option A	X	X		X
	Option B	X	X	X	X
	Option C	X	X		X
General Construction		X	X		X
Landscaping		X	X		X
		Liaison with Public	Project Programme	Monitoring	General Measures
Site Preparation		X	X	X	X
Demolition		X	X	X	X
Foundations	Option A	X	X	X	X
	Option B	X	X	X	X
	Option C	X	X	X	X

General Construction	X	X	X	X
Landscaping	X	X		X

Selection of Quiet Plant

The potential for any item of plant to generate noise should be assessed prior to the item being brought onto the site. The least noisy item will be selected wherever possible. Should a particular item of plant already on the site be found to generate high noise levels, the first action should be to identify whether or not said item can be replaced with a quieter alternative.

Noise Control at Source

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

Referring to the potential noise generating sources for the works under consideration, the following best practice migration measures will be considered:

- The lifting of bulky items, dropping and loading of materials will be restricted to normal working hours.
- Mobile plant should be switched off when not in use and not left idling.
- For piling plant, noise reduction can be achieved by enclosing the driving system in an acoustic shroud.
- For concrete mixers, control measures will be employed during cleaning to ensure no impulsive hammering is undertaken at the mixer drum.
- For all materials handling ensure that materials are not dropped from excessive heights, lining drops chutes and dump trucks with resilient materials.
- Demountable enclosures can also be used to screen operatives using hand tools and will be moved around site as necessary.
- All items of plant will be subject to regular maintenance. Such maintenance can prevent unnecessary increases in plant noise and can serve to prolong the effectiveness of noise control measures.

Piling

Piling is the construction activity which is most likely to cause disturbance. General guidance in relation to piling is outlined in the following paragraphs.

Piling programmes will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. If piling works are in progress on a site at the same time as other works of construction or demolition that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time.

Prior to construction the planner, developer, architect and engineer, as well as the local authority, will be made aware of the proposed method of working of the piling contractor. The piling contractor will in turn have evaluated any practicable and more acceptable alternatives that would economically achieve, in the given ground conditions, equivalent structural results.

On typical piling sites the major sources of noise are essentially mobile and the noise received at any control points will therefore vary from day to day as work proceeds. The duration of piling works is typically relatively short in relation to the length of construction work as a whole, and the amount of time spent working near to noise sensitive areas can represent only a part of the piling period.

Noise reduction can be achieved by enclosing the driving system in an acoustic shroud. For steady continuous noise, such as that generated by diesel engines, it may be possible to reduce the noise emitted by fitting a more effective exhaust silencer system or utilising an acoustic canopy to replace the normal engine cover. Impact noise when piling is being driven can be reduced by introducing a non-metallic dolly between the hammer and the driving helmet.

Screening by barriers and hoardings is less effective than total enclosure but can be a useful adjunct to other noise control measures. For maximum benefit, screens should be close either to the source of noise (as with stationary plant) or to the listener. Removal of a direct line of sight between source and listener can be advantageous both physically and psychologically. In certain types of piling works there will be ancillary mechanical plant and equipment that may be stationary, in which case, care should be taken in location, having due regard also for access routes. When appropriate, screens or enclosures should be provided for such equipment.

Screening

Screening is an effective method of reducing the noise level at a receiver location and can be used successfully as an additional measure to all other forms of noise control. It is understood that the existing concrete perimeter wall will remain during the construction process and provide a degree of screening.

In addition, careful planning of the site layout will also be considered. The placement of site buildings such as offices and stores will be used, where feasible, to provide noise screening when placed between the source and the receiver.

Liaison with the Public

A designated environmental liaison officer will be appointed to site during construction works. Any noise complaints will be logged and followed up in a prompt fashion by the liaison officer. In addition, where a particularly noisy construction activity is planned or other works with the potential to generate high levels of noise, or where noisy works are expected to operate outside of normal working hours etc., the liaison officer will inform the nearest noise sensitive locations of the time and expected duration of the noisy works.

Project Programme

The phasing programme will be arranged so as to control the amount of disturbance in noise and vibration sensitive areas at times that are considered of greatest sensitivity. During excavation/ piling or other high noise generating works are in progress on a site at the same time as other works of construction that themselves may generate significant noise and vibration, the working programme will be phased so as to prevent unacceptable disturbance at any time.

