

6.4 Mitigation Measures

Measures have been provided for the protection of retained woodland, trees and hedgerow, including the use of protective barriers and the utilisation of a root protection area, to be calculated by a qualified arborist. Recreation and replanting of woodland, treeline and hedgerow habitats (194m² of a "micro woodland", planting 120 no. semi-mature trees and 40 no. multi-stem trees (native or varieties of native species), and 420m of linear hedge) will reduce the impacts to the retained habitats. Following the implementation of the mitigation measures to protect remaining trees and hedgerows, residual impacts on are considered to be reduced, but will remain significant at a local level.

Measures have been proposed to address impacts on fauna. In the case of bats, preconstruction checks of trees to check for Potential Roost Features (PRF) will be undertaken to ensure no bat roosts are present within the proposed development site. During the operational phase, lighting columns will be fitted with baffles as appropriate to minimise light spill. Compensation and enhancement measures have been proposed in the form of bat boxes and bird boxes. In the case of birds, measures have been proposed to prevent mortality during construction and infilling works. Residual impacts on fauna are considered to be reduced but will remain significant at a local level due to the loss of habitats as a result of the proposed development.

6.5 Cumulative Impacts

Cumulative effects have been considered, with no additional significant residual effects predicted following the implementation of mitigation measures.

6.6 Residual Impact

Following the implementation of mitigation and compensation/enhancement measures, residual impacts on bats are not considered to be significant.

Following the implementation of mitigation and compensation measures, residual impacts on birds are considered to be reduced but will remain significant at a local level.

Following the implementation of mitigation measures to protect the remaining woodland, trees and hedgerow, residual impacts are considered to be reduced but will remain significant at a local level until such time as newly planted/recreated habitats mature.

7 LAND, SOILS AND HYDROGEOLOGY

The following sections present a summary of the information contained in **Chapter 7** (Land, Soils and Hydrogeology) of Volume 2 of this EIAR, which outlines the environmental effects of the proposed development on land and soils environment, including hydrogeology.

7.1 Existing Environment

Site investigations were undertaken in 2019, and drilling confirmed that the proposed site is underlain by > 8.0 metres of overburden. The overburden is composed predominantly of glacial tills (Boulder clay). No groundwater inflows were observed. No evidence of soil contamination or illegal dumping was indicated by analyses carried out as part of the Site Investigation works.

The underlying bedrock is the Lucan Formation comprising dark shaley limestone known as Calp. The overall Geological Survey Ireland (GSI) aquifer classification is "Li" (locally important aquifer moderately productive only in local zones). The area is served by public water mains and therefore it is unlikely that there are any water supply wells in the area. The low permeability boulder clay deposits above the bedrock limit infiltration and restrict percolating water from reaching the bedrock aquifer. The GSI groundwater mapping website indicates that the vulnerability (is classified as being "low").

7.2 Potential Impacts

The only interactions with land and soils environment will be as a result of routine excavation. Soil will be routinely excavated to a depth of approx. 4.0 metres below ground level to build the underground car park and the site recontoured to accommodate the foundations and construction of the buildings. No dewatering will be required.

The design of the proposed development does not facilitate the beneficial re-use of suitable excavated material on site. Consequently, the excavated material constitutes a waste and will be recovered and/or disposed off-site at appropriately authorised waste facilities. However, under the Waste Hierarchy principals, the re-use of the excavated soils is preferred to the disposal to landfill. Consideration will be given to removal of soil off site for re-use as a by-product (in accordance with Article 27 of the European Communities (Waste Directive) Regulations 2011).

The disposal of excavated material is considered to have low importance and the magnitude of the impact on the environment is predicted to be neutral, temporary, negligible. The significance of the impact is imperceptible.

Accidental spillages could result in soil being contaminated.

Potential impacts during the construction and operational phase include the leakage or spillage of construction related materials and fuels and chemicals on site. However, the vulnerability classification of the underlying groundwater has been classified as "Low" based on site specific information.

The impact on groundwater water quality is predicted to be negligible in magnitude and imperceptible in significance, temporary in duration and unlikely.

The impact of accidental spillages on soils is negligible in magnitude and imperceptible in significance.

7.3 Mitigation Measures

As no significant impacts were predicted, no specific mitigation measures are proposed. However, in advance of work starting on site, the works Contractor will prepare a CEMP, a CMP, and a Waste Management Plan will be implemented to ensure best practices.

7.4 Cumulative Impact

As the impacts are neutral and unlikely to interact with the impacts of other existing or permitted projects, there are no cumulative impacts predicted.

7.5 Residual Impact

The predicted overall residual impact of the proposed development on land, soils, geology and hydrogeology both during construction and operational stage will be neutral.

8 WATER AND HYDROLOGY

The following sections present a summary of the information contained in **Chapter 8** (Water and Hydrology) of Volume 2 of this EIAR. This chapter considered the impact of the proposed development on the receiving surface water environment in its vicinity.

The assessment was based on a desk study review of hydrological information, site visits, and the Flood Risk Assessment (FRA) provided as part of the planning application. Water quality data to establish baseline conditions was obtained from the EPA mapping website and www.catchments.ie.

8.1 Existing Environment

The site is located within the upper catchment of the Santry River, which has its origins at Harristown and Dubber, south of St. Margarets. It flows to the west of Dublin Airport and parallel to the main runway. From there, it flows through Silloge, under the M50 Motorway at Ballymun, through Santry Demesne. It then passes under the M1/M50 Motorway at Santry, through Kilmore, Edenmore, Raheny and under the Dublin/Belfast railway line before discharging to Dublin Bay at North Bull Island. The river drains an area of approximately 1,400 ha.

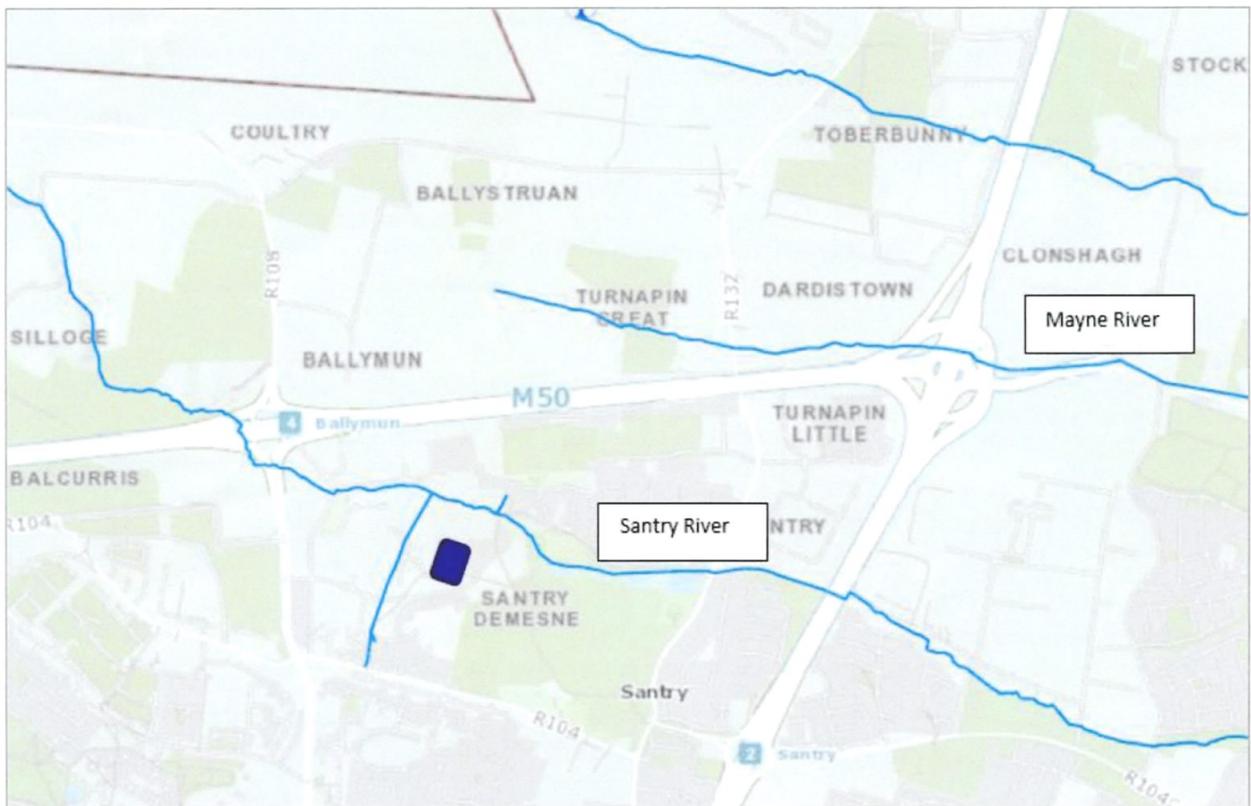


Figure 8-1: Local Rivers

The WFD Status for the Santry_010 River Water Body is “Poor” and “at risk” of not achieving “Good” status. A FRA was undertaken to accompany the planning application. The OPW preliminary flood risk assessment (PFRA) flood extent map and FCC strategic flood risk assessment Flood Map indicate that the existing site lies within Flood Zone C where the probability of flooding from rivers and the sea is low (less than 0.1% AEP or 1 in 1,000).

8.2 Potential Impacts

No water will be abstracted from streams in the vicinity of the proposed site. All wastewaters will be directed to the public sewer. The water supply to the proposed development will from the existing public watermain infrastructure.

8.2.1 Flooding Impacts

The proposed surface water drainage has been designed to incorporate Sustainable Urban Drainage Systems (SUDS) devices, in the form of attenuation tanks, permeable paving and a Green Roof system over 60% of the apartment roof and central courtyard areas to limit any potential pollutants in runoff prior to discharge to the Santry River. The drainage systems will be designed in accordance with the report entitled "*The Planning System and FRM Guidelines for Planning Authorities*" (2009).

Stormwater runoff from the development will drain via the proposed Green Roof system and other SUDS devices to the existing surface water network on the local access road west of the development site and existing attenuation northwest of the adjacent Bridgefield development tank prior to discharge to the Santry River. The proposed attenuation and SUDS measures have been designed to cater for the 1:100-year critical storm event plus 20% for climate change with restricted outflows limited to 1.1 Litres/sec to the surface water system, ensuring that the runoff from the site will be restricted to the required green field runoff rate.

The risk of flooding of the proposed site is minimal (located in Zone C). The attenuation measures and the lack of any alteration to the channel will result in no increase in risk of flooding of lands downstream and upstream of the site.

There are no flooding impacts predicted as a result of the proposed development.

8.2.2 Water Quality

Potentially the most serious source of contamination to a water course associated with the development are accidental spillages.

