19 Interactions

19.1 Introduction

No revisions were necessary to this EIAR chapter in responding to Dun Laoghaire - Rathdown County Council (DLR CC) decision to request Further Information dated 25th March 2026 in respect of LRD26A/0051/WEB.

This Chapter was prepared by Brock McClure, Planning and Development Consultants, in conjunction with the other appointed consultants who assisted in preparation of this EIAR. The purpose of this chapter is to identify and draw attention to significant interactions between environmental factors.

Impact interactions and inter-relationships have been considered throughout the environmental assessment process and in the preparation of individual, topic specific chapters of this EIAR in order to facilitate a holistic assessment of how the proposed scheme may affect various environmental factors. All environmental topics are interlinked to a degree, and this chapter contains an analysis of the interrelationships between specific environmental influences.

As referenced throughout this EIAR, criteria for evaluating impact levels and definitions of the magnitude of any effects follow the EPA *'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports''* (Draft 2017) guidance and Government of Ireland *'Guidelines for Planning Authorities and An Bord Pleanala on carrying out Environmental Impact Assessment'(2018)*. The magnitude of effects considers the likely scale of the predicted change to the baseline conditions resulting from the predicted effect, taking into account the duration of the effect i.e. temporary or permanent. Moreover, as set out in the European Commission's, *Environmental Impact Assessment of Projects Guidance on the preparation of the Environmental Impact Assessment Report* (2017), reference should also be made to the earlier (1999) European Commission's, *Guidelines for the Assessment of Indirect and Cumulative Impacts as well as Impact Interactions.*

19.2 Descriptions of Interactions and their Significance

Population & Human Health

The individual EIAR chapters have addressed the interactions with population and these can be summarised as follows:

Water: Potential impacts on the receiving water environment could also result in associated human health impacts. However, the mitigation measures described in Chapter 4- Population and Human Health, and those relevant in Chapter 7 – Hydrology will ensure that this will not occur

Air Quality and Climate: Potential impacts on the receiving air quality and climate environment could also result in associated human health impacts. However, the mitigation measures described in Chapter 5 – Population and Human Health, and those relevant in Chapter 10 – Air Quality and climate will ensure that this will not occur.

Noise and Vibration: Construction phase noise and vibration emissions will be temporary and transient and will be managed so as to minimise impact to population and human health by complying with all relevant guidance, as such the impact will be short-term and have a slight impact overall. Potential impacts on the receiving noise and vibration environment could also result in associated human health impacts. However, the mitigation measures described in Chapter 4 – Population and Human Health, and Chapter 8 – Noise and Vibrations will ensure that this will not occur.

Lands, Soils, Geology & Utility – Potential impacts on the receiving land, soils and geology environment could also result in human health impacts. However, the mitigation measures described on Chapter 4 – Population and Human Health, and those relevant in Chapter 6 – Land, Soil, Geology, Hydrogeology & Utility will ensure that this will not occur.

19.3 Biodiversity

Risks to Biodiversity have been considered by each discipline of the EIAR. The following disciplines have potential for significant interaction with Biodiversity:

Landscape and Visual

The proposed landscape plan demonstrates a strong integration with ecological considerations by incorporating native planting, habitat creation, and sustainable drainage features. Open spaces will provide amenity areas for residents and the public, including play zones, fitness areas, and seating. To facilitate these features, some vegetation removal, is required.

Mitigation measures have been embedded within the design to offset these impacts. Native shrubs will be planted in the woodland understory to enhance structural diversity and maintain ecological function. This approach ensures that perimeter areas remain largely inaccessible to the public, preserving a commuting and foraging corridor for wildlife and maintaining a habitat protection zone. Tree loss will be compensated through the planting of both native and selected non-native species across the site, improving canopy cover and providing nesting and feeding opportunities for birds. While lawn and wildflower meadows are incorporated into the design to offset any loss of grassland habitat.

Boundary zones and southern green areas are designed as biodiversity buffers, supporting pollinators and small mammals through wildflower meadows, native shrubs, and log piles. Tree retention and protection (for the majority of trees on Site) and proposed tree planting throughout the Site enhances ecological connectivity (The Tree File, 2025), while swales, tree pits and attenuation areas provide natural stormwater management, accounting for the quality and quantity of runoff, as well as the amenity value of surface water in the urban environment. These measures collectively promote habitat diversity and strengthen the site's ecological resilience within an urban context.

Overall, the interaction between biodiversity and landscape is considered long-term, slight, and neutral, with ecological connectivity maintained and enhanced through targeted planting strategies.