Operational Phase

Mechanical Plant Noise

As part of the detailed design of the development, plant items with appropriate noise ratings and, where necessary, appropriately selected remedial measures (e.g. enclosures, silencers etc.) will be specified in order that the adopted plant noise criteria is achieved at the façades of noise sensitive properties, including those within the development itself.

Chapter 13 has specified cumulative plant noise limits at the nearest noise sensitive properties that must be achieved in order to ensure the impact is acceptable. To achieve these noise limits consideration will be given, at the detailed design stage, to a variety of mitigation measures and forms of noise control techniques. Some examples of these measures are as follows:

- Reduced/quiet modes;
- Duct mounted attenuators on the atmosphere side of air moving plant;
- Splitter attenuators or acoustic louvres providing free ventilation to internal plant areas;
- Solid barriers screening any external plant; and
- Anti-vibration mounts on reciprocating plant.

In addition to the above, it is proposed that the following practices are adopted to minimise potential noise disturbance for neighbours.

- All mechanical plant items e.g. motors, pumps etc. shall be regularly maintained to ensure that excessive noise generated any worn or rattling components is minimised.
- Any new or replacement mechanical plant items, including plant located inside new or existing buildings, shall be designed so that all noise emissions from site do not exceed the noise limits outlined in Chapter 13.

Entertainment Noise

The amenity spaces that have potential for entertainment noise will be designed at a later stage however to ensure no negative impact associated with these spaces, the following acoustic measures may be incorporated.

Measure	Description
Appropriate Linings	Building constructions (e.g. external walls) should be reviewed in order to determine whether additional measures are required in order to control noise emissions from the highlighted areas. These measures would typically consist of independent wall linings where appropriate.
Glazing	Glazing will be required to offer an appropriate sound insulation performance in order to minimise noise break-out from refurbished and new buildings.
Doors	Access to noisy internal areas from external locations may require acoustic lobbies with double doors separated by an appropriate distance.
Ventilation	Ventilation should be supplied by suitably attenuated mechanical means. Once details of the proposed building services installation are known, consideration should be given to the potential for entertainment noise breakout to atmosphere via ductwork; the potential for services noise transfer to both external and internal areas.
Audio System	The audio systems should feature a distributed array of loudspeakers arranged such that the coverage zones are tightly controlled and all patrons are within the "near field" of one or more loudspeakers. This will limit the amount of sound energy incident upon the external walls and in turn help to control the amount of noise transfer and break-out. This design is critical also for external area (e.g. secret garden area) with potential for amplified music. Before the operation of any such external system, music noise levels will be calibrated to control noise levels within the design criteria in Section 13.3.2.1.
Noise Level	Once the measures outlined above are implemented it would be recommended that a maximum permissible noise level be set for each venue / location (i.e. a noise level that should not be exceeded in order to ensure that noise emissions are kept to an acceptable level).

Inward Noise Impact – Acoustic Design Statement Part 2

Chapter 13 identified some facades that will be provided with glazing and ventilation that achieves minimum sound insultation performances (such as parts of Block A and Block F). Other facades in the development have no minimum requirement for sound insulation.

The assessment has demonstrated that the recommended internal noise criteria will be achieved through consideration of the proposed façade elements at the design stage. The calculated glazing and ventilation specifications are preliminary and are intended to form the basis for noise mitigation at the detailed design stage. Consequently, these may be subject to change as the project progresses. There is no acoustic requirement relating to the creche façade. Appropriate internal noise levels are predicted to be achieved with standard double glazing and ventilators.

20.9.2 Monitoring

Construction Phase

The contractor will be required to ensure construction activities operate within the noise and vibration limits set out within this assessment. The contractor will be required to undertake regular noise and vibration monitoring at locations representative of the closest sensitive locations to ensure the relevant criteria are not exceeded.

Noise monitoring should be conducted in accordance with the International Standard ISO 1996: 2017: *Acoustics – Description, measurement and assessment of environmental noise.*

Vibration monitoring should be conducted in accordance with BS 6472:2008 *Guide to evaluation of human exposure to vibration in buildings. Vibration sources other than blasting* (human disturbance) and BS ISO 4866:2010 *Mechanical vibration and shock. Vibration of fixed structures. Guidelines for the measurement of vibrations and evaluation of their effects on structures* (building damage).

Operational Phase

Noise or vibration monitoring is not required once the development is operational.