Potential impacts on water quality during the construction phase are considered *negative, temporary, and imperceptible*. This is the typical potential impact associated with construction projects. There are no potential impacts on water quality during the operational phase.

Chemical pollutants such as hydrocarbons and other chemicals may enter the surface waters in the event of accidental release and have implications down-stream of the Proposed Development. The volumes of hydrocarbons that could potentially spill during the operational phase will be small. Spills will gather on site rather than discharge directly to the water course. The magnitude of the impact is assessed to be "Small Adverse" on an attribute of "Medium" importance. The significance of this potential impact is "Slight", negative in quality and temporary in duration.

8.3 Mitigation Measures

8.3.1 Flooding Impacts

The proposed drainage designs will incorporate SUDS measures (embedded mitigation) to ensure the runoff from the site (including all phases of the development) to the Santry River will not exceed greenfield runoff rates. Consequently, there will be no increase in risk of flooding in the receiving waters.

8.3.2 Water Quality

All surface water discharge from the proposed site will pass through suitably sized hydrocarbon interceptors. The incorporation of hydrocarbon interceptors will ensure that any spill is contained before reaching the Santry River.

Following the implementation of mitigation, the significance of the impact on water quality will be imperceptible.

A contract-specific CEMP will be implemented by the contractor to ensure good construction management practices are employed.

Following the implementation of mitigation measures, the residual impacts of the construction and operation of the proposed development will be *neutral and imperceptible*.

8.4 Cumulative Impact

The stormwater attenuation system is designed to accommodate both phases of the development. As the impacts are imperceptible and unlikely to interact with the impacts of other existing or permitted projects, there are no cumulative impacts predicted.

8.5 Residual Impacts

No significant residual Impacts are predicted.

9 AIR QUALITY

The following sections present a summary of the information contained in **Chapter 9** (Air Quality) of Volume 2 of this EIAR. This chapter assessed the likely air quality impacts associated with the construction and operational phases of the proposed development.

9.1 Existing Environment

In terms of the existing air quality environment, data available from similar environments indicates that levels of nitrogen dioxide (NO₂), particulate matter less than 10 microns, and particulate matter less than 2.5 microns (PM₁₀ and PM_{2.5}) are, generally, well within the National and EU ambient air quality standards.

9.2 Impact Assessment

Impacts on air quality can occur during both the construction and operational phases of the proposed development. With regard to the construction stage, the greatest potential for air quality impacts is from fugitive dust emissions impacting nearby sensitive receptors. In terms of the operational stage, air quality impacts will predominantly occur as a result of the change in traffic flows on the local roads associated with the proposed development.

The surrounding area was found to have a medium sensitivity to dust soiling and low sensitivity to dust-related human health impacts. There is an overall medium risk of potential dust soiling impacts and a low risk of human health impacts as a result of the proposed construction works. Any potential dust impacts can be mitigated through the use of best practice and minimisation measures which are outlined in **Chapter 9** (Air Quality) of Volume 2 of this EIAR. Therefore, dust impacts will be *short-term* and *imperceptible* at all nearby sensitive receptors.

The changes in traffic volumes associated with the operational phase of the development were not substantial enough to meet the assessment criteria requiring a detailed air quality modelling assessment. It can therefore be concluded that levels of traffic-derived air pollutants resulting from the development will not exceed the ambient air quality standards, and the impact of the development in terms of NO₂ and PM₁₀ emissions is long-term, neutral and imperceptible.

9.3 Mitigation Measures

The best practice dust mitigation measures that will be put in place during the construction of the proposed development will ensure that the impact of the development complies with all EU ambient air quality legislative limit values, which are based on the protection of human health. Therefore, the impact of the construction of the proposed development is likely to be short-term, localised, negative and imperceptible with respect to human health. Operational phase-predicted concentrations of pollutants are predicted to be significantly below the EU standards, and the impact on human health is predicted to be *imperceptible*, *neutral* and *long term*.

Provided the mitigation measures outlined in **Chapter 9** (Air Quality) of Volume 2 of this EIAR and are implemented throughout the construction phase of the proposed development, there are no significant cumulative impacts to air quality predicted for the construction phase. During the operational phase of the proposed development, the impact is predicted to be *long-term* and *imperceptible* with regards to air quality.

During the construction phase of the development, residual impacts are predicted to be *short-term* and *negative* in terms of air quality and human health. Operational phase impacts are predicted to be *long-term*, neutral and *imperceptible*.

9.4 Residual Impact

No significant impacts to air quality are predicted during the construction or operational phases of the proposed development.

10 MICROCLIMATE: SUNLIGHT AND DAYLIGHT

The following sections present a summary of the information contained in **Chapter 10** (Microclimate: Sunlight and Daylight) of Volume 2 of this EIAR. This chapter assessed the impact of the proposed development on daylight and sunlight access in the surrounding area.

10.1 Daylight

10.1.1 Methodology

A three-dimensional digital model of the proposed development, the development permitted under ABP Ref. TA06F.313317, and of existing buildings in the area, was constructed by ARC Consultants based on drawings and three-dimensional models supplied by the Design Team; on drawings and information available from the online planning register; and with reference to on-site, satellite and aerial photography. ARC analysed the three digital models of the proposed development and of the existing buildings surrounding the development site using proprietary sunlight and daylight analysis software in order to quantify the likely impact of the proposed development on daylight access within chosen sample rooms in buildings in close proximity to the development site.

10.1.2 Impact Assessment

ARC's analysis indicates a potential for the proposed development to result in "imperceptible" to "slight" impacts on daylight access to opposing houses at Cedarview (e.g., Nos. 31-42 Cedarview), with a potential for "slight" to "moderate" impacts on daylight access within a small number of rooms at No. 33 Cedarview. The potential for the proposed development to result in impacts on daylight access within other houses at Cedarview is low with potential impacts on daylight access within dwellings ranging from none to "imperceptible".

To the west, the proposed development is likely to result in "imperceptible" to "moderate" impacts on daylight access within opposing rooms within the recently constructed, residential development at Blackwood Square, which has also been developed by the Applicant. The proposed development is unlikely to result in material impacts on daylight access within most units at Blackwood Square within the meaning of the BRE Guide.

To the south, the proposed development has the potential to result in "imperceptible" to "slight" impacts on Block 1 and "imperceptible" to "moderate" impacts on daylight access within Block 2 of the office development at Swift Square.

There are no structures on the existing site to the west, which is the subject of planning permission for residential development in eight and nine-storey blocks on the adjoining site to the east at Whitehaven (ABP Ref. TA06F.313317). This development has yet to be constructed.

10.1.3 Cumulative Impact

The proposed development, in combination with the permitted Whitehaven development on the adjoining site (ABP Ref. TA06F.313317) to the east, has the potential to result in some additional impacts on daylight access to neighbouring residential buildings at Cedarview and non-residential buildings at Swift Square. In most cases, while ARC's analysis indicated that the proposed development, in combination with the permitted Whitehaven development (ABP Ref. TA06F.313317) on the adjoining site to the east, would result in a greater reduction in Vertical Sky Component to some windows in the existing buildings, the further reduction is likely to be so minor that it would not change the way the impact to that building was assessed and categorised under the proposed scenario discussed above. ARC's analysis indicated that the greatest potential for cumulative impacts on daylight access within residences arises in relation to a small number of houses at Cedarview, closest to the application site and the adjoining site to the east, although any impacts identified are likely to fall within the range of minor impacts. Specifically, there is a potential for the proposed development, in combination with the permitted Whitehaven development, to result in an "imperceptible" to "not significant" impact on the kitchen at No. 31 Cedarview and "imperceptible" to "slight" impact on a first floor bedroom at No. 40 Cedarview and on a first-floor bedroom at No. 44 Cedarview.

10.1.4 Residual Impact

Given that the potential for development to result in impacts on daylight access diminishes with distance, it is the finding of ARC's analysis that the proposed development will have no undue adverse impact on daylight access within buildings in the wider area surrounding the application site.

10.2 Sunlight

10.2.1 Methodology

A three-dimensional digital model of the proposed development, the development permitted under ABP Ref. TA06F.313317, and of existing buildings in the area, was constructed by ARC Consultants based on drawings and three-dimensional models supplied by the Design Team; on drawings and information available from the online planning register; and with reference to on-site, satellite and aerial photography. Using the digital model, shadows were cast by ARC at several times of the day at the equinox and presented on shadow study diagrams submitted with this EIAR. ARC also analysed the three digital models of the proposed development and of the existing buildings surrounding the development site using proprietary sunlight and daylight analysis software in order to quantify the likely impact of the proposed development on windows with a reasonable expectation of sunlight within chosen sample rooms in buildings and on existing amenity areas in close proximity to the development site.

10.2.2 Impact Assessment

The application site is largely vacant at present, so it is inevitable that sustainable development of the site will result in a change in the existing shadow environment.

During mornings throughout the year, the proposed development is likely to result in additional overshadowing of lands to the west. To the west of the application site, a residential development, Blackwood Square, has been recently constructed to the west and north of a dense band of mature trees protected under a Tree Protection Order - these trees intervene between the development now proposed and the eastern façade of the recently constructed, residential development at Blackwood Square (also developed by the Applicant). While shadows cast by the proposed development are likely to result in little or no impact on most units within this recently constructed development if the shadows cast by the existing trees were not considered, the proposed development has the potential to result in a "slight" to "moderate" impact on sunlight access to those east-facing windows in close proximity to the proposed new structures, with a potential for "moderate" to "very significant" impacts on a small number of windows in proximity to the proposed new structures and on nearby set back bedroom windows.

To the north, shadows cast by the proposed development are likely to extend to opposing houses at the residential estate as Cedarview over the course of the day during the autumn, winter and spring months. There is a potential for shadows cast by the proposed development, in combination with envisaged development on the adjoining Whitehaven site, to result in "imperceptible" to "slight" impacts on sunlight access on rooms within the opposing dwelling, with a potential for an "imperceptible" to "moderate" impact on sunlight access within a bedroom at No. 31 Cedarview. ARC's analysis indicates further indicates that the proposed development is likely to have little or no material impact on sunlight access to the rear gardens of opposing houses at Cedarview within the meaning of the BRE Guide. Moreover, during the summer months (May, June, and July), shadows cast by the proposed development are not likely to result in a material impact on sunlight access to Cedarview.

To the south, the proposed development is likely to reduce sunlight access to the northern facades of the office blocks at Swift Square during the very early mornings and late evenings of the summer months. However, given that rooms in these large open-plan office blocks will continue to receive sunlight from other windows unaffected by shadows cast by the proposed development, the potential impact of the proposed development is likely to range from none to "imperceptible" to "slight".