19.3.1 Air Quality and climate

Air quality and climate are interrelated due to shared sources of emissions, particularly from the combustion of fossil fuels during both the demolition/construction and operational phases of the Proposed Development. These activities generate pollutants that contribute to both local air quality impacts and global climate change.

During the construction phase, emissions may arise from machinery, equipment, and vehicle movements, contributing to both air pollutants and greenhouse gases. During the operational phase, traffic-related emissions associated with the Proposed Development are the primary source of ongoing contributions to climate-related impacts.

While air quality does not directly influence climate, the sources of emissions that affect both are closely linked. As such, the assessment of air quality has been undertaken in parallel with the climate assessment presented in Chapter 11 (Climate) to ensure consistency in the evaluation of emissions and their potential impacts.

Based on the nature and scale of the Proposed Development, and the mitigation measures in place, no significant effects on climate are anticipated during either the construction or operational phases.

Noise and Vibration – In compiling this environmental impact assessment, reference has been made to the project description provided by the project co-ordinators, project drawings provided by the project architects and information relating to construction activities provided by the engineers. Noise emission sources from the proposed development during the construction and operational phases will be from construction plant and activity, building services and traffic accessing the development. The noise impact assessment has been prepared in consultation with the design team and traffic engineers. Reference can be made to the relevant chapters for additional information.

Water: The key environmental interaction with Biodiversity is Hydrology Chapter 7 of this EIAR document which proposes measures to ensure the quality (pollution and sedimentation) and quantity (surface run-off and flooding) is of an appropriate standard. Mitigation measures described in Chapter 5 – Biodiversity, and those relevant in Chapter 7 – Hydrology will ensure that this will not occur.

19.4 Land, Soils, Geology, Hydrogeology and Utilities

During the construction phase, the following aspects would interact with land and soils and in the absence of mitigation may give rise to likely significant effects:

19.4.1 Air Quality & Climate

Demolition & Construction Stages

Demolition and construction phase activities such as demolition of existing infrastructure, excavations and stockpiling of materials have the potential for interactions between air quality and the land, soils and hydrogeological environment in the form of dust emissions.

Mitigation measures implemented during the demolition and construction phases will ensure that the deposition of dust is minimised. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and land, soils and hydrogeology. The interaction is considered to be **neutral**, **imperceptible**, and **short term**.

There are no interactions identified between land, soils, hydrogeology and climate during the demolition and construction phases.

Operational Stage

There are no interactions identified between land, soils, hydrogeology, air quality and climate during the operational phase.

19.4.2 Hydrology

Demolition Stage

The likelihood of significant effects on the hydrological regime at the Proposed Development during the demolition phase is minimal due to the demolition works being limited to surface-level activities and do not involve any excavation works.

As a result, no significant effects on the land's composition, stability, or fertility are anticipated. The absence of excavation works means that there is no disturbance to the natural soil structure, preventing potential soil erosion or compaction. Therefore, there is no risk of increased sediment loading and run off entering nearby surface waterbodies during this phase. The interaction is considered to be **neutral**, **imperceptible** and **short-term**.

Construction Stage

The construction phase of the Proposed Development has the potential to result in increased sediment runoff which has the potential to interact negatively on surface water quality. The

proposed construction phase mitigation outlined in Section 8.8.2 - Chapter 8 – Hydrology of the EIA Report, means that the proposed development will not result in significant negative impact on surface water quality in the local area. The interaction is considered to be **neutral**, **imperceptible** and **short-term**.

Operational Stage

The operational phase of the proposed development has the potential to interact negatively on surface water quality via the proposed surface water network. The proposed operation phase mitigation outlined in Section 8.8.3 - Chapter 8 – Hydrology of the EIAR, means that the proposed development will not result in significant negative impact on surface water quality in the local area. The interaction is considered to be **neutral**, **imperceptible** and **long-term**.

19.4.3 Biodiversity

Demolition & Construction Stages

The demolition works of the Proposed Development are limited to surface-level activities on predominately existing buildings and infrastructure and do not involve any excavation works. As a result, the impact on biodiversity is minimal. Overall, the surface-level demolition works will benefit the local biodiversity, preserving their integrity and minimizing any potential environmental consequences. The interaction is considered to be **neutral**, **imperceptible** and **short-term**.

Regarding the construction phase, in the absence of standard mitigation measures to control the construction activities there is potential for silt laden material or pollution to enter nearby surface waterbodies (and impact on local biodiversity and European sites downstream from the works). Furthermore, dust emissions from exposed earthworks have the potential to settle on plants causing impacts to local ecology.