20.10 Material Assets - Waste Management

20.10.1 Avoidance, Remedial and Mitigation Measures

Construction Stage

A project specific Resource & Waste Management Plan (RWMP) has been prepared in line with the requirements of the requirements of the *EPA, Best Practice Guidelines for the Preparation of Resource and Waste Management Plans for Construction & Demolition Projects' (2021)* a) and is included as Appendix 14.1. The mitigation measures outlined in the RWMP will be implemented in full and form part of mitigation strategy for the site. The mitigation measures presented in this RWMP will ensure effective waste management and minimisation, reuse, recycling, recovery and disposal of waste material generated during the excavation and construction phases of the proposed development.

- Prior to commencement, the appointed Contractor(s) will be required to refine / update the RWMP (Appendix 14.1) in agreement with Dublin City Council and in compliance with any planning conditions, or submit an addendum to the RWMP to Dublin City Council, detailing specific measures to minimise waste generation and resource consumption, and provide details of the proposed waste contractors and destinations of each waste stream.

- The Contractor will implement the RWMP throughout the duration of the proposed excavation and construction phases.

A quantity of topsoil and sub soil will need to be excavated to facilitate the proposed development. The Project engineers have estimated that 10,000m^3 of excavated material will need to be removed off-site. Correct classification and segregation of the excavated material

is required to ensure that any potentially contaminated materials are identified and handled in a way that will not impact negatively on workers as well as on water and soil environments, both on and off-site.

In addition, the following mitigation measures will be implemented:

- Building materials will be chosen to 'design out waste';
- On-site segregation of waste materials will be carried out to increase opportunities for off-site reuse, recycling and recovery. The following waste types, at a minimum, will be segregated:
    - Concrete rubble (including ceramics, tiles and bricks);
    - Plasterboard;
    - Metals;
    - Glass; and
    - Timber.
- Left over materials (e.g. timber off-cuts, broken concrete blocks / bricks) and any suitable construction materials shall be re-used on-site, where possible; (alternatively, the waste will be sorted for recycling, recovery or disposal);
- All waste materials will be stored in skips or other suitable receptacles in designated areas of the site;
- Any hazardous wastes generated (such as chemicals, solvents, glues, fuels, oils) will also be segregated and will be stored in appropriate receptacles (in suitably bunded areas, where required);
- A Resource Manager will be appointed by the main Contractor(s) to ensure effective management of waste during the excavation and construction works;
- All construction staff will be provided with training regarding the waste management procedures;
- All waste leaving site will be reused, recycled or recovered, where possible, to avoid material designated for disposal;
- All waste leaving the site will be transported by suitably permitted contractors and taken to suitably registered, permitted or licenced facilities; and
- All waste leaving the site will be recorded and copies of relevant documentation maintained.

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

These mitigation measures will ensure that the waste arising from the construction stage of the proposed development is dealt with in compliance with the provisions of the Waste Management Act 1996, as amended, associated Regulations and the Litter Pollution Act 1997 and the NWMCPE 2024. It will also ensure optimum levels of waste reduction, reuse, recycling and recovery are achieved and will promote more sustainable consumption of resources.

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Operational Stage

A project specific Operational Waste Management Plan (OWMP) has been prepared and is included as Appendix 14.2. The mitigation measures outlined in the OWMP will be implemented in full and form part of mitigation strategy for the site. Implementation of this OWMP will ensure a high level of recycling, reuse and recovery at the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus achieving the targets set out in the EMR Waste Management Plan 2015 – 2021 and abiding by the DCC waste bye-laws.

- The tenants / operators / facilities management company(s) of the development during the operational phase will be responsible for ensuring and allocating personnel and resources, as needed – the ongoing implementation of this OWMP, ensuring a high level of recycling, reuse and recovery at the Site of the proposed Development.

- The tenants / operators / facilities management company(s) will regularly audit the onsite waste storage facilities and infrastructure, and maintain a full paper trail of waste documentation for all waste movements from the site.

In addition, the following mitigation measures will be implemented:

- The Operator will ensure on-Site segregation of all waste materials into appropriate categories, including (but not limited to):

    - Organic waste;
    - Dry Mixed Recyclables;
    - Mixed Non-Recyclable Waste;
    - Glass;
    - Cardboard;
    - Plastic;
    - Waste Electrical and Electronic Equipment (WEEE)
    - Cooking oil;
    - Cleaning chemicals (paints, adhesives, resins, detergents, etc.);
    - Furniture (and from time-to-time other bulky waste); and
    - Abandoned bicycles.