To the west, the proposed development is likely to cast shadows during the afternoons and evenings on the adjoining Whitehaven site, which is also under the control of the Applicant. Planning permission was granted for residential development in eight and nine-storey blocks on the adjoining site to the east at Whitehaven (ABP Ref. TA06F.313317), but this development has yet to be constructed.

10.2.3 Cumulative Impact

The potential for the proposed development, in combination with the permitted Whitehaven development (ABP Ref. TA06F.313317) on the adjoining site to the east, has the potential to result in some additional impacts on sunlight access to some neighbouring residential lands at Cedarview (and, in particular, those closest to the boundaries of the application site). In most cases, while ARC's analysis indicated that the proposed development, in combination with the permitted Whitehaven development, would result in a greater reduction in sunlight access to some windows in existing buildings, the further reduction is likely to be so minor that it would not change the way the impact to that building was assessed and categorised under a proposed scenario as described above. ARC's analysis indicated that the greatest potential for cumulative impacts on sunlight access arises in relation to a small number of houses at Cedarview, closest to the application site and the adjoining Whitehaven site to the east, although most impacts identified are likely to fall within the range of minor impacts. For example, the cumulative effect of the proposed development, in combination with the permitted Whitehaven development, is likely to result in an "imperceptible" to "slight" impact on sunlight access to the living room at No. 32 Cedarview, an "imperceptible" to "not significant" impact on a bedroom at No. 31 Cedarview, an "imperceptible" to "slight" impact on the kitchen of No. 42 Cedarview, and "imperceptible" to "not significant" impacts on a number of the bedrooms at No. 42 Cedarview.

11 MICROCLIMATE: WIND

The following sections present a summary of the information contained in **Chapter 11** (Microclimate: Wind) of Volume 2 of this EIAR. This chapter includes the results of a wind microclimate study which identifies wind patterns and how the proposed development is going to modify these patterns.

11.1 Introduction

A wind microclimate study has been carried out to consider the possible wind patterns formed under both mean and peak wind conditions typically occurring on the site area. This accounting for a scenario where the proposed development is inserted in the existing environment (potential impact) and, for a scenario where the proposed development is analysed together with the existing environment and any permitted development (not constructed yet) that can be influenced by the wind patterns generated by the proposed one (cumulative impact).

The potential receptors include those areas, in the surrounding of the development, which can be exposed to potential risks generated by the elevated wind speed or building massing wind effects. Potential receptors for the wind assessment are all pedestrian circulation routes, building entrances and leisure open areas within the site and in neighbouring adjacent areas. The pedestrian level is considered at 1.5m above the ground of each receptor identified within the proposed scheme.

11.2 Methodology

The method for the study of wind microclimate combines the use of Computational Fluid Dynamics (CFD) to predict wind velocities and wind flow patterns, with the use of wind data from suitable meteorological station and the recommended comfort and safety standards (Lawson Criteria). The effect of the geometry, height and massing of the proposed development and existing surroundings including topography, ground roughness and landscaping of the site, on local wind speed and direction is considered as well as the pedestrian activity to be expected (sitting, standing, strolling and fast walking).

The results of the assessment are presented in the form of contours map of the Lawson criteria at pedestrian level.

"*Lawson Comfort and Distress Criteria*" has been adopted for wind microclimate studies as a means of assessing the long-term suitability of urban areas for walking or sitting, accounting for both microclimatic wind effects (i.e., site location and prevailing winds) and microclimatic air movement associated with wind forces influenced by the localised built environment forms and landscaping effects.

- Topography of the site with buildings (proposed and adjacent existing/permitted developments massing, depending on the scenario assessed "baseline, proposed or cumulative") have been modelled using CFD OpenFOAM Software.
- Suitable wind conditions have been determined based on historic wind data. Criteria and selected wind scenarios included means and peaks wind conditions that need to be assessed in relation to the Lawson Criteria.
- CFD has been used to simulate the local wind environment for the required scenarios ("baseline, proposed, cumulative").
- The impact of the proposed development massing on the local wind environment has been determined (showing the wind flows obtained at pedestrian level).
- Potential receptors (pedestrian areas) have been assessed through review of external amenity/public areas (generating the Lawson Comfort and Distress Map).
- Potential mitigation strategies for any building related discomfort conditions (where necessary) have been explored and their effect introduced in the CFD model produced.

The significance of on Site measurement locations are defined by comparing the wind comfort/safety levels with the intended pedestrian activity at each location, using the ranges of wind speed/human activity provided by the Lawson Comfort and Distress Criteria.

The significance of off Site measurement locations are defined by comparing the wind comfort/safety levels with the intended pedestrian activity at each location, prior and after the introduction of the proposed development.

11.3 Impact Assessment

The analysis carried out has shown that of the wind patterns in between the blocks 1 and 2 and blocks 2 and 3 create a minor funnelling effect. This can be noted near the South-West side of the development, which receives the prevailing South-West and South-East winds at approximately 5m/s. However, considering that the baseline wind speed is ranging from 3.9ms/ to 6m/s, throughout the area, the wind is not accelerating to critical values. The wind is also decelerated with respect the undisturbed wind speed, this can be seen in the area on the North of the proposed development.

11.4 Residual Impact

Wind cannot be eliminated or totally mitigated as it depends on weather conditions which could vary. The data of the historical wind conditions collected and reported in the previous sections, show that the wind speeds likely to occur on the site are below critical values, and that pleasant and comfortable microclimate can be maintained for most of the time and under the most frequent wind scenarios.

Gusts and storms can still occur, however, and they can create unpleasant and sometimes unsafe conditions. The pedestrian activities concerning the Lawson Comfort and Distress Criteria are not in general carried out during those weather conditions.

Having considered the above, no further changes to the development design and further increasing of the landscaping is suggested, as safety and pedestrian comfort is maintained in accordance with Lawson Comfort and Distress Criteria.

12 NOISE AND VIBRATION

The following sections present a summary of the information contained in **Chapter 12** (Noise and Vibration) of Volume 2 of this EIAR. This chapter assesses the likely noise & vibration impacts associated with the proposed development.

12.1 Methodology

The noise impact assessment has focused on the potential outward impacts associated with the construction and operational phases of the proposed development on its surrounding environment, as well as the inward impact of noise on the proposed residential dwellings.

12.2 Existing Environment

Baseline noise monitoring has been undertaken across the development site to determine the range of noise levels at varying locations across the site and to establish the existing noise climate at the nearest noise-sensitive locations and across the development site itself.

The survey was conducted in general accordance with ISO 1996: 2017: Acoustics – Description, measurement and assessment of environmental noise.

The noise survey indicated an environment that was dominated largely by road and air traffic.

In addition to the baseline survey, reference has been made to the Fingal Development Plan 2023-2029 Aircraft Noise Zones, which provide details of future noise levels of Dublin Airport flight operations. These have been incorporated into the assessment analysis.

12.3 Impact Assessment

During the main construction phase involving site clearance, building construction, and landscaping works the assessment has determined that there is the potential for some temporary significant noise impacts when works are undertaken within 45m of the receptor locations. However, these occurrences will only be temporary, and the vast majority of the construction works will take place at distances from the receptors where no significant impacts are predicted, and the construction criteria will be complied with. A schedule of noise mitigation measures, including noise limits and screening, will all be employed to ensure any noise and vibration impacts during this phase will be reduced as far as is reasonably practicable.

During the operational phase, the outward noise impact to the surrounding environment will be limited to any additional traffic on surrounding roads and potential plant noise.

The impact assessment has concluded that additional traffic from the proposed development will have an insignificant impact on the surrounding noise environment. The resulting impact is of *neutral, long-term* and *imperceptible*.

The operational plant noise from the development will be designed to ensure the prevailing background noise environment is not increased by a significant level such that potential adverse noise impacts are avoided. Once noise emissions from operational plants and activities are designed in accordance with BS 4142 Methods for Rating and Assessing Industrial and Commercial Sound, the resultant residual noise impact from this source will be of *negative, not significant, long-term impact*.

The potential for inward noise impact on the proposed development has been assessed. The assessment was carried out with reference to the guidance contained in Professional Practice Guidance on Planning & Noise (ProPG), BS 8233:2014 Guidance on Sound Insulation and Noise Reduction for Buildings; and the local and national Noise Action Plans relevant to the area. The assessment has concluded that standard double glazing and ventilation will provide suitable protection to indoor spaces.

External noise levels are not expected to meet the guidance noise levels due to the future noise contours from Dublin Airport. Given that the source will be aircraft noise it will not be possible to mitigate these external areas to within the guidance thresholds.

12.4 Mitigation Measures

Best practice noise and vibration control measures will be employed by the contractor during the construction phase in order to avoid significant impacts at the nearest sensitive buildings. This 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.

During the operational phase of the development, noise mitigation measures with respect to an increase in traffic on public roads are not deemed necessary. In terms of outward plant and mechanical noise, plant and attenuators should be selected with care at the design stage to meet the criteria outlined in **Chapter 12** (Noise and Vibration) of Volume 2 of this EIAR.

12.5 Cumulative Impact

It is considered that additional traffic introduced onto the local road network due to the construction and operational phases associated with the development and surrounding developments, as outlined in the relevant sections of this EIAR will not result in a significant noise impact.

12.6 Residual Impact

During the construction phase of the proposed development, there are significant, negative and temporary impacts predicted for dwellings that are located within 45m of construction works. At distances greater than 45m there are no significant impacts predicted.

During the operational phase, neutral, long-term and imperceptible impact has been predicted for the increase in traffic on public roads.

Plant noise will be controlled to the criteria outlined within this chapter of the EIAR. The impact, when controlled to these levels will be a *negative, not significant, long-term impact*.

13 CULTURAL HERITAGE

The following sections present a summary of the information contained in **Chapter 13** (Cultural Heritage) of Volume 2 of this EIAR. This chapter discusses the receiving environment from a cultural heritage perspective and assesses the impact of the proposed development on identified sites and areas of cultural heritage interest and/or potential.

13.1 Introduction

Cultural Heritage is defined by UNESCO as “the legacy of physical artefacts and intangible attributes of a group or society that are inherited from past generations, maintained in the present and bestowed for the benefit of future generations” (www.unesco.org/new/en/cairo/culture/tangible-cultural-heritage). In terms of the present project, Cultural Heritage is assumed to include all humanly created features on the landscape, including portable artefacts, which might reflect the prehistoric, historic, architectural, engineering and/or social history of the area.

13.2 Methodology

The Cultural Heritage of the area of the proposed project was examined through an Archaeological, Architectural, and Historical study. The Archaeological and Architectural studies involved a documentary/cartographic search (Paper Survey) and focused field inspection of the area, while the Historical study involved a documentary search.

13.3 Existing Environment

The subject development lands form part of the townland of Santry Demesne, in the barony of Coolock and the civil parish of Santry.

