

16.

INTERACTIONS OF THE FOREGOING

16.1

Introduction

The preceding Chapters 5 to 15 of this EIAR identify the potential significant environmental effects that may occur in terms of Population and Human Health, Biodiversity, Land, Soils and Geology, Hydrology and Hydrogeology, Air Quality, Climate, Noise and Vibration, Landscape and Visual, Cultural Heritage, Material Assets (Roads and Traffic, Utilities and Waste Management), and Vulnerability to Major Accidents and Natural Disasters as a result of the Proposed Development, as described in Chapter 4 (Description of the Proposed Development) of this EIAR.

All of the potential significant effects of the Proposed Development and the measures proposed to mitigate these have been outlined in the preceding chapters of this EIAR. Mitigation measures and best practice measures for the construction and operation of the Proposed Development are detailed in the accompanying Construction and Environmental Management Plan (CEMP) (Appendix 4-2), and Chapter 17 Schedule of Commitments. However, for any development with the potential for significant environmental effects there is also the potential for interaction between these potential significant effects. The result of interactive effects may exacerbate the magnitude of the effects or ameliorate them or have a neutral effect.

Article 3 of EIA Directive 2011/92/EU as amended by Directive 2014/52/EU states that the environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors: (a) population and human health; (b) biodiversity, with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC; (c) land, soil, water, air and climate; (d) material assets, cultural heritage and the landscape; (e) the interaction between the factors referred to in points (a) to (d). The assessment in this chapter assesses the interaction between the relevant assessments in this EIAR.

A matrix is presented in Table 16-1 below to identify potential interactions between the various aspects of the environment already assessed in this EIAR. The matrix highlights the occurrence of potential positive or negative effects during both the construction (C) and operational (O) phases. In Section 16.2 below, the potential interactions between each environmental component have been discussed in order of the relevant chapters of the EIAR. Once a potential interaction between two environmental components has been discussed, for example, Population & Human Health and Hydrology and Hydrogeology, the interaction will not be discussed again in the following relevant section, therefore there is no Hydrology and Hydrogeology and Population & Human Health section.

Table 16-1 Interaction Matrix: Potential for Interacting Impacts

	Phase	Population and Human Health	Biodiversity	Land, Soils and Geology	Hydrology & Hydrogeology	Air Quality	Climate	Noise and Vibration	Landscape and Visual	Cultural Heritage	Material Assets	Accidents & Disasters
Population and Human Health	C											
	O											
Biodiversity	C											
	O											
Land, Soils and Geology	C											
	O											
Hydrology & Hydrogeology	C											
	O											
Air Quality	C											
	O											
Climate	C											
	O											
Noise and Vibration	C											
	O											
Landscape and Visual	C											
	O											
Cultural Heritage	C											
	O											
Material Assets	C											
	O											
Accidents & Disasters	C											
	O											

Legend:

No Interacting Effect:

Neutral Effect:



Positive Effect:

Negative Effect:



The potential for interaction of effects has been assessed, throughout this EIAR, as part of the Impact Assessment process. While the work on all parts of the EIAR were not carried out by MKO, the entire project and all the work of the sub-consultants was managed and coordinated by the company. The EIAR was edited and collated by MKO as an integrated report of findings from the impact assessment process, by all relevant experts, and effects that potentially interact have been assessed in detail in the individual chapters of the EIAR and summarised in Section 16.2 below.

Where any potential negative effects have been identified during the assessment process, these impacts have been avoided or reduced by design and the proposed mitigations measures, as presented throughout the EIAR.

16.1.1 Statement of Authority

This section of the EIAR has been prepared by Fangfei Zhang and it has been reviewed by Feargal Lennon and Karen Mulryan all of MKO. Fangfei Zhang is a Graduate Environmental Scientist with MKO since September 2025. She holds an MSc (Hons) in Environmental Science from Trinity College Dublin and a BEng (Hons) in Environmental Engineering. Fangfei has experience in CEMP, geo-environmental interpretive reports, preliminary site assessment reports, Screening, and the preparation of Population and Human Health assessments, Material Assets Assessments and Air Quality Assessments for EIARs.