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

- The residents / tenants / facilities management company will ensure that all waste collected from the site of the Proposed Development will be reused, recycled, or

recovered, where possible, with the exception of those waste streams where appropriate facilities are currently not available; and

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

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

20.10.2 Monitoring

The management of waste during the construction phase will be monitored by the Contactor's appointed Resource Manager to ensure compliance with the above-listed mitigation measures, and relevant waste management legislation and local authority requirements, including maintenance of waste documentation.

The management of waste during the operational phase will be monitored by the Operator / Facilities Manager to ensure effective implementation of the mitigation measures outlined in Section 14.6, Appendix 14.1 and 14.2 internally and by the nominated waste contractor(s).

Construction Stage

The objective of setting targets for waste management is only achieved if the actual waste generation volumes are calculated and compared. This is particularly important during the excavation and construction works, where there is a potential for waste management objectives to become secondary to other objectives, i.e. progress and meeting construction schedule targets. The *RWMP* specifies the need for a Resource Manager to be appointed, who will have responsibility for monitoring the actual waste volumes being generated and ensuring that contractors and sub-contractors are segregating waste as required. Where targets are not being met, the Resource Manager will identify the reasons for this and work to resolve any issues. Recording of waste generation during the construction phase of the proposed development will enable better management of waste contractor requirements and identify trends. The data should be maintained to advise on future developments.

Operation Stage

During the operational phase, waste generation volumes should be monitored by the Operator / Buildings Management. There may be opportunities to reduce the number of bins and equipment required in the WSA, where estimates have been too conservative. Reductions in bin and equipment requirements will improve efficiency and reduce waste contactor costs.

Waste legislation should also be consulted on a regular basis in case of any changes which may impact on waste management procedures.

20.11 Material Assets - Transportation

20.11.1 Mitigation Measures

Construction Stage

A *Construction and Environmental Management Plan* (CEMP) has been prepared as part of the planning application with an associated *Preliminary Construction Management Plan* (PCMP), which incorporates a range of integrated control measures and associated management activities with the objective of minimising the construction activities associated with the development. The following initiatives will be implemented to avoid, minimise and/or mitigate against the anticipated construction period impacts:

- During the pre-construction phase, the site will be securely fenced off/hoarded off from adjacent properties, public footpaths and roads;
- Appropriate on-site parking (temporary parking for the duration of construction works) and compound area will be provided to prevent overflow onto the local network;
- A large proportion of construction workers are anticipated to arrive in shared transport. It is likely that some numbers of the construction team will be brought to/from the site in vans/minibuses, which will serve to reduce the trip generation potential;
- Delivery vehicles to and from the site will be spread across the course of the working day, therefore, the number of HGVs travelling during the peak hours will be relatively low;
- Truck wheel washes will be installed at construction entrances;
- Any specific recommendations with regard to construction traffic management made by Dublin City Council will be adhered to;
- Potential localised traffic disruptions during the construction phase will be mitigated through the implementation of industry standard traffic management measures such as the use of traffic signage. These traffic management measures shall be designed and implemented in accordance with the Department of Transport's Traffic Signs Manual "*Chapter 8 Temporary Traffic Measures and Signs for Roadworks*" and "*Guidance for the Control and Management of Traffic at Roads Works – 2nd Edition*" (2010);
- Site entrance point/s from the public road will be constructed with a bound, durable surface capable of withstanding heavy loads and with a sealed joint between the access and public highway. This durable bound surface will be constructed for a distance of 10m from the public road.

- Material storage zones will be established in the compound area and will include material recycling areas and facilities;
- 'Way finding' signage will be provided to route staff / deliveries into the site and to designated compound / construction areas;
- Dedicated construction haul routes will be identified and agreed with Dublin City Council prior to commencement of activities on-site; and
- On completion of the works, all construction materials, debris, temporary hardstands etc. from the site compound will be removed off-site and the site compound area reinstated in full on completion of the works.

Operational Stage

A package of integrated mitigation measures has been identified to off-set the additional local demand that the proposed residential-led mixed-use development at the subject site could potentially generate as a result of the forecast increase in vehicle movements by residents of the scheme. The identified measures and associated timescale for their implementation are summarised below.