Following the Anglo-Norman invasions, the lands in the region were granted to Hugh de Lacy, who in turn granted the area of Santry to Adam de Feipo or Phepoe; control of these lands subsequently passed, by marriage, to the Marewood family; the lands subsequently formed part of the Barnwell estates but were forfeited to the Crown in the late 1530s. The lands formed part of the former Santry Court Estate, owned by the Barry family, Barons of Santry, from at least the mid-seventeenth century to the mid-eighteenth century. Subsequent to this they were inherited by the Compton Domville family, who retained the estate until the late-nineteenth century when they were inherited by the Pöe family who were relatives of the Domville's by marriage. Much of the estate, including the area of the proposed development, was acquired by Dublin Corporation in the early 1930s and largely remained in agricultural use until more recent years, when they were privately developed for commercial and residential use. In that regard, the entire site was subjected to extensive topsoil stripping/general ground reduction works in more recent times when it was developed as a car park facility.

There are no previously identified individual sites of archaeological interest located within the site or immediate environs; the nearest is the site of the former Santry Court/Santry House, which is listed in the Record of Monuments and Places (RMP) (Ref: DU014-030) and located approximately 500m to the southeast of the subject lands. No features of archaeological potential were noted by cartographic and aerial photographic research and no surface features/traces of archaeological potential were noted by the surface reconnaissance survey.

There are no structures listed in the RPS of the Fingal Development Plan 2023-2029 as being located within, or in the immediate environs of, the subject proposed development lands. The National Inventory of Architectural Heritage (NIAH) has not identified any extent structures or historic gardens within the site or environs.

13.4 Impact Assessment

There are no historical events associated with the subject development lands and no previously identified archaeological monuments or structures of architectural heritage interest are located within, or in the environs of, the site.

Given the above, it is considered that no direct or visual impacts to any Cultural Heritage Assets will occur as a result of the development proceeding.

13.5 Mitigation Measures

The entire site has been the subject of extensive ground disturbance works, including topsoil stripping, associated with the construction of the existing car parks; consequently, the site is considered to be of *negligible* archaeological potential. Given this and the consideration that no impacts to any Cultural Heritage Assets will occur as a result of the development proceeding, it is deemed that no mitigation measures are required.

13.6 Cumulative Impact

It is not envisaged that any negative cumulative effects will occur with respect to Cultural Heritage Assets as a result of the project proceeding as proposed.

13.7 Residual Impact

It is not envisaged that any negative residual effects will occur with respect to Cultural Heritage Assets as a result of the project proceeding as proposed.

14 LANDSCAPE AND VISUAL

The following sections present a summary of the information contained in **Chapter 14** (Landscape and Visual) of Volume 2 of this EIAR. This chapter assesses the landscape and visual impact of the proposed development on the receiving environment.

14.1 Existing Environment

The receiving environment of the proposed development is within Northwood in Santry and was formerly part of the Santry Demesne. The subject lands are surrounded by mixed-use development, furthermore, the surrounding area has undergone a significant level development in recent years.

Existing developments of note around the subject lands are Cedarwood, the Sports Surgery Clinic, Swift Square Office Park and Bridgefield Apartments, while important recreational areas are Santry Park and Community Gardens to the South and the Santry River Walk to the north.

The subject lands themselves have no inherent landscape character, and the site would be considered a 'transitional landscape'. It has been used for construction storage and waste in recent years and is now used as a temporary car park.

14.2 Impact Assessment

14.2.1 Potential Impact of the Proposal

The proposed development has various potential impacts in relation to the landscape on the subject lands and the surrounding landscape. Impacts during construction can arise from building activity, temporary structures, changes in levels and earthworks and a general change in the use of the site. Once the development is complete and operational, impacts could arise from new buildings and structures, infrastructure, services, the introduction of a new landscape and a change of landscape use.

14.2.2 Predicted Impact of the Proposal

14.2.2.1 Construction

During construction it is predicted that the proposed development will cause temporary or short-term negative impacts which arise due to the clearance of the existing site, the introduction of construction-related structures, machinery and infrastructure. The proposed development is, however, located in an area which has undergone a significant level of development in recent years, and which, therefore already contains many of the visual elements associated with construction activity. The visual elements associated with the construction of the proposed development would thus be consistent with the development in the surrounding area.

14.2.2.2 Operation

During operation, it is predicted that there will be a negative impact arising from the proposed development. Due to a number of factors the magnitude of the impact will be slight. The appropriateness of the development in regard to land-use zoning, the extent of surrounding development of a similar nature and the newly proposed landscape scheme will all aid in reducing the negative impact of the proposed development. Visual impacts were assessed, both in relation to construction and operation, from specific locations around the proposed development. The existing views show the extent of existing built development around the subject lands while the proposed views show that the proposed development, although it causes a negative impact, is of a similar nature and is consistent with existing and emergent development trends. Furthermore, due to the extent of the surrounding development, the proposed development is not visible from some viewpoints. The magnitude of the negative impacts ranges from *slight to moderate* with a *moderate* impact meaning that the impact causes a change which is noticeable but is consistent with emerging trends.

14.3 Mitigation Measures

The negative impacts will be mitigated through various approaches at both construction and operational stages, through monitoring, maintenance and design proposals. At construction, the site will be suitably

manged and designed in order to cause the least disruption to the neighbouring residences and the surrounding area and tree protection will be implemented. Design proposals, including the proposed landscape scheme and the architectural design of the proposed building, will reduce the negative impacts. During operation, a landscape management plan will ensure the establishment of a healthy landscape scheme and the continued sustainability of the new trees within the proposed development.

14.4 Cumulative Impact

The cumulative impact of the proposed development refers to its impacts combined with other existing developments in the area, both permitted and proposed. There is a significant level of existing built development of a similar typology in the surrounding area. Furthermore, the development of residential apartments Whitehaven (Ref. ABP-313317-22) has recently been permitted. This development will further result in the proposed development reading as part of a wider built environment and will, from some points in the local landscape, obstruct or partially obstruct views of such.

Given that the proposed development is an infill development within a landscape containing developments, both built, permitted and under construction, that are of a similar nature, there would not be deemed to any significant cumulative impact on the surrounding landscape.

14.5 Residual Impact

The main impact on the landscape character will be the transformation of the area to a construction compound. However, as described in the 'Character of the Site' section of this document the landscape of this section the site would be considered of no aesthetic value and the wider environment would be considered a transitional landscape. As the proposed landscape scheme matures the new landscape spaces will become more appreciated by the users for their inherent values. This will reduce the magnitude of negative impact felt from the initial construction activities and initial visual impact of the built mass during the operational phase.

The landscape proposals include the installation of native trees, hedgerows and ecological corridors. The proposed landscape treatment combined with the architectural treatment of the building will reduce the visual mass of the development and mitigate its visual impact. As the new trees mature the magnitude of the visual impacts will be reduced further. Furthermore, a significant level of public realm, amenity and parkland spaces will be introduced providing recreational value and reducing the impact on landscape character in the area.

15 MATERIAL ASSETS: TRAFFIC AND TRANSPORT

The following sections present a summary of the information contained in **Chapter 15** (Material Assets: Traffic and Transport) of Volume 2 of this EIAR. This chapter addresses all traffic and transport and related sustainability issues, including means of vehicular access, pedestrian, cyclist and local public transport connections, and quantifies the impacts on the local road network.

15.1 Existing Environment

The existing site is currently used as a surface car parking area associated with the Swift Square Park Office buildings and temporary parking facilitating construction workers at Blackwood Square SHD (Ref. ABP-306075-19) to the west of the subject Site. Vehicular access is currently connected to a sideroad, and vehicles can travel to Northwood Avenue from the existing carpark via Cedarview and the local access road to the west of the Site. The site is bounded by Swift Square Office Park development to the south, Cedarview residential development to the north, local access road and Gulliver's Retail Park to the west, and the proposed Whitehaven SHD to the south-east.

The land uses surrounding the development site are a mix of commercial, healthcare and residential (comprising both individual dwellings and larger residential apartment blocks), all of which benefit from access to/from Northwood Avenue. As a modern development, the pedestrian and cycle facilities within the Northwood area are of good quality. All pedestrian routes leading to/from the development benefit from the provision of street lighting in addition to good quality pedestrian footways. There are numerous pedestrians crossing facilities available along Northwood Avenue just south of the development. Additionally, off road cycle tracks are provided throughout the Northwood area and on the external road network. Ballymun Road has an off-road cycle track, while Swords Road has an On-Road cycle track. The off-road cycle lane along Northwood Avenue branches out at numerous locations along the route, providing additional cycle facilities throughout the Northwood area. For the Proposed Cycle Network, it is noted that much of the alignment for the Santry River Greenway is already in place throughout the Northwood area.

The site is ideally situated to benefit from a comprehensive range of Dublin Bus and Transport for Ireland (TFI) Go Ahead bus services. Furthermore, the range and proximity of a number of emerging public transport interchanges further enhance the sustainability characteristics of the Site. Dublin Bus and Go Ahead operate numerous routes along Swords Road and Ballymun Road, and Santry Avenue. These Dublin Bus operated bus services operate on a daily basis and offer relatively frequent schedules.

A MetroLink stop is currently proposed at Northwood in close proximity to the proposed development. MetroLink is the proposed high-capacity, high-frequency rail line running from Swords to Charlemont, linking Dublin Airport, Irish Rail, DART, Dublin Bus and Luas services, creating a fully integrated public transport service in the Greater Dublin Area. The proposed Northwood Metro Link stop will likely be located west of the proposed Swift Apartment development at the junction of the Ballymun Road (R108)/Northwood Avenue. The development will benefit from connectivity to a new pedestrian walkway through Gulliver's Retail Park designed to provide direct access to the MetroLink stop, which is being constructed with the ongoing Blackwood Square development.

15.2 Characteristics of the Proposed Development

Access to the proposed development will be provided from two locations. One vehicular access will connect between the local access road to the west of the proposed development and the basement car park. Another vehicular and cyclist access will connect between Cedarview and the ground floor undercroft/podium level car park.

It was agreed that a sustainable approach to parking would be incorporated into the development. The parking strategy utilised is derived from "*Sustainable Urban Housing: Design Standards for New Apartments*", which places a strong emphasis on bicycle parking. The development is well situated next to high-quality off-road cycling infrastructure and there is an opportunity to maximise the benefit deriving from appropriate cycle parking provision.