Thereby, taking into account the mitigation measures outlined in Section 7.8, there still remains a residual negative interaction between land, soils and hydrogeology with biodiversity during the construction phase. The interaction is considered to be **negative**, **imperceptible**, and **short term**.

Operational Phase

The proposed work is expected to have no significant impact on the local designated areas and their conservation objectives. The interaction is considered to be **neutral**, **imperceptible**, and **long-term.**

19.4.4 Waste

Demolition & Construction Stages

During the demolition phase, some structures, buildings, and infrastructure will be removed from the site to accommodate the proposed development and associated enabling works. These activities will generate waste materials that will be managed in accordance with regional and national legislation. Time and resources will be dedicated to ensuring efficient waste management practices, and waste arisings will be taken to suitably registered, permitted, and licensed waste facilities for processing and segregation, reuse, recycling, recovery, and/or disposal, as appropriate.

During the construction phase, excavated soil (c. 12,000 m3) will be generated from the excavations required to facilitate site levelling, construction of new foundations and installations of site services. It is currently envisaged that 10,800 m3 of excavated soil will be reused on-site.

The material that will be taken off-site will be sent for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 15 (Waste Management), Chapter 7 (Land, Soils, Geology, Hydrogeology) and the requirements of the RWMP (Appendix 15.1), will ensure the effect is **neutral**, **imperceptible** and **long-term** .

Operational Stage

There are no potentially significant interactions identified between land, soils, geology, hydrogeology and waste during the operational phase.

19.5 Hydrology

This section discusses interactions between this chapter and other specialist environmental topics considered in this EIAR.

19.5.1 Land, Soils and Hydrogeology

Demolition Stage

The likelihood of significant effects on land, soils and hydrogeology at the proposed development during the demolition phase is minimal due to the demolition works being limited to surface-level activities and do not involve any excavation works.

As a result, no significant effects on the land's composition, stability, or fertility are anticipated. The absence of excavation works means that there is no disturbance to the natural soil structure, preventing potential soil erosion or compaction. The interaction is considered to be **neutral**, **imperceptible** and **short-term**.

Construction Stage

The construction phase of the proposed development has the potential to result in increased sediment runoff which has the potential to interact on grounwater water quality. The proposed construction phase mitigation outlined in Section 8.8.2, means that the proposed development will not result in significant negative impact on groundwater water quality in the local area.

Taking into account the design and mitigation measures set out in Chapter 8 (Hydrology) & Chapter 7 (Land, Soils, Geology and Hydrogeology) of this EIA Report, means that the proposed development will not result in significant negative impact on the Land, Soils, Geology and Hydrogeology in the local area. The interaction is considered to be **neutral**, **imperceptible** and **short-term**.

Operational Stage

Taking into account the design and mitigation measures set out in Chapter 8 (Hydrology) & Chapter 7 (Land, Soils, Geology and Hydrogeology) of this EIA Report. There are no potentially significant interactions identified between Land, Soils and, Hydrogeology and Hydrology during the operational phase.

The operational phase of the Proposed Development has the potential to interact negatively on groundwater and surface water quality via the proposed surface water network. The proposed operation phase mitigation outlined in Section 7.8.2 - Chapter 7 – Land, Soils, Geology and Hydrogeology of the EIAR, means that the proposed development will not result in significant negative impact on surface water quality in the local area. The interaction is considered to be neutral, Imperceptible, and short term.

19.5.2 Biodiversity

Demolition Stage

The demolition works of the Proposed Development are limited to surface-level activities on predominately existing buildings and infrastructure and do not involve any excavation works. As a result, the impact on biodiversity is minimal.

Overall, the surface-level demolition works will benefit the local biodiversity, preserving their integrity and minimizing any potential environmental consequences. The interaction is considered to be **neutral**, **imperceptible** and **short-term**.

Construction Stage

Dust emissions have the potential to settle on plants causing impacts to local ecology. Mitigation measures during the construction phase of the Proposed Development will ensure that dust generation is minimised.

Taking into consideration the discharge of surface and foul water to the combined sewer network and the mitigation measures outlined in Section 8.8 the impact on biodiversity should be minimal.

Taking into account the design and mitigation measures set out in (Hydrology) and (Biodiversity) of this EIA Report, the interaction between Hydrology and Biodiversity is considered to be **neutral**, **imperceptible**, and **short term**.