- **Parking Management Strategy** - A management regime has been set out (and accompanies this planning application) which will be implemented by the development's management company to control access to the on-site car parking spaces thereby actively managing the availability of on-site car parking for residents and visitors to the development. This provision equates to a car parking ratio of approximately 0.546 car parking spaces per residential unit (as shown in the Table below). The signing of a rental agreement or purchase of one of the proposed residential apartments will NOT include access to a designated on-site parking space. All potential residents (prior to signing rental agreement) will be notified that the proposed scheme is a 'low car allocation' development with no access (or guarantee thereof) to the limited on-site residents car parking provision. Nevertheless, all residents of the proposed scheme will have the opportunity to apply to the on-site management company for a resident's car parking permit (updated weekly, fortnightly, monthly, quarterly or annually) and subsequently access to a dedicated (assigned) on-site basement car parking space. A charge will be applied to obtain a permit with the objective of covering the associated management costs and discouraging long term usage of the car parking space.

Table 15.15 Car Parking Ratio

Car Parking Ratio	
Residential Car Parking Ratio including Car Share and Mobility Impaired Spaces*	0.546 Spaces/Unit
Residential Car Parking Ratio excluding Car Share and Mobility Impaired Spaces* (as per Compact Settlement Guidelines)	0.496 Spaces/Unit

- **Management** – A preliminary Mobility Management (MMP) has been compiled (Appendix 15.2) with the aim of guiding the delivery and management of co-ordinated initiatives by the scheme promotor to be implemented upon occupation of the site. The MMP will ultimately seek to encourage sustainable travel practices for all journeys to and from the proposed development.

- **Infrastructure** – Infrastructure measures identified to reduce reliance of private vehicles include the provision of ample secure cycle parking on site, exceeding minimum guidance (DHPLG), and ensuring a design which promotes permeability for pedestrians and cyclists to, through and from the development (DMURS). The lower level of car parking provision for the development will also act as a powerful mobility management measure, ensuring against an overprovision of parking and a resultant over reliance on the private vehicle.

- **Infrastructure** – Junction enhancements have been identified and proposed at the R117 Sandford Road site access junction, including an upgrade to the existing controlled pedestrian crossing to a toucan crossing, with the objective of creating a highly permeable environment for pedestrians and cyclists and the tightening of corner radii on the Belmont Avenue arm, with dropped kerbs and tactile paving providing a safer informal crossing than the existing scenario. A signalised toucan crossing is also proposed at the R117 Milltown Road, adjacent to the site access location, facilitating safe connections for pedestrians and cyclists.

- **Car Sharing** – The provision of 10 No. dedicated car share (GoCar and development-owned) spaces at surface and basement level for the use of the scheme's residents and staff. The availability of these on-site provide a viable alternative to residents needing to own a private vehicle whilst still having access to a car as and when required.

20.11.2 Monitoring

Construction Phase

During the construction stage, the following monitoring exercises are proposed:

- Compliance with construction vehicle routing practices;

- Compliance with construction vehicle parking practices;

- Internal and external road conditions; and
- Timing of construction activities.

Operational Phase

As part of the Mobility Management Plan (MMP) process, bi-annual post occupancy surveys are to be carried out in order to determine the success of the measures and initiatives as set out in the proposed MMP document. The information obtained from the monitoring surveys will be used to identify ways in which the MMP measures and initiatives should be taken forward in order to maintain and further encourage sustainable travel characteristics.

20.12 Material Assets – Site Services

Construction Phase

- A site-specific Construction and Environmental Management Plan (CEMP) will be developed and implemented during the construction phase. Site inductions will include reference to the procedures and best practice as outlined in the CEMP. Please refer to Verde Construction and Environmental Management Plan which has been attached in Appendix 16.4.
- Contractor to prepare Method Statement detailing the proposals for works in the vicinity of existing utilities (method statement to be agreed with Project Supervisor Design Process (PSDP)).
- Contractor to locate and record all services on site prior to commencement of excavations.
- A GPR utility survey has been carried out along Sandford Road, Milltown Road and Eglinton Road to confirm the location of power, gas and telecommunications infrastructure. Refer to Appendix 16.2 for GPR survey. This survey is to be supplemented with slit trench investigation as required by the contractor in advance of commencing works along Sandford Road, Milltown Road and Eglington Road.
- Contractor to obtain utility company network plans and arrange observation as required.
- Connections to the existing power, gas and telecommunications networks will be coordinated with the relevant utility provider and carried out by approved contractors. Contractor to comply with HSA Code of Practice for Avoiding Danger from Underground Services.
- All personnel using machinery/plant to have undergone training on the use of said machinery/plant. Ongoing site supervision to be undertaken to ensure all use of machinery/plant is in accordance with the training undertaken.
- Contractor to prepare and implement a Construction Traffic Management Plan that will be agreed with the Design Team and local authority, which will ensure the safety of the public during construction (note, an outline TMP is included in the Preliminary construction Management Plan).