The proposed development will provide 446 car parking spaces, of which 74 car parking spaces located at ground floor undercroft/podium level, 360 car parking spaces located at basement and 12 car parking spaces located on-street, which are newly constructed by the proposed development. The 360 basement car parking spaces will comprise 214 relocated car parking spaces from Swift Square Office Park buildings and 146 car parking spaces for the residential units. The 74 ground floor undercroft/podium level car parking

spaces will comprise 40 relocated car parking spaces from Swift Square Office Park buildings and 34 car parking spaces for the residential units. The 180 residential car parking spaces equates to 0.91 car parking space per residential unit, which is greater than the recommended car parking supply of 0.5 spaces per one & two bedroom units (i.e., 99 car parking spaces) as required in the Fingal Development Plan.

15.3 Impact Assessment

15.3.1 Construction Stage

All construction activities will be governed by a CTMP, the details of which will be agreed upon with FCC's Roads Department prior to the commencement of the Construction Phase. The principal objective of the TMP is to ensure that the impacts of all building activities generated during the Construction Phase upon both the public (off-site) and internal (on site) workers environments, are fully considered and proactively managed/programmed, respecting key stakeholders' requirements.

During the construction works, there will be additional heavy goods vehicles (HGV) movements to/from the Site. Traffic will be generated by the disposal of surplus subsoil from the Site, deliveries of construction materials and equipment and, of course, private vehicles owned and driven by construction workers and staff.

15.3.2 Operational Phase

To determine current traffic behaviour in the vicinity of the subject site, a vehicle turning movement survey was obtained at seven junctions around Northwood. Due to the current Covid-19 restrictions, traffic in the surrounding area is considerably less than usual. FCC was informed that historical traffic counts were obtained for each junction. The historical traffic counts were taken in 2019 from a previous application for Blackwood Square, a development located c.10m west of the subject site.

The traffic analysis, traffic/queue counts, and pre-Covid on-site observations all demonstrated that Junction 2) Ballymun Road (R108) / Northwood Avenue, Junction 6) Santry Ave / Northwood Road and Junction 7) Northwood Ave / Swords Road (R138), are currently at or nearing capacity. In the future, the junctions will not operate efficiently in either the "without" and "with" the development scenarios. Any future traffic growth, irrespective of the subject development, will therefore result in an impact to the operation of the junction. The planned upgrade of the Old Ballymun Road junction to SCATS will help control traffic, reducing delays. It is noted that the 2024 or 2039 analysis does not include the likely improvements in the public transport services (MetroLink and BusConnects).

This further emphasises the need for an improved public transport network such as MetroLink and BusConnects, regardless of the proposed Swift Apartment development. Additionally, further investments are needed in cycling infrastructure not just in Northwood but the Greater Dublin Area. This will encourage a greater number of Northwood residents to leave their car at home and choose sustainable transport modes.

15.4 Mitigation Measures

15.4.1 Construction Phase

In advance of work starting on site, the works Contractor will prepare a detailed CMP and CTMP to be submitted to FCC for approval. The construction stage management plan will be a live document, and it will go through a number of iterations before works commence and during the works. It will set out requirements and standards which must be met during the construction stage and will include the relevant mitigation measures outlined in the EIA Report and any subsequent conditions relevant to the proposed development. The following mitigation measures have been identified, which will form part of a plan:

- Good construction management practices will be employed, such as fencing the site off from the public and neighbouring sites, adequate external/internal signage, secure internal site offices, dedicated construction access points, all to ensure the safety construction staff and the public.
- Appropriate levels of staff parking and compounding will be provided to ensure no potential overflow or haphazard parking in the area. The site will be able to accommodate employee and visitor parking throughout.

- Set construction traffic routes to and from the site will be agreed upon with FCC prior to the commencement of construction activities onsite. The time of day permissible for such routes will also be agreed upon and outside of the morning/evening peak hours.
- Wheel wash facilities will be provided on site to ensure that construction debris will not have an impact on the quality of roads in the Northwood area.

Managing construction traffic is an ongoing collaborative process. The application documentation includes a draft CMP and CWMP prepared by J.B. Barry & Partners Ltd. The measures set out therein will be adhered to by the construction contractor.

15.4.2 Operational Phase

A number of measures have been and will be implemented prior to the subject scheme opening, which includes:

- Development Plan Objectives: The Fingal Development Plan 2023-2029 proposes a number of junction and road infrastructure upgrades, which will greatly increase traffic capacity in the area. The upgrades include;
 - Provision of an underpass to include provision for a car, bus, cycle, and pedestrian link to link lands east and west of the R108 to enhance connectivity.
 - Enhance pedestrian links within and to Santry Demesne.
 - Facilitate the provision of a direct access route from Old Ballymun Road through Northwood. Development shall enhance connectivity to the proposed Northwood Metro Stop.
 - Maintain the operational capacity of the Swords Bypass, the R132.
 - During consultation with FCC on the Blackwood Square SHD application, it is noted that Fingal plan to upgrade Junction 3) Northwood Avenue / Old Ballymun Road to incorporate SCATS. Upgrading this junction to SCATS will allow the junction to control the traffic arriving from Northwood to the Ballymun Road.
- All junction upgrades will improve traffic movements in the area, improve road safety, and provide a safer environment for pedestrians and cyclists, encouraging sustainable transport.
- Parking: Car parking and bicycle parking within the development will take a sustainable approach to parking. The parking strategy utilised is derived from “*Sustainable Urban Housing: Design Standards for New Apartments*”, which places a strong emphasis on bicycle parking, thus reducing the need for private single-occupancy vehicles.
- Development Design: A creche set-down area has been provided and a number of parking spaces are allocated north of the creche area on the ground flood to facilitate servicing, short duration parking and childcare facility pickup / drop off. Refuse collections will be managed to ensure there is no conflict with creche drop off and collection times.
- Residential Travel Plan (RTP): An RTP included with the application documents is to be rolled out with the aim of guiding the delivery and management of coordinated initiatives by the scheme promotor. A Residential Travel Plan, also known as a Mobility Management Plan, is a long-term management strategy which identifies a package of measures to encourage residents and visitors to use sustainable forms of transport such as walking, cycling and public transport and to reduce dependency on private car single-occupancy use. By providing for the transportation needs of people and goods in an ordered and planned manner, the environmental, economic and social impacts of travel may be greatly reduced.

The successful implementation of the RTP provides the development with a number of advantages, which include improved environmental performance; improved health and well-being for those residents using active transport modes and the reduced demand for car parking spaces. Available initiatives to reduce the environmental impact of commuter journeys include; car pooling schemes and the promotion of sustainable transport such as walking, cycling and public transport.

15.5 Cumulative Impact

The TII traffic growth rates will account for any increase in traffic as a result of other developments in the area such as Swift Square, Blackwood Square, Bridgefield and other potential developments in the future.

Consequently, all impacts assessed are inherently cumulative impacts. As demonstrated above in the traffic analysis, the junctions will not operate efficiently in either the “without” and “with” the Swift Apartment development scenarios. As the junctions are at capacity, the cumulative effect of neighbouring developments will likely have a noticeable increase in queues/delays. This further emphasises the need for an improved public transport network such as MetroLink and BusConnects, regardless of the Swift Apartment development and neighbouring developments.

15.6 Residual Impact

15.6.1 Construction Phase

There will be minor impacts on the safety or operation of the road network as a result of the construction phase of the Swift Apartment development. Having consideration for the mitigation measures outlined above, any impacts during the construction phase will be negligible. All construction-related traffic will be outside the morning and evening peak hours and will not have a significant impact the operation of the adjoining junctions. The overall residual impact during the construction phase of the proposed development on traffic and transportation, after the implementation of mitigation measures outlined above, will be *short-term, not significant* and *neutral*.

15.6.2 Operational Phase

It was determined that Junction 2) Ballymun Road (R108) / Northwood Avenue, Junction 6) Santry Ave / Northwood Road and Junction 7) Northwood Ave / Swords Road (R138) were the key junctions to be modelled. The analysis demonstrated that when factoring up the 2019 traffic counts, in 2021 Junction 2) Ballymun Road (R108) / Northwood Avenue will operate just over the normal design threshold during the morning and evening peak hours considered. Junction 7) Northwood Ave / Swords Road (R138) will also exceed the normal design threshold during the evening peak hour. Junction 6) Santry Ave / Northwood Road will operate just below the design threshold, but nearing capacity.

In the future, the junctions will not operate efficiently in either the “without” and “with” the development scenarios. Any future traffic growth, irrespective of the subject development, will therefore result in an impact to the operation of the junction. It is noted that the 2039 analysis does not include the likely improvements in the public transport services (MetroLink and BusConnects).

It is noted that Fingal plans to upgrade Junction 3) Northwood Avenue / Old Ballymun Road to incorporate SCATS. Upgrading this junction to SCATS will allow the junction to control the traffic arriving from Northwood to the Ballymun Road. The junctions will better calculate and adapt the timing of traffic signals in the network allowing the junction to operate efficiently, creating an overall positive impact. This further emphasises the need for an improved public transport network as outlined in Section 2.3, such as MetroLink and BusConnects, regardless of the Swift Apartment development. Additionally, further investments are needed in cycling infrastructure not just in Northwood, but the Greater Dublin Area. This will encourage a greater number of Northwood residents to leave the car at home and choose sustainable transport modes.

The study concludes that from a traffic and safety perspective, the proposed development, as described herein, does not pose any significant residual impacts and, on this basis, should be granted planning permission. The overall residual impact during the operational phase of the proposed development on traffic and transportation, after the implementation of the mitigation measures outlined above, will be *long-term, not significant* and *neutral*.

16 MATERIAL ASSETS: BUILT SERVICES

The following sections present a summary of the information contained in **Chapter 16** (Material Assets: Built Services) of Volume 2 of this EIAR. This chapter addresses the likely effects on built services and infrastructure, which may be affected by the construction of the proposed development.

16.1 Introduction

Material Assets are taken to mean built services and infrastructure, namely.

- Potable Water Supply
- Wastewater Services
- Electricity
- Gas
- Telecommunications

The impact on other material assets is assessed in various chapters of the EIAR.

- Chapter 7: Land, Soils and Hydrogeology
- Chapter 8: Water and Hydrology
- Chapter 13: Cultural Heritage
- Chapter 14: Landscape and Visual
- Chapter 15: Material Assets: Traffic and Transport

A Pre-Connection Application was submitted to UÉ (formerly Irish Water) on 07th May 2021 in relation to wastewater discharge and water supply for the development, and a Confirmation of Feasibility (CoF) was received on 17th August 2021 with no upgrades required to the existing UÉ (formerly Irish Water) infrastructure.

Following a more recent Pre Connection Enquiry (PCE), an updated CoF was received from UÉ (formerly Irish Water) on the 09th August 2022, which also confirmed that connections to water supply and wastewater for the proposed development were feasible without any upgrades to UÉ (formerly Irish Water) infrastructure.

A copy of the CoF Statement and Design Acceptance is included in Appendix 1 of the *Water Services Report* prepared by J.B. Barry & Partners Ltd and submitted with the application package.