Operational Stage

The Proposed Development design includes hardstand cover across the site and the proposed surface water drainage system for this development has been designed as a sustainable urban drainage system (SuDS). It is proposed to use a sustainable urban drainage system (SuDS) approach to stormwater management throughout the site where possible. The overall strategy aims to provide an effective system to mitigate the adverse effects of urban stormwater runoff on the environment by reducing runoff rates, volumes and frequency, reducing pollutant concentrations in stormwater. The design of the attenuation storage system has been carried out for the 1 in 100-year event with a 20% allowance for climate change.

There is no discharge to ground proposed as part of the surface water drainage strategy. Surface water will be divided into two zones and discharged to 2 locations within the existing stormwater network, one on the northeast side and another via a manhole at the northern corner of the site. Foul water will be discharged to the existing foul sewer system which is connected to the Ringsend WWTP.

Taking into account the design and mitigation measures set out in Section 8.8 of this EIA Report, the interaction between Hydrology and Biodiversity during the operational phase is considered to be **neutral**, **imperceptible**, and **long term.**

19.5.3 Waste

Demolition & Construction Stage

During the construction phase, excavated soil (c. 12,000 m3) will be generated from the excavations required to facilitate site levelling, construction of new foundations and installations of site services. It is currently envisaged that 10,800 m3 of excavated soil will be reused on-site.

The material that will be taken off-site will be sent for reuse or recovery, where practical, with disposal as a last resort. Adherence to the mitigation measures in Chapter 15 (Waste Management), Chapter 8 (Hydrology) and the requirements of the RWMP (Appendix 15.1), will ensure the effect is **neutral**, **imperceptible** and **long-term**.

Operational Stage

There are no potentially significant interactions identified between Waste and Hydrology during the operational phase.

19.5.4 Air Quality & Climate

Demolition & Construction Phases

Demolition phase activities such as demolition of existing infrastructure, excavations and stockpiling of materials etc. have the potential for interactions between air quality and hydrology in the form of dust emissions that may deposit in surface waters.

Mitigation measures implemented during the demolition phase will ensure that the deposition of dust is minimised. With the appropriate mitigation measures to prevent fugitive dust emissions, it is predicted that there will be no significant interactions between air quality and hydrology. The interaction is considered to be **neutral**, **imperceptible**, and **short term**.

There are no interactions identified hydrology and climate during the demolition and construction phases.

Operational Phase

There are no potentially significant interactions identified between hydrology and air quality and climate during the operational phase.

19.6 Noise and Vibration

In compiling this environmental impact assessment, reference has been made to the project description provided by the project co-ordinators, project drawings provided by the project architects and information relating to construction activities provided by the engineers. Noise emission sources from the proposed development during the construction and operational phases will be from construction plant and activity, building services and traffic accessing the development. The noise impact assessment has been prepared in consultation with the design team and traffic engineers. Reference can be made to the relevant chapters for additional information.

19.7 Air Quality

Interactions between Air Quality and other aspects of this EIA are considered in this section of the chapter. This section has been informed by, and should be read in conjunction with, other relevant chapters including Population and Human Health, Biodiversity, Land and Soils, Climate, and Traffic and Transport, to ensure a consistent and comprehensive assessment of potential interactions.

19.8 Climate

Climate interactions with various environmental topics are extensive and significant, highlighting the broad effect of climate factors across different aspects of the environment. The "avoidance, remediation and mitigation" section of this chapter outlines effective management and reduction measures for the following identified interactions.

One of the most critical interactions is between climate and GHG emissions The Proposed Development's carbon footprint, including emissions from construction and operational activities, energy use, and transportation, plays a role in influencing climate change. Effective management and reduction measures for these emissions are outlined in the mitigation section to support climate resilience and regulatory compliance.

19.8.1 Population and Human Health

Human health and well-being are closely linked to climate factors. Climate change can exacerbate health issues such as heat stress, respiratory conditions, and vector-borne diseases. While the Population and Human Health chapter focuses on direct health determinants, the Climate Chapter also considers indirect pathways through which climate-related measures may influence public health. These include:

- Air quality impacts from construction and operational traffic, which are addressed in parallel with climate assessment;
- Noise and vibration disturbance, particularly in relation to sensitive receptors such as residential dwellings;
- Green infrastructure and landscaping, which contribute to urban cooling, improved air quality, and enhanced amenity;

- SuDS and water management systems, which reduce flood risk and associated health hazards.

These measures support climate resilience and help safeguard public health in the context of a changing climate.