Feargal is a Project Environmental Scientist with MKO with over 3 years of experience in environmental consultancies. Feargal holds MSc in Environmental Resource Management from University College Dublin. Over his time at MKO Feargal has developed strong skills in environmental fieldwork, report writing and project management. Feargal has contributed to a wide range of projects over his time with MKO preparing Environmental Impact Assessments, Construction and Environmental Management Plans, and Construction Waste Management Plans. Feargal has been involved in a variety of projects including greenways, quarries, waste facilities, industrial and residential developments. Through his work on projects such as the Dexcom Athenry Pharmaceutical Plant and Ulster Canal restoration project, Feargal has gained extensive experience in coordinating and preparation of EIARs.

Karen is a Senior Environmental Scientist with MKO with over 10 years' experience in the consultancy sector. Karen holds a BA International in Archaeology from NUI Galway and a MSc in Archaeology from the University of Edinburgh. Karen's professional consultancy experience comprises project management, environmental impact assessment reporting and peer reviewing, site selection, feasibility assessment, client liaison and stakeholder engagement. Karen's project management and EIA coordination experience includes large scale renewable energy developments, specifically wind and solar, grid infrastructure, large scale flood relief schemes and residential developments. Karen holds memberships with the Chartered Institute for Archaeologists (ACIfA) and the Institute of Archaeologists of Ireland (IAI).

16.2 Impact Interactions

16.2.1 Population and Human Health

Population and Human Health and Land, Soils & Geology

Construction Phase

The Proposed Development site covers approximately 9 hectares (ha) and is located within the townland of Barrymore. Current land-use of the Proposed Development site is comprised of a mixture of artificial surfaces associated with sports and leisure facilities in the north and a discontinuous urban fabric in the south. The Site extends from the existing road and car parking spaces associated with the Hodson Bay Hotel and marina along the Hodson Bay access road (L2020 Local Road) to the N61 National Road.

The surrounding area is primarily artificial vegetated grassland (Athlone Golf Club) to the north, and a mix of residential and agricultural land to the south of the site.

The construction phase will involve a phased, short-term change in land-use activities e.g. berthing and sailing usage at the marina will change to a construction site for approximately 6 months; and the existing Baysports Waterpark will change to a construction site for approximately 18 months. An alternative reduced scale Baysports waterpark location will be accommodated to the north of the site, adjacent to Carpark C; thus, temporarily changing this existing carpark/ amenity grassland area to a water sport activity service. The L2020 Local Road will not change from its existing function with the construction of the active travel improvements.

With the implementation of mitigation measures detailed in Section 7.6.2 of Ch. 7 Lands, Soils & Geology and the CEMP (Appendix 4-2), the potential for residual effects associated with soil or ground contamination during the construction phases and subsequent health effects are assessed as Short-term, Slight, Negative effects occurring within the overall short-term construction phase.

Operation Phase

The Proposed Development comprises a coordinated package of public realm enhancements, active travel infrastructure, transport improvements, parking reconfiguration and expansion within the Hodson Bay area, and the construction of a new Water Sports Pavilion and café building and an expansion and upgrade to the existing marina. The overall aim of the Proposed Development is to enhance accessibility, promote sustainable travel, and support the continued development of Hodson Bay as a key regional tourism and recreation destination. As such, the operational phase will see a continuation of the existing use but on a larger scale, with a considered design incorporating landscaping, outdoor play area, multifunctional venue usage, enhanced health and safety measures (signage, paths, lighting), enhanced active travel. This is a Long-term Moderate Positive impact.

On this basis, the identified interaction during the construction and operation phase is Not Significant.

Population and Human Health, and Hydrology & Hydrogeology

Construction Phase

The construction phase ground works and use of plant on the Site may give rise to the potential release of suspended solids and hydrocarbons into surface and groundwaters.

Construction phase activities have the potential to impact upon surface water and groundwater quality through earthworks, shallow excavation dewatering, release of hydrocarbons, contamination from wastewater disposal, release of cement-based products, and installation of piles. The likely significant effects of the Proposed Development and mitigation measures that are considered during the approximate 30-month construction stage are further assessed in Chapter 8 Hydrology and Hydrogeology Section 8.5.3. With the implementation of the mitigation measures set out, there will be Short-term Slight Negative residual effect on water quality during the construction phase of the Proposed Development.

Operation Phase

As described in Section 8.5.4 of Chapter 8 Hydrology and Hydrogeology, the Proposed Development design ensures that the potential for impacts on the water environment are not significant and there is no pathway to public or private water supplies which in turn could impact human health. Additionally, the Flood Risk Assessment (Appendix 8-1) shows that the risk of the Proposed Development contributing to downstream flooding is minimal, and that the Proposed Development will not increase the risk of flooding elsewhere. Refer to Chapter 8: Hydrology and Hydrogeology and Appendix 8-1 Flood Risk Assessment for further details. The impacts on water quality during the operational phase range from Long term, Slight, Negative with a low probability of occurring.