16.2 Impact Assessment

16.2.1 Water Supply and Wastewater Services

During the connection works which will require the water supply being shut down within the overall development for a short period of time there is potential for a *temporary slight adverse* impact.

The water supply requirements of the construction phase will be from a temporary connection to the watermain. The impact on the water supply network is considered to be slight and short term.

The temporary on-site toilet and washing facilities for construction workers will be connected to existing foul sewer via the internal sewer network. The significance of the potential impact on the existing foul infrastructure is considered "*imperceptible*" and *temporary* adverse in duration.

Occupancy of the entire Development will occur around the same time. This will lead to an increase in demand on the water supply network and increased foul effluent flows to the wastewater infrastructure. UÉ (formerly Irish Water) have confirmed in their Confirmation of Feasibility Statement that water supply to the proposed Development is feasible without upgrades. Similarly, UÉ (formerly Irish Water) have confirmed, in their Confirmation of Feasibility Statement, that there is capacity in their Wastewater Infrastructure to cater for this Development. The potential impacts on the Potable Water Supply Network and Wastewater Infrastructure is considered to be imperceptible.

16.2.2 Surface Water Disposal

The impacts of surface water drainage are described in **Chapter 8** (Water and Hydrology) of Volume 2 of this EIAR and the Water Services Report prepared by J.B. Barry & Partners Ltd and submitted with the application package.

16.2.3 Electricity

It is anticipated that the construction phase of the proposed development will require a peak load of 300kVA. The majority of this supply will be for the cranes during construction.

The proposed development will require the construction of a potential double substation on site. The load associated with the planned scheme will require a full new electrical infrastructure on site, and while the apartments will be highly energy efficient in terms of internal power demand, lighting and general services, there will be a specific capacity provision for electric cars.

16.2.4 Gas

At this time, the preference for the scheme is to install a district heating scheme to cater for all the units. The main plant will be centralised in a single location, and this will house the high-efficiency boilers and CHP engines that will meet the thermal demand on site. There are high and low-pressure gas mains adjoining the development, and a single supply will be taken off these and routed to the boiler house. With the central plant system, the overall boiler capacity on site is greatly reduced due to the high level of diversification that can be applied. From an operator's perspective, the maintenance of the system is much easier, and there is no need to route gas anywhere else in the building.

16.2.5 Telecommunications

In order to enable the site, ducting will be provided to the site boundary to facilitate network cabling by Virgin and Eir. A fibre-into-the-home service will be delivered to all of the units, and this will allow giving the scheme to reach high levels of bandwidth capacity in the years ahead.

16.3 Mitigation Measures

The proposed water supply network, including water conservation measures, will be designed strictly in accordance with the UÉ (formerly Irish Water) Code of Practice for Water Infrastructure, Dec 2017 (Revision 1). The proposed wastewater pipelines will be designed strictly in accordance with the UÉ (formerly Irish Water) Code of Practice for Wastewater Infrastructure, Dec 2017(Revision 1).

As no significant impacts were predicted, no specific mitigation measures are proposed. However, in advance of work commencing on site the contractor will prepare a works specific CEMP to ensure best practices are implemented.

16.4 Cumulative Impact

The Confirmation of Feasibility Statement issued by UÉ (formerly Irish Water) confirms that there is adequate capacity in their water supply network and wastewater systems to accommodate the proposed development. Consequently, there are no cumulative impacts predicted.

16.5 Residual Impacts

No negative residual impacts are predicted.

17 POPULATION AND HUMAN HEALTH

The following sections present a summary of the information contained in **Chapter 17** (Population and Human Health) of Volume 2 of this EIAR.

Human Beings comprise an important aspect of the environment to be considered. Any significant impact on the status of humans, which may be potentially caused by a development proposal, must therefore be comprehensively addressed as part of the EIA.

17.1 Impact Assessment

The construction phase of the proposed development is likely to result in a positive net improvement in economic activity. The proposed development will result in a construction period of up to 24 months. Thus, the construction phase is likely to enhance economic activity in the construction sector. It is anticipated that a substantial number of jobs will be created directly on site. The construction of this development would also support job creation in building supply companies as well as have a positive impact on local businesses associated with the increase in spending on goods and services in the area.

The construction phase of the project may have some short-term negative impacts on local businesses/residents. Such impacts are likely to be associated with construction traffic, possible nuisances associated with construction activity and noise impact. Mitigation of these potential impacts through construction management (such as methods employed, hours of operation) is an established approach. Such impacts will be short-term. Some temporary additional local populations may arise out of construction activity. However, these impacts are imperceptible, temporary in nature and therefore not considered significant.

The completed scheme will have long-term beneficial impacts for local businesses and the wider economy through the provision of acutely required additional housing in an area well served by public transport. The proposed development will bring a new population to the area. This will support existing schools, shops, public transport and the local community and has the potential to raise falling birth rates and stabilize rents/house prices through increased supply. Sunlight and daylight provision are in accordance with pertinent standards. It is considered that the effects on population and human health will be slight to moderate, positive, and long-term.

17.2 Mitigation Measures

Construction shall adhere to good practice and legal requirements. The Outline CEMP for the project, which will be submitted with the planning application, sets out the basic measures to be employed in order to mitigate potential negative effects during construction.

17.3 Cumulative Impact

The overall cumulative impact of the proposed development will therefore be long-term and positive with regard to population and human health, as residents will benefit from a high quality, visually attractive living environment, with ample opportunity for active and passive recreation and strong links and pedestrian permeability, with a direct and convenient link to existing high-frequency public transport modes and the planned MetroLink.

17.4 Residual Impacts

Adherence to the mitigation measures recommended in this EIAR will ensure that there will be no negative residual impacts or effects on population and human health from the construction and operation of the proposed scheme. Indeed, the delivery of much-needed housing will realise a likely significant positive effect on the local area. The provision of onsite facilities, including pedestrian and cyclist facilities and high-quality amenity open space, will also result in a positive contribution to the mental health and well-being of the residents and local amenity users.

18 CLIMATE

The following sections present a summary of the information contained in **Chapter 18** (Climate) of Volume 2 of this EIAR. This chapter contains an assessment of the likely impact on climate associated with the proposed development.

18.1 Existing Environment

The existing climate baseline can be determined by reference to data from the EPA on Ireland's total greenhouse gas (GHG) emissions and compliance with EU Regulation 2018/842. The EPA state that Ireland had total Effort Sharing Regulation (ESR) GHG emissions of 46.16 Mt CO₂eq in 2021. This is 2.71 Mt CO₂eq higher than Ireland's annual target for emissions in 2021. The EPA predict that Ireland can comply with the GHG targets for 2021 – 2030 provided full implementation of the measures outlined within the Climate Action Plan and the use of the flexibilities available.

18.2 Impact Assessment

Impacts on climate are likely as a result of GHG emissions during both the construction and operational phase. A number of mitigation measures have been proposed as set out in **Section 18.5 of Chapter 18** (Climate) of Volume 2 of this EIAR; these will reduce the impact on climate from both construction and operation. As the proposed development has proposed some best practice mitigation measures and is committing to reducing climate impacts where feasible, the development will comply with the do-minimum standards set through regulation (the Nearly Zero Energy Building standard and Part L 2021); the impact of the proposed development in relation to GHG emissions is considered long-term, moderate adverse and significant.

There is the potential for increased traffic volumes to impact climate during the operational phase. A detailed climate assessment of traffic emissions was scoped out of this assessment. It was determined that emissions the development in place would not significantly impact Ireland's climate targets for future years. While there will be some vehicular emissions associated with the proposed development overall, the development has been designed to encourage more sustainable travel methods. The potential climate impact of the proposed development is considered neutral, long-term and imperceptible in relation to traffic emissions.

In addition to greenhouse gas emissions, the vulnerability of the proposed development to climate change has been assessed. This was conducted by determining the sensitivity of the area to various climate hazards and the likelihood of the climate hazards occurring on site. The vulnerability assessment determined that there is a medium risk of flooding and extreme temperatures to the development as a result of climate change. However, flooding impacts have been mitigated as part of the design of the development with adequate attenuation and drainage provided. Building materials will be selected so as to withstand temperature variations as per their design.

18.3 Residual Impact

Overall, there was no significant residual climate change-related risks.

19 CUMULATIVE EFFECTS AND ENVIRONMENTAL INTERACTIONS

The EIA Directive and its transposing regulations require that in addition to assessing impacts on population & human health, biodiversity, land & soils, water, air, climate, landscape, material assets and cultural heritage on the environment, the inter relationship between these factors must be considered.

The potential interaction between environmental aspects, arising from within the development were considered, to ensure that the combination of impacts was correctly examined, and any required mitigation measures included.

Each technical chapter of the EIAR details individual environmental baseline information and identifies the significant potential and residual construction and operational effects/impacts of the proposed development. In addition, the potential for other environmental interactions is identified, and the relevant impact either on, or from, these other aspects are analysed via data exchange between and assessment review by the relevant experts.

Table 19.1 is a matrix table indicating the significant interactions that are likely to occur between the various environmental disciplines regarding the proposed scheme. Where a tick exists in a box in a table, this indicates that a relationship exists between the two environmental areas. The purpose of the table is to allow interaction between two various disciplines to be recognised, although the level of interaction will vary in each case. It is assumed in presenting this table that an environmental discipline has a potential inter-relationship during either the construction or operational phase of the scheme or both.

EIAR VOLUME 1: Non-Technical Summary

Table 19.1: Interactive Effect on Receptors (interactions are outlined horizontally from right to left)

Interactive / Cumulative Effect on Receptor	Biodiversity	Land, Soil, and Hydrogeology	Water and Hydrology	Air Quality	Microclimate: Sunlight and Daylight	Microclimate: Wind	Noise and Vibration	Cultural Heritage	Landscape and Visual	Material Assets: Traffic and Transport	Material Assets: Built Services	Population and Human Health	Climate
Biodiversity		◆	◆	◆			◆		◆				◆
Land, Soil, and Hydrogeology	◆			◆			◆	◆		◆		◆	
Water and Hydrology	◆												
Air Quality	◆	◆								◆	◆	◆	◆
Microclimate: Sunlight and Daylight												◆	
Microclimate: Wind									◆			◆	
Noise and Vibration										◆	◆	◆	
Cultural Heritage									◆				
Landscape and Visual	◆							◆				◆	
Material Assets: Traffic and Transport		◆		◆				◆			◆	◆	
Material Assets: Built Services		◆								◆			
Population and Human Health			◆	◆	◆	◆	◆		◆	◆			◆
Climate	◆	◆	◆	◆	◆	◆	◆			◆	◆	◆	

20 SCHEDULE OF ENVIRONMENTAL COMMITMENTS

All mitigation and monitoring commitments detailed within this EIAR have been included in a separate compendium and are presented in **Table 20.1** below. Together these tables form the Schedule of Environmental Commitments, which will be implemented as required during the construction and operational phases of the proposed residential development at lands to the north of Northwood Avenue, Santry, Dublin 9.