Operational Phase

On completion of the construction phase there will be no further impact on electrical, gas or telecommunications supplies. No mitigation measures are proposed in relation to the site services described in this chapter.

20.12.2 Monitoring

No specific monitoring is proposed in relation to electrical, gas and telecommunications infrastructure.

20.13 Microclimate – Wind

20.13.1 Mitigation Measures

Construction Phase

The assessment of the wind microclimate during the construction phase has been based on professional judgement by reviewing the existing site conditions and the expected conditions once the development is in place via the Computational Fluid Dynamics (CFD) modelling.

It is expected the wind microclimate will gradually adjust from the existing conditions to the final modelled scenario as construction progress develops. However, the mitigation measures outlined in the following sections will need to be implemented before completion to ensure comfortable conditions once the proposed development becomes operational.

Operational Phase

Chapter 17 outlines specific mitigation measures that have been incorporated into the proposed design to prevent excessive wind speeds during the operational phase of the development. The proposed development has been designed to have acceptable pedestrian wind comfort conditions during the operational phase.

The following specific mitigation measures have been incorporated for the operational phase of the development:

Apartment Block Arrangement

The arrangement of the apartment blocks has been carefully chosen to help mitigate increased wind speeds throughout the site. The central areas within the development are well protected from the predominant south-west wind direction via the buildings located to the south-west. Furthermore, an internal courtyard space has been incorporated within Block B and C which provides a sheltered area for pedestrians to utilise throughout the year.

Inset Balconies

The Block A1 building, which is most exposed to the wind due to its height, predominantly incorporates inset balconies. Inset balconies offer increased wind protection for people utilising the balcony spaces as they provide a natural shelter from the elements.

Landscaping

The landscaping has been strategically designed to mitigate increased wind speeds and to provide shelter for pedestrians at ground level, within the central courtyard spaces and on the rooftop amenity area. The landscaping design incorporates trees, hedges and raised planters and sheltered seating pockets which all act as wind mitigation measures.

Trees are to be planted close to primary entrance ways and along the streetscape, mitigating excessive wind speeds and providing shelter for pedestrians at street level. The use of trees and low-level shrubs all assist in the localised reduction of wind speed.

20.13.2 Monitoring

Construction Phase

During the construction phase the wind conditions will gradually change from the conditions experienced in the existing environment to the conditions experienced during the operational phase. As wind comfort conditions are comfortable at both phases and no issues have been identified, no monitoring is required.

Operational Phase

The proposed development has been designed to have acceptable pedestrian wind comfort conditions during the operational phase; therefore no monitoring is required.

20.14 Risk Management

20.14.1 Mitigation Measures

Chapter 18 of this EIAR sets out that control measures observed for health and safety and environmental management as per relevant code of practices (Code of Practice for Inspecting and Certifying Buildings and Works) and relevant legislation including Building Control Act 1990 (No. 3 of 1990), as amended and Building Control Regulations 1997, as amended. It is considered that the vulnerability of the proposed development to the risk of major accidents or disasters will not be significant.

20.14.2 Monitoring

There is no monitoring required with regards to the risk of major disasters and accidents beyond standard mitigation and management measures. All monitoring proposals for the interacting chapters have been detailed in the relevant technical chapters and are included in this Chapter 20 Mitigation Measures and Monitoring.

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20.15 Cumulative Impacts

Any potential cumulative impacts have been considered in the preparation of this EIAR and are detailed where relevant in the various EIAR Chapters e.g. construction stage impacts, surface water drainage infrastructure, foul drainage, water supply, landscape and visual impact and traffic for example. Therefore, it is clear that the potential for any cumulative impacts to occur have been comprehensively considered in the preparation of this EIAR, as detailed throughout the various chapters. A full list of proposed and pending applications was

considered by the EIAR Team as set out in Chapter 3.0 and where relevant were included in the cumulative impacts assessment of the relevant chapter. As a result, it is not proposed to include any specific measures for monitoring or mitigation to be undertaken in relation to cumulative impacts.