19.8.2 Biodiversity

Climate change can alter habitat conditions, encourage spread of invasive species, disrupt species distributions, and affect ecological balances. These shifts may impact local flora and fauna, particularly in sensitive coastal and estuarine environments adjacent to the Proposed Development.

The Biodiversity chapter outlines a suite of mitigation and enhancement measures that directly support climate resilience, including:

- Planting of native tree and hedgerow species selected for their adaptability to changing climatic conditions;
- Integration of green infrastructure such as permeable paving, green walls, and pollinator-friendly planting to support ecosystem services;
- Sustainable drainage systems (SuDS) to manage water quality and quantity; and
- Lighting design to reduce disturbance to nocturnal species.
- Long-term habitat management, including for the prevention of the introduction and spread of invasive species.
- Biodiversity measures listed above and included within the biodiversity chapter align with national and EU climate adaptation strategies, contributing to broader goals such as carbon neutrality, nature-based solutions, and ecosystem-based adaptation. Such strategies include:
- CAP25 explicitly supports a transition to a biodiversity-rich, climate-resilient, and environmentally sustainable economy
- National Adaptation Framework (NAF) 2025, which identifies biodiversity as a priority sector for climate adaptation, promotes ecosystem-based adaptation and nature-based solutions to address climate risks such as flooding, drought, and habitat loss, and encourages local and sectoral adaptation plans to integrate biodiversity and climate resilience.
- EU Adaptation Strategy (2021 Update) which emphasizes nature-based solutions (NbS) as a key cross-cutting priority. Supports ecosystem restoration, urban greening, and coastal protection as climate adaptation tools, and promotes integration of NbS into urban planning, water management, and disaster risk reduction.
- EU Biodiversity Strategy 2030 which aims to restore at least 30% of degraded ecosystems by 2030. Recognizes biodiversity as essential for climate mitigation and adaptation, and supports green infrastructure and ecological connectivity to enhance resilience.

These measures contribute to carbon sequestration, urban cooling, and ecological connectivity, enhancing the site's resilience to climate change and supporting long-term biodiversity conservation.

19.8.3 Land and Soils

Climate change can affect soil moisture, erosion rates, and land productivity. Increased rainfall may lead to soil erosion, while extended dry periods can degrade soil quality. The Proposed Development includes mitigation measures to manage these risks.

Ground investigations were undertaken in December 2018 and November 2020 by Ground Investigations Ireland. Confirmatory environmental soil testing will be undertaken after the demolition phase and prior to any material being removed from site, in order to verify the assessment made on the basis of the ground investigations. Due to the nature of the usage of this site as an educational facility, it is not envisaged that contaminated soil will be encountered.

The project engineers J.J. Campell and Associates have estimated that c. 12,000 m³ of material will be excavated to facilitate construction. Of this, 10,800 m³ is expected to be reused onsite, while 1,200 m³ will be removed offsite for appropriate reuse, recovery, recycling or disposal.
The Construction Environmental Management Plan (CEMP) outlines procedures for managing soil stockpiles, preventing dust generation, and controlling runoff, all of which are critical in the context of climate variability.
No significant adverse effects are anticipated during the operational phase, and the site will be suitable for long-term residential and commercial use.

19.8.4 Hydrology and Hydrogeology

Climate variability, such as increased rainfall or prolonged droughts, can affect water availability, quality, and management practices. This includes effects on stormwater runoff, flood risk, and water supply. The Hydrology Chapter outlines the Proposed Development's water management strategies, including SuDS, attenuation systems, and flood resilience measures, ensuring robustness against future climate scenarios.

19.8.5 Air Quality

Air quality and climate are interrelated due to shared sources of emissions, particularly from the combustion of fossil fuels during both the demolition/construction and operational phases. These activities generate pollutants that contribute to both local air quality impacts and global climate change. The air quality assessment was undertaken in parallel with the climate assessment to ensure consistency in evaluating emissions and their potential impacts.

19.8.6 Material Assets: Waste and Utilities

The Proposed Development has been designed in accordance with relevant building design standards, including those related to energy performance and climate resilience. Low-carbon power and heating systems, such as centralised heat pumps and mechanical ventilation with heat recovery, have been incorporated to reduce reliance on imported fossil fuels and minimise GHG emissions. These design choices represent a direct and indirect interaction with climate and are assessed in this chapter.

19.8.7 Archaeology and Cultural Heritage

Cultural heritage sites are at risk due to climate change, with increased weathering, flooding, and temperature fluctuations potentially accelerating their deterioration. Mitigation measures employed at the Proposed Development will ensure that no significant impacts occur.