Table 20.1: Environmental Commitments - Mitigation Measures (Construction and Operational Phases)

Item Ref.	Env. Topic	Schedule of Env. Commitments Mitigation Measures	Construction Phase	Operational Phase
N/A	Biodiversity (Chapter 6)	<p>Construction Environmental Management Plan (CEMP)</p> <p>A CEMP summarises the overall environmental management strategy that will be adopted and implemented during the construction phase of the proposed development. The purpose of the CEMP is to demonstrate how the proposed construction works can be delivered in a logical, sensible, and safe sequence with the incorporation of specific environmental control measures relevant to construction works of this nature. The CEMP sets out the mechanism by which environmental protection is to be achieved during the construction phase of the proposed development. The CEMP has been prepared in accordance with the following industry best practice guidance:</p> <ul style="list-style-type: none"> TII's Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan (TII 2007); and Construction Industry Research and Information Association (CIRIA) in the UK, Environmental Good Practice on Site Guide, 4th Edition (CIRIA 2015). <p>The CEMP has been prepared in conjunction with the Environmental Impact Assessment (EIA) Report with input from members of the design team. The CEMP supports the information already provided in the EIA Report.</p> <p>The CEMP has been prepared and is included as part of the planning application package. The CEMP will be updated by the client prior to the commencement of the construction phase so as to include any additional measures required pursuant to conditions attached to any decision to grant approval. The CEMP has regard to the guidance contained in the TII Guidelines for the Creation, Implementation and Maintenance of an Environmental Operating Plan and the handbook published by Construction Industry Research and Information Association (CIRIA) in the UK, Environmental Good Practice on Site Guide, 4th Edition (CIRIA 2015). The CEMP will be implemented in full by the appointed contractor to the satisfaction of the client.</p>	◆	
BBM1; BBM2		<p>Breeding Birds</p> <p>The following mitigation measures are proposed to comply with legislation protecting birds and their nests:</p> <ul style="list-style-type: none"> BBM1: In order to avoid disturbance of breeding birds, their nests, eggs and/or their unflown young, any tree felling, or hedgerow, scrub or brash removal works will be undertaken outside of the nesting season (1st March to 31st August inclusive). <p>Where this seasonal restriction cannot be observed, then:</p> <ul style="list-style-type: none"> BBM2: A check of woodland, trees and hedgerows within the proposed development site for breeding birds will be undertaken during the appropriate season (between 1st March and 31st August) by a suitably qualified and experienced ecologist. The appointed ecologist will confirm whether birds are nesting within suitable habitats affected by or immediately adjacent to the proposed development site. Should nesting birds be encountered during these checks, the vegetation removal in the vicinity of the nest(s) will be delayed until nesting has finished. This will comprise another inspection by an ecologist to check that young birds have fledged, and no new nests are present on site. 	◆	

Item Ref.	Env. Topic	Schedule of Env. Commitments Mitigation Measures	Construction Phase	Operational Phase
BM1; BM2; BM3; BM4; BM5	Biodiversity (Chapter 6)	<p>Bats</p> <p>All bat species and their roost sites are strictly protected under both European and Irish legislation, including:</p> <ul style="list-style-type: none"> Wildlife Act, as amended Council Directive on the Conservation of Natural Habitats and of Wild Flora and Fauna, as amended European Communities (Birds and Natural Habitats) Regulations, as amended <p>It is an offence under Section 23 of the Wildlife Acts and under Section 51 of the European Communities (Birds and Natural Habitats) Regulations to kill a bat or to damage or destroy the breeding or resting place of any bat species. Under the European Communities (Birds and Natural Habitats) Regulations, it is not necessary that the action should be deliberate for an offence to occur. This places an onus of due diligence on anyone proposing to carry out works that might result in such damage or destruction. Under Section 54 of S.I. 477 of 2011, a derogation may be granted by the Minister where there is no satisfactory alternative, and the derogation is not detrimental to the maintenance of the populations of the species to which the Habitats Directive relates at a favourable conservation status in their natural range.</p> <p>Bats could occupy suitable roosting features at any time prior to the commencement of works. Therefore, there is an inherent risk that bats could be affected by the proposed felling works. The following mitigation procedures will be followed:</p> <ul style="list-style-type: none"> BM1: The trees in the lands that are scheduled for removal will be rechecked by a suitably qualified ecologist for the presence of PRFs immediately prior to felling. This measure is proposed as PRFs could potentially develop in the period between the completion of surveys to inform this report and the commencement of tree-felling works. <p>Where no PRF features are identified during the recheck, no further actions will be taken. Where PRFs are identified on trees, the following measures will be undertaken:</p> <ul style="list-style-type: none"> BM2: Felling of confirmed and potential tree roosts will be undertaken between September and February, when bats are least likely to be utilising tree roosts in an urban context. BM3: Subject to the health and safety considerations with regard to access to PRFs, PRFs will be inspected using an endoscope device by a suitably licenced and experienced professional to check for the presence of roosting bats. Access to the PRFs may be facilitated by using a mobile elevated working platform (MEWP) or similar or using tree climbing equipment. <p>Where a bat or signs of a bat are identified in a PRF feature during the pre-felling checks of the tree, all works to the relevant tree will cease. A bat mitigation strategy will be prepared for the tree pruning/removal works, and a derogation licence will be sought from the Minister for Housing, Local Government and Heritage to facilitate the legal removal of a roost.</p> <p>Where a PRF or a set of PRFs on a tree are identified as being of low suitability for bats/unlikely to host roosting bats, e.g., due to their extent, condition, exposure etc., then felling/pruning of the relevant section of tree / relevant tree will proceed at the discretion of the tree surgeon and under the supervision of a suitably qualified ecologist.</p> <p>Where a PRF, or a set of PRFs, is assessed as being of greater than low suitability for roosting bats, the following will apply:</p> <ul style="list-style-type: none"> BM4: Where it is safe and appropriate to do so for both bats and humans, such trees may be felled using heavy plant to 	◆	

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		<p>push over the tree. In order to ensure the optimum warning for any roosting bats that may still be present, the tree will be pushed lightly two to three times using the heavy plant machinery, with a pause of approximately 30 seconds between each nudge to allow bats to become active. The tree should then be pushed to the ground slowly and should remain in place until it is inspected by a bat specialist.</p> <p>Or</p> <ul style="list-style-type: none"> BM5: Trees will be felled “in section” where the sections can be rigged to avoid sudden movements or jarring of the sections. Felled sections to be inspected when on ground and left in place for 24hrs before mulching. 		
TM1	Biodiversity (Chapter 6)	<p>Retained Trees</p> <p>The following mitigation measures are proposed to protect the trees to be retained on site:</p> <ul style="list-style-type: none"> TM1: In order to preserve the trees to be retained within the proposed development, the root protection area must be calculated by a qualified arborist. Protective barriers as per standard guidance BS 5837:2012 must be installed to exclude construction activities from the root protection area of the trees 	◆	
N/A	Biodiversity (Chapter 6)	<p>Landscape Design</p> <p>As outlined in Chapter 14: Landscape and Visual. SuDs has been incorporated into the design with a key design feature in respect of biodiversity relating to the inclusion of green roofs. Proposed landscape planting incorporated into the proposed development design will be implemented by the appointed contractor. The Landscape Masterplan for this proposed development (Chapter 14: Landscape and Visual of Volume 2 of this EIAR) and accompanying Landscape Report includes the following: use of native species, pollinator-friendly species, hedgerows, treelines, wildflower meadows and micro woodland.</p>		◆
N/A	Biodiversity (Chapter 6)	<p>Use of Native species</p> <p>As part of the iterative design process, consultations between the ecologist and landscape designer have ensured that the landscape design is cognisant of incorporating biodiversity into developments, a theme that is also identified in the third National Biodiversity Action Plan to “mainstream biodiversity”. The tree population associated with the proposed development site is predominantly young (less than 20 years old). These are trees that have been planted as part of the Swift Square Office Park and associated temporary car park, by the applicant. The removal of these trees will be mitigated by the creation of 194m² of a “micro woodland”, planting 120 no. semi-mature trees and 40 no. multi-stem trees (native or varieties of native species), and 420m of linear hedge. In this regard, the replanting of near to 100% native tree species will be undertaken, with species including silver birch <i>Betula pendula</i>, downy birch <i>Betula pubescens</i>, Scots pine <i>Pinus sylvestris</i>, bird cherry <i>Prunus padus</i>, pedunculate oak <i>Quercus robur</i> and white willow <i>Salix alba</i>.</p>		◆
N/A	Biodiversity (Chapter 6)	<p>Pollinator Friendly species</p> <p>The Landscape Masterplan for this proposed development (Chapter 14: Landscape and Visual of Volume 2 of this EIAR) has been designed to include biodiversity and ecological enhancement measures to strengthen green infrastructure within the wider landscape. This includes the use of ornamental shrub and herbaceous groundcover planting, with an emphasis on those species listed as pollinator friendly under the All-Ireland Pollinator Plan 2021-2025. The full species list is specified in the Landscape Masterplan drawing which accompanies this report.</p>		◆