On this basis, the identified interaction during the construction and operational phase is Not Significant.

Population and Human Health, and Air Quality

Construction Phase

The construction phase will require the use of construction plant and vehicles, resulting in short term exhaust emissions within and around the site. These effects will be localised to the construction areas and limited to the duration of the works. Emissions associated with the transport of materials, waste and personnel will also occur, resulting in a Short-term, Slight Negative effect on air quality and therefore health.

Construction activities, including demolition, excavation, earthworks and material handling, have the potential to generate dust across the site, which has been assessed in accordance with IAQM (2024) guidance. The surrounding area is considered to have high sensitivity to dust soiling, while sensitivity to human health effects from PM₁₀ is assessed as low. The potential effects of dust emissions during the construction phase are considered to give rise to Short-term, Significant, Negative effects in the absence of mitigations. The potential dust impacts that may occur during the construction phase of the Proposed Development are further described in Chapter 9: Air Quality. With the implementation of the mitigation measures set out in CEMP (Appendix 4-2), there will be a potential Short-term Slight Negative residual effect on air quality and therefore health during the construction phase of the Proposed Development

Operational Phase

There will be no impact on human health from dust emissions in the vicinity of the Proposed Development site once the Proposed Development has been built, and all construction vehicles and personnel are offsite. Any further works which may need to occur on site as part of maintenance and repairs during the operation of the site, may cause slight brief dust emissions, and is unlikely to have any negative significant impact on human health. The predicted increase in traffic volumes is slight and will result in a corresponding slight increase in traffic-related air pollutant emissions. The provision of enhanced active travel infrastructure will encourage access by walking and cycling, while the inclusion of electrical vehicle charging points will facilitate the uptake of low-emission vehicles. No significant additional emission sources (e.g. from on-water activities or fixed plant) are anticipated. Overall, the operational phase of the Proposed Development will result in a Long-term, Imperceptible Negative effect on air quality.

On this basis, the identified interaction during the construction and operational phase is Not Significant.

Population and Human Health, and Climate

Construction Phase

The construction phase of the Proposed Development will lead to emissions from plant and machinery use and transport (i.e. exhaust emissions). Following implementation of the mitigation measures presented in Chapter 10, residual effects of greenhouse gas emissions arising from the construction phase of the Proposed Development will have a short-term imperceptible negative effect on climate. However, once emitted to the atmosphere, the greenhouse gas emissions that will arise from construction phase activities will have a permanent imperceptible negative effect on climate. The potential for health effects is considered to be imperceptible due to the quantity of greenhouse gases that will be emitted.

Operational Phase

When considering the greenhouse gas emissions associated with the operational phase of the Proposed Development, within the context of the national commercial built environment and Transport Sector Emissions Ceilings detailed in Section 10.2.2 of Chapter 10, the Proposed Development will have a Permanent, Imperceptible, Negative effect on GHG concentrations. The provision of active travel infrastructure, pedestrian priority measures and electric vehicle charging facilities is expected to support modal shift, reduce dependence on private vehicle use and contribute to reductions in transport-related emissions. These measures interact positively with climate objectives and human health outcomes. On this basis, the identified interaction during the construction and operational phase is Not Significant.

Population and Human Health and Noise and Vibration

Construction Phase

There will be an increase in noise levels in the vicinity of the Proposed Development site during the construction phase as a result of Heavy Goods Vehicle (HGVs) and building operations, both of which have the potential to cause a nuisance to sensitive receptors such as hotel guests, local residents and tourists during the construction phase. Construction noise at any given noise sensitive location will be variable throughout the construction phase, depending on the activities underway and the distance from the main construction activities to the receiving properties. Noise levels associated with the construction works at all receptors will be lower than the 65 dB BS 5228-1:2009 criterion and therefore is considered a Short-term, Imperceptible, Negative effect.

Proposed works along the L2020 Local Road may give rise to brief or temporary exceedances of the 70 dB TII criterion at receptors alongside the road which may temporarily reduce residential amenity and contribute to annoyance and disturbance. The resulting interaction between Noise and Vibration and Population and Human Health is assessed as Slight, Negative and Brief to Temporary.