19.8.8 Material Assets: Traffic

Traffic-related emissions are a key contributor to climate change. The UK Highways Agency's DMRB guidance document LA 114 (2019) outlines criteria for determining whether a detailed climate assessment is required. These include:

- A change of more than 10% in Annual Average Daily Traffic (AADT);
- A change of more than 10% in the number of heavy-duty vehicles; or
- A change in daily average speed of more than 20 km/hr
-

These criteria were applied to both the construction and operational phases of the Proposed Development. For the construction phase, a Traffic & Transport Assessment Report prepared by NRB Consulting Engineers (2025) confirms that projected traffic volumes fall below the thresholds set out in TII guidance, based on project-specific traffic modelling. Therefore, no significant climate effects are anticipated from construction traffic.

For the operational phase, traffic flow information was obtained from NRB Consulting Engineers (2025) for the purposes of this assessment. Two different year scenarios are presented in Table 10-13 of Chapter 10: Air Quality of the EIAR: the 'Do Nothing' and 'Do Something' scenarios for the Opening Year (2028) and Design Year (2043), in line with TII guidance (Opening Year + 15 years). This data, based on project-specific traffic modelling, confirms that none of the impacted road links meet the DMRB thresholds.

As such, a quantitative assessment of traffic emissions on climate has been scoped out, and no significant climate effects are anticipated from either construction or operational traffic.
In summary, the Proposed Development's interactions with climate encompass a range of factors including GHG emissions, water resources, biodiversity, soil, human health, and cultural heritage. Effective mitigation strategies and robust monitoring will be essential to address these interactions, minimise adverse effects, and ensure the development's resilience to climate change.

19.9 Wind and Microclimate

The principal interaction is with Chapter 5 (Population & Human Health), since the wind conditions at the proposed development site can affect the amenity and safety of residents and visitors, as discussed above. As discussed earlier, in all cases, the proposed development will deliver a wind microclimate that is either suitable for all intended pedestrian uses, or calmer than required for the intended uses. In a number of instances, the proposed development will result in an improved (i.e., calmer) wind microclimate relative to the baseline scenario. Therefore, no significant impacts on population and human health are predicted as a result of the wind effects of the proposed development.

19.10 Landscape and Visual Impact Assessment

19.10.1 Biodiversity

The proposed landscape plan demonstrates a strong integration with ecological considerations by incorporating retained trees, new native planting, habitat creation, and sustainable drainage features. Open spaces will provide amenity areas for residents and the public, including play zones, fitness areas, and seating. To facilitate these features, some vegetation removal is required.

Mitigation measures have been embedded within the design to offset these impacts. Native shrubs will be planted in the woodland understory to enhance structural diversity and maintain ecological function. This approach ensures that perimeter areas remain largely inaccessible to the public, preserving a commuting and foraging corridor for wildlife and maintaining a habitat protection zone. Tree loss will be compensated through the planting of both native and selected non-native species across the site, improving canopy cover and providing nesting and feeding opportunities for birds. Lawn and wildflower meadows are incorporated into the design to offset any loss of grassland habitat.

Boundary zones and southern green areas are designed as biodiversity buffers, supporting pollinators and small mammals through wildflower meadows, native shrubs, and log piles. Tree retention and protection (for the majority of trees on Site) and proposed tree planting throughout the Site enhances ecological connectivity (The Tree File, 2025), while swales, tree pits and attenuation areas provide natural stormwater management, accounting for the quality and quantity of runoff, as well as the amenity value of surface water in the urban environment. These measures collectively promote habitat diversity and strengthen the site's ecological resilience within an urban context.

Overall, the interaction between biodiversity and landscape is considered long-term, slight, and neutral, with ecological connectivity maintained and enhanced through targeted planting strategies.

19.10.2 Population and Human Health

The proposed development would introduce a new, high density residential neighbourhood to the urban landscape, favourably located with respect to Blackrock town centre and shopping areas, employment and education facilities, public transport services and public open space. This would have significant, long-term, positive impacts for the new resident community

The proposal includes a substantial area of public open space contiguous with Rockfield Park adjacent to the site. The southern and central open space areas would be visible and accessible from Rockfield Park, effectively expanding the park onto the site and incorporating the numerous retained trees in these areas into the expanded public open space. The interaction between landscape and population and human health would constitute a moderate, long term, positive effect.