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Item Ref.	Env. Topic	Schedule of Env. Commitments Mitigation Measures	Construction Phase	Operational Phase
WLM1 (Chapter 6)	Biodiversity	<p>Woodlands</p> <p>Mitigation for the removal of woodland habitats recorded during the habitat survey (outlined in section 6.2.9.1 Habitats and Flora Survey) are as follows:</p> <ul style="list-style-type: none"> WLM1: The creation of 194m² of a “micro woodland which will consist of native tree species (e.g. those tree species included in treelines below, as well as alder <i>Alnus glutinosa</i>, hazel, hawthorn, holly <i>Ilex aquifolium</i>, blackthorn <i>Prunus spinosa</i>, dog-rose <i>Rosa canina</i> and gorse <i>Ulex europaeus</i>) planted closely together in a “Miyawaki Method” style, which is used to encourage more biodiversity. The micro woodland will include native canopy trees, and mostly native midstorey and understorey planting, with the full species list specified in the accompanying Landscape Masterplan. 		◆
HM1 (Chapter 6)	Biodiversity	<p>Hedgerows</p> <p>Mitigation for the removal of hedgerow habitats recorded during the habitat survey (outlined in section 6.2.9.1 Habitats and Flora Survey) are as follows:</p> <ul style="list-style-type: none"> HM1: The planting of 420 m of linear hedgerows with a range of native herbaceous and tree/shrub species (e.g., <i>wild privet Ligustrum vulgare</i> and <i>hornbeam Carpinus betulus</i>) will be planted along the western perimeter of and proposed development. When established, this will allow for the development of biodiversity corridors for fauna. 		◆
TM1; TM2 (Chapter 6)	Biodiversity	<p>Treelines</p> <p>Mitigation for the removal of treeline habitats recorded during the habitat survey (outlined in section 6.2.9.1 Habitats and Flora Survey) are as follows:</p> <ul style="list-style-type: none"> TM1: The planting of native 120 no. semi-mature trees and 40 no. multi-stem trees (native or varieties of native species, e.g. silver birch <i>Betula pendula</i>, scots pine <i>Pinus sylvestris</i>, bird cherry <i>Prunus padus</i> and pedunculate oak) will allow for the development of roosting and foraging habitats to establish over time. TM2: The tree root protection areas as defined in BS 5837:2012, will be maintained so as to avoid compaction from human traffic. 		◆
WMM1 (Chapter 6)	Biodiversity	<p>Wild Meadows</p> <p>Mitigation for removal of grassland:</p> <ul style="list-style-type: none"> WMM1: Pollinator friendly wildflower meadow areas will be encouraged to develop with native species along the peripheries of grassy areas, of which in total there will be 1572m². Mowing of grassy areas should ideally follow the advice given in the All-Ireland Pollinator Plan Advice to Councils (NBDC, 2021), which gives a variety of grass management options, including the six-week meadow. This allows five cuts to occur at specific periods in April, May, July, August and October, with grass cuttings removed to encourage wildflowers to grow. 		◆
BM6 (Chapter 6)	Biodiversity	<p>Bats</p> <ul style="list-style-type: none"> BM6: Lighting proposals for the operational phase have been reviewed as part of this biodiversity assessment. The lighting columns will be fitted with baffles as appropriate to minimise light spill to retained/replanted trees and hedgerows and 		◆

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		outside the proposed development site boundary to below 3 lux and include not orientating fittings above the horizontal plain.		
BBM3	Biodiversity (Chapter 6)	Birds <ul style="list-style-type: none"> BBM3: In order to provide additional nesting opportunities for birds whilst the new planting is established, 3 no. 1B Schwegler nest boxes⁴ or similar will be installed within the proposed development site. The nest boxes will be installed at a minimum of 3m above ground level to ensure against disturbance from humans and domestic animals such as cats. The boxes will be deployed across the site in appropriate locations, as advised by a suitably qualified ecologist. 	N/A	
BM7	Biodiversity (Chapter 6)	Bats <ul style="list-style-type: none"> BM7: Although no bat roosts were confirmed during the surveys and the potential for same was considered as being of low suitability, additional roosting opportunities for bats are proposed, to include 3 no. Schwegler 2F bat boxes⁵ to be erected on suitable retained trees in suitable locations across the site, the location of which to be decided by a suitably qualified and experienced bat ecologist. The boxes will be installed on the tree at a height of 3-5 and firmly fixed to tree trunk: <ul style="list-style-type: none"> Where practicable, the bat boxes will be installed in an East, South and West orientation and protected from undue disturbance by selective placement away from light spill and at a height >3.5m. There will be 1m clearance (e.g., no overhanging branches or ivy encroachment near installed box) around each bat box opening. Installed bat boxes will labelled and data (reference number, GPS location and photographic record) will be supplied to Bat Conservation Ireland (BCI), Local Authority Biodiversity Officer and NPWS. BM7 has been proposed as an enhancement measure for the proposed development site rather than a mitigation measure as no confirmed roosting sites have been identified. 	N/A	
N/A	Land, Soils and Hydrogeology (Chapter 7)	<p>As no significant impacts were predicted, no specific mitigation measures are proposed. However, in advance of work starting on site the works Contractor will prepare a Construction Environment Management Plan (CEMP) which will include the schedule of any mitigation measures included with this EIAR. The plan will have regard to the guidance contained in the handbook published by Construction Industry Research and Information Association (CIRIA) in the UK, Environmental Good Practice on Site, CIRIA 2005. The CEMP will be a live document and it will go through a number of iterations before works commence and during the works. It will set out requirements and standards which must be met during the construction stage and will include the relevant mitigation measures outlined in the EIA Report and any subsequent conditions relevant to the proposed development. The following mitigation measures have been identified which will form part of a Construction Environmental Management Plan (CEMP) which will include measures for reduction or elimination of pollution and the schedule of mitigation measures in this EIAR.</p> <ul style="list-style-type: none"> Contractor Guidance set out in the Control of Water Pollution from Construction Sites (CIRIA, 2001) shall be adhered to. Good 	◆	

⁴ Bird boxes are available to purchase online from NHBS www.nhbs.com and similar websites

⁵ Bat boxes are available to purchase online from NHBS www.nhbs.com and similar websites

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Item Ref.	Env. Topic	Schedule of Env. Commitments Mitigation Measures	Construction Phase	Operational Phase
		<p>construction management practices will be employed. During the construction stage, all potentially harmful substances (e.g., oils, diesel, herbicides, pesticides, concrete etc.) will be stored in accordance with the manufacturer's guidelines regarding safe and secure buildings/compounds.</p> <ul style="list-style-type: none"> Designated impermeable cement washout areas must be provided; All oils and fuels will be stored in bunded tanks with the provision of a storage/retention capacity of 110% of tank storage. Care and attention will be taken during refuelling and maintenance operations. Adequate means to absorb or contain any spillages of these chemicals will be available at all times. Any soil contaminated from an accidental spillage will be contained and treated appropriately and disposed of in accordance with the Waste Management Act 1996-20122. 		
N/A	Land, Soils and Hydrogeology (Chapter 7)	As there is no operational interaction or impacts on the land, soils and hydrogeological environments, no mitigation is proposed apart from good practice.		◆
N/A	Water and Hydrology (Chapter 8)	<ul style="list-style-type: none"> In advance of work starting on site the works Contractor will prepare a Construction Environment Management Plan (CEMP) and a Construction and Demolition and Waste Management Plan (CDWMP) which will include the schedule of any mitigation measures included with this EIAR. The plan will have regard to the guidance contained in the handbook published by Construction Industry Research and Information Association (CIRIA) in the UK, Environmental Good Practice on Site, CIRIA 2005. The CEMP will be a live document and it will go through a number of iterations before works commence and during the works. It will set out requirements and standards which must be met during the construction stage and will include the relevant mitigation measures outlined in the EIA Report and any subsequent conditions relevant to the proposed development. <p>Flood Risk to Surrounding Areas</p> <ul style="list-style-type: none"> The attenuation storage and the required outlet control to attenuate the discharge flow will be constructed as early as possible in the construction stage; and During construction, the surface run-off will be directed through the existing stormwater drainage system. This will ensure that the discharge to the Santry River shall not exceed greenfield run-off rates. <p>Following the implementation of mitigation, no significant residual impacts are predicted.</p> <p>Water Quality</p> <p>The following mitigation measures have been identified which will form part of a Construction Environmental Management Plan (CEMP) which will include measures for reduction or elimination of pollution and the schedule of mitigation measures in this EIAR.</p> <ul style="list-style-type: none"> Contractor Guidance set out in the Control of Water Pollution from Construction Sites (CIRIA, 2001) shall be adhered to. Good construction management practices will be employed. During the construction stage, all potentially harmful substances (e.g. oils, diesel, herbicides, pesticides, concrete etc.) will be stored in accordance with the manufacturer's guidelines regarding safe and secure buildings/compounds. Foul drainage from all site facilities will be to a public sewer. When cast in-place concrete is required, all work must be done in the dry and effectively isolated from any flowing water (or water that may enter rivers or streams) for a period sufficient to ensure no leachate from the concrete; 	◆	

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Item Ref.	Env. Topic	Schedule of Env. Commitments Mitigation Measures	Construction Phase	Operational Phase
		<ul style="list-style-type: none"> No direct discharges to be made to waters where there is potential for cement or other contaminant residues in discharges; Designated impermeable cement washout areas must be provided; Within the site boundary fence, temporary earth bunds will be constructed to contain surface water run-off and channel it to a silt trap or settlement pond before discharge to the drainage network; Any excavated vegetation, soil and subsoil will be temporarily stockpiled away at least 20 m from any surface water features in order to reduce the likelihood of any suspended solids reaching them; Discharge points to the drainage network will entail a mechanism for containment of run-off in the event of accidental spillage to enable clean-up and appropriate disposal through licensed facilities. Any soil contaminated from an accidental spillage will be contained and treated appropriately, and disposed of in accordance with the Waste Management Act 1996-2012. <p>Following implementation of mitigation, the significance of the impact on water quality will be imperceptible.</p>		
N/A	Water and Hydrology (Chapter 8)	<p>Potential operational impacts are substantially mitigated through avoidance by the implementation of good management systems and sensible practices.</p> <p>Flooding</p> <p>The design of the drainage system has inbuilt mitigation, as outlined in Chapters 8 and 16. No flooding of the site and surrounding area are predicted. Consequently, no further mitigation is proposed.</p> <p>Water Quality</p> <p>The incorporation of hydrocarbon interceptors will ensure that any spill is contained before reaching the Santry River.</p> <p>Following the implementation of mitigation, the significance of the impact on water quality will be imperceptible.</p>		◆
N/A	Air Quality (Chapter 9)	<p>The pro-active control of fugitive dust will ensure the prevention of significant emissions rather than an inefficient attempt to control them once they have been released. The main contractor will be responsible for the coordination, implementation and ongoing monitoring of the dust mitigation measures. The key aspects of controlling dust are listed below. Full details of the dust mitigation measures can be found in Section 9.5 of Chapter 9.</p> <p>In summary, the measures which will be implemented will include:</p> <ul style="list-style-type: none"> Hard surface roads will be swept to remove mud and aggregate materials from their surface while any un-surfaced roads will be restricted to essential site traffic. Any road that has the potential to give rise to fugitive dust must be regularly watered, as appropriate, during dry and/or windy conditions. Vehicles exiting the site shall make use of a wheel wash facility where appropriate, prior to entering onto public roads. Vehicles using site roads will have their speed restricted, and this speed restriction must be enforced rigidly. On any un-surfaced site road, this will be 20 kph. Public roads outside the site will be regularly inspected for cleanliness and cleaned as necessary. Material handling systems and site stockpiling of materials will be designed and laid out to minimise exposure to wind. Water misting or sprays will be used as required if particularly dusty activities are necessary during dry or windy periods. During the movement of materials both on and off-site, trucks will be stringently covered with tarpaulin at all times. Before entrance onto public roads, trucks will be adequately inspected to ensure no potential for dust emissions. 	◆	