19.10.3 Architectural Heritage

The site includes three protected structures, 'St. Teresa's House', 'St. Teresa's Lodge' and associated entrance gates:

- The proposed development would retain, refurbish and re-purpose St Teresa's House, dividing the house into six apartments.
- The proposed development would relocate St Teresa's Lodge from its current position in the north east corner of the site beside the N31, to a position inside the southern boundary, adjacent to Rockfield Park. The gate lodge would be re-purposed as a café, accessible to the public from Rockfield Park.
- The entrance gates would be retained in their current position.

The condition of the three protected structures, and the condition of their landscape contexts, would be improved. Their incorporation into a high quality residential neighbourhood landscape, and their new functions, would make them more accessible to the public, allowing for greater appreciation as well as securing their long term maintenance.

Overall, the interaction between architectural heritage and landscape is considered long-term, moderate, and positive.

19.11 Wind and Microclimate

The principal interaction is with Chapter 5 (Population & Human Health), since the wind conditions at the proposed development site can affect the amenity and safety of residents and visitors, as discussed above. As discussed earlier, in all cases, the proposed development will deliver a wind microclimate that is either suitable for all intended pedestrian uses, or calmer than required for the intended uses. In a number of instances, the proposed development will result in an improved (i.e., calmer) wind microclimate relative to the baseline scenario. Therefore, no significant impacts on population and human health are predicted as a result of the wind effects of the proposed development.

19.12 Material Assets – Traffic and Transport

Traffic Survey data and Projections were supplied to design Team members to facilitate an assessment of traffic noise. Design Team liaised with DLRC and the NTA in terms of the Design of the Access Junction and the Layout. Report was updated to reflect comments at DLRCC Opinion Stage.

19.13 Material Assets - Waste Management

19.13.1 Population and Human Health

Waste management practices have the potential to affect human health through exposure to improperly handled waste during construction and / or operation, which could result in littering and presence of vermin, with associated risks to human health. A carefully planned approach to waste management, adherence to the project specific RWMP and OWMP, along with the mitigation measures in Chapter 5 (Human Health & Population) and this chapter, will minimise risks associated with odour, pests, and contamination, thereby protecting the health and well-being of workers at the Proposed Development and the local population. Potential effects on population and human health are addressed in Chapter 5. Following mitigation, the effects are expected to be **long-term, imperceptible and neutral**.

19.13.2 Lands, Soils, Geology & Hydrogeology

During the construction phase, there will be soil, stones and clay excavated to facilitate site clearance, construction of new building foundations and installation of services. The project engineers (CS Consulting Group) have estimated that 1083 m^3 of material will need to be excavated to do so. It is currently envisaged that none of this excavated material will be reused on site due to the limited opportunities for reuse on site, meaning the full volume will need to be removed offsite for appropriate offsite reuse, recovery, recycling and / or disposal.

The management of contaminated soil, if encountered, will be undertaken in accordance with the Land and Soils chapter and the RWMP. Proper classification and handling of soil waste will prevent degradation of land quality and avoid cross-contamination with clean materials. Potential effects on land and soils are addressed in Chapter 7. Adherence to the mitigation measures in Chapter 7 (Land, Soils, Geology & Hydrogeology), this chapter, and the requirements of the RWMP (Appendix 15.1), will ensure the effect is **long-term, imperceptible** and **neutral**.

No significant soil-related waste is expected during the operational phase.

19.13.3 Hydrology

Improper storage or disposal of waste, particularly hazardous substances, has the potential to impact surface water and groundwater quality during the construction phase. The RWMP includes provisions for bunded storage of hazardous materials and protocols for managing contaminated soil. These measures will mitigate the risk of leachate or runoff entering watercourses and protect the hydrological environment. During the operational phase, the OWMP will ensure that liquid and cleaning chemicals are stored and disposed of in compliance with best practice to avoid water contamination. Potential effects on hydrology and hydrogeology are addressed in Chapter 8 and, following the implementation of mitigation measures, are expected to be **short-term, imperceptible** and **neutral**.

19.13.4 Biodiversity

Potential impacts on biodiversity associated with waste generation during the construction and operational phases arise primarily from the improper management of waste, which could lead to littering, pollution, or the attraction of vermin within affected areas. During operation, waste will be managed at the point of generation through appropriate segregation and stored in covered facilities to prevent litter dispersion and pest attraction. Adherence to the mitigation measures set

out in this chapter, and in Chapter 6 (Biodiversity) will ensure the associated effect is **long-term, imperceptible** and **neutral**.

19.13.5 Climate

Waste management contributes to greenhouse gas (GHG) emissions, particularly through landfill disposal and transport. The RWMP prioritises reuse, recycling, and recovery of materials, which will reduce the volume of waste sent to landfill and associated emissions. Similarly, the OWMP will promote recycling and minimise residual waste during operation, reducing indirect emissions from waste transport and disposal. The direct and indirect effects of the Proposed Development on climate, such as GHG are addressed in Chapter 11, and following implementation of mitigation measures, are expected to be **long-term, imperceptible** and **neutral**.

19.13.6 Traffic and Transport

Local traffic and transport will be impacted by the additional vehicle movements generated by removal of waste from the site during the construction and operational phases of the Proposed Development. The increase in vehicle movements as a result of waste generated during the construction phase will be temporary in duration. There will be an increase in vehicle movements in the area as a result of waste collections during the operational phase, but these movements will be imperceptible in the context of the overall traffic and transportation increase. Traffic-related impacts during the construction and operational phases are addressed in Chapter 14 (Material Assets: Traffic & Transport). Provided the mitigation measures detailed in Chapter 14 and this chapter are adhered to, the predicted effects are **short to long-term**, **imperceptible** and **neutral**.

19.14 Archaeological, & Cultural Heritage

There are potential interactions with the following specialist elements of the project during the construction phase:

- Land, Soils, Geology, Hydrogeology and Utilities (Chapter 7)
- Landscape and Visual Impact Assessment (Chapter 13)
- Architectural and Built Heritage (Chapter 17)

19.15 Architectural Built Heritage

There were interactions between Architectural Heritage and Architectural Design as follows:

- Develop design to comply with heritage protection guidelines;
- Maximise retention of historic fabric;
- Retain character of structure and those elements which give special interest ensure reversibility of interventions

- **Arboriculture** - Retain significant trees which give site its sylvan character.

- **Landscape design** - Develop Landscape design with reference to historic site plan and historic landscape assessment.

- **Archaeological Heritage** - Research Archaeology of site and develop design to respond.

- **Historic Landscape Assessment** - Research Historic Landscape is almost entirely associated with development of Protected Structures.

- **Visual Impact Assessment** - Assess Views to and from Protected Structures.

19.16 Risks of Major Accidents and/or Disasters

There are interactions with Population and Human Health, Land, Soils, Geology and Hydrogeology, Surface Water, Noise, Climate and Air, Material Assets, Traffic and Transport, Landscape and Visual, and Cultural Heritage which have been previously addressed in the previous chapters

19.17 Conclusion

A summary of the interactions is summarised in the table below.

Table 19.1 Interactions between chapters

Interactions	Population and Human Health		Biodiversity		Land, Soils, Geology & Utilities		Hydrology		Noise & Vibration		Air Quality		Climate		Wind and Microclimate		Landscape and Visual Impact Assessment		Material Assets- Traffic and Transport		Material Assets- Waste Management		Archaeology and Cultural Heritage		Architectual Built Heritage		Risks of Major Accidents and/or Disasters	
	CP	OP	CP	OP	CP	OP	CP	OP	CP	OP	CP	OP	CP	OP	CP	OP	CP	OP	CP	OP	CP	OP	CP	OP	CP	OP	CP	OP
Population and Human Health			x	x	✓	x	✓	x	✓	✓	✓	✓	✓	✓	x	x	x	x	x	x	x	x	x	x	x	x	✓	✓
Biodiversity					✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	x	x	x	x	x	x	x	x	x	x	x	x	✓	✓
Land, Soils, Geology & Utilities							✓	✓	x	x	✓	✓	✓	✓	x	x	x	x	✓	✓	✓	✓	✓	✓	x	x	x	x
Hydrology									x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Noise & Vibration											x	x	x	x	x	x	x	x	✓	✓	x	x	x	x	x	x	✓	✓
Air Quality													x	x	x	x	x	x	✓	✓	x	x	x	x	x	x	✓	✓
Climate															x	x	x	x	✓	✓	x	x	x	x	x	x	✓	✓
Wind & Microclimate																	✓	✓	x	x	x	x	✓	✓	x	x	x	x
Landscape and Visual Impact Assessment																			x	x	x	x	✓	✓	✓	✓	✓	✓
Material Assets- Traffic and Transport																					x	x	x	x	x	x	✓	✓
Material Assets- Waste Management																							x	x	x	x	x	x
Archaeology and Cultural Heritage																									x	x	✓	✓
Archaeology Built Heritage																											x	x
Risk of Major Accidents and/or Disasters																												

*CP stands for Construction Phase and OP stands for Operation Phase.