Operational Phase

Apart from potential live and prerecorded amplified music played at events, the Proposed Development will not include any sources or activities likely to give rise to LAeq T levels at residential receptors which exceed the 55 dB daytime, 50 dB evening or 45 dB night-time criteria recommended by the World Health Organisation (WHO) and Environmental Protection Agency (EPA). Similarly, the 60 dB night-time LAFmax limit recommended by the WHO is highly unlikely to be exceeded at any receptor.

Live and prerecorded amplified music played at events may result in LAeqT levels of 60 dB at the hotel and 50 dB at Yewpoint receptors. These levels will exceed the daytime 55 dB criterion at the hotel, and the 50 dB criterion if such events occur during the period 1900-2300 h.

The impact at receptors is assessed to be neutral and imperceptible at distant receptors, increasing to moderate adverse at the hotel and Yewpoint receptors when noise emissions are present. Events however will be short and infrequent, the overall effect is therefore expected to be Slight and Negative.

On this basis, the identified interaction during the construction, operational phase is Not Significant.

Population and Human Health, and Landscape and Visual

Construction Phase

Potential visual effects during the Construction Phase include negative impacts on nearby visual receptors as a result of vegetation removal, earthworks and operation of machinery in close proximity to the Hodson Bay Hotel and Athlone Golf Club properties. These visual effects will be most pronounced in the immediate vicinity of the Proposed Development site. Large machinery may be intermittently required to facilitate construction of the Water Sports Pavilion and Marina Redevelopment and Extension buildings; the machinery may be partially visible for receptors utilising the hotel and golf club.

The visual effects on recreational users, visitors and residents during the Construction Phase are predicted to be Direct, Short-term, Moderate and Negative.

Operational Phase

The Proposed Development comprises a mix of surface-level to relatively tall infrastructure, including the new water sports building, the multi-use pavilion, the café and service buildings, the plaza and terrace, and water access points of the developed shoreline. The public realm improvements, promenade, viewing areas, playground, wellness spaces and enhanced waterfront access will improve opportunities for recreation, social interaction, physical activity and wellbeing. Importantly, the majority of long-distance views over Lough Ree are preserved and more opportunity to experience views is created by the addition of the proposed infrastructure. The visual effects are predicted to be primarily "Slight" and no higher

than “Moderate,” owing to the overall “Positive” quality of most effects and the redevelopment and enhancement of already developed areas within a destination area of highly valued tourism.

On this basis, the identified interaction during the construction and operational phase is Not Significant.

Population, and Human Health and Material Assets

Construction Phase

During construction, there will be a temporary increase in traffic associated with construction staff, deliveries of materials and plant, and HGV movements. These additional movements will be Short-term and are expected to be accommodated by the existing N61 and L2020 road network without materially affecting its operation. Construction traffic will generally occur during normal working hours and will not coincide with the principal recreational traffic peaks, which typically occur during afternoons, evenings and weekends. Delays may occur where construction vehicles enter or leave the site; however, these will be localised and short in duration. These effects interact with Population and Human Health receptors through temporary reductions in accessibility, increased journey times and amenity effects for residents, visitors and recreational users. The interaction of these effects has the potential to result in a temporary adverse effect on population and human health. Subject to the implementation of a Construction Traffic Management Plan, the impact on the surrounding road network is considered to be Short-term, Slight and Negative.

In addition, construction activities may result in temporary interactions between Population and Human Health and water supply, wastewater infrastructure and waste management through utility connections, excavation works and the generation of construction waste. The mitigation measures outlined in CEMP (Appendix 4-2) and Section 14.2.7 of Chapter 14 Material Assets of this EIAR, including the protection of existing utilities, appropriate waste management and pollution prevention measures, will minimise the potential for service disruption and environmental contamination. Therefore, the effects on Population and Human Health are anticipated to be Short Term, Slight, Negative during the construction phase.

Operational Phase

During the operational phase, there will be no impacts or associated effects on water supply or wastewater infrastructure arising from the Proposed Development. A key positive interaction between Material Assets and Population and Human Health will arise from the provision of enhanced active travel infrastructure, upgraded pedestrian facilities, improved accessibility, reconfigured parking, enhanced public realm areas and upgraded tourism and recreation infrastructure. The provision of a continuous shared pedestrian and cycle facility, improved crossings, traffic calming measures, enhanced lighting and connectivity will support increased levels of active travel, improve accessibility and safety for all users, including vulnerable road users, and increase opportunities for recreation and social interaction.

The upgraded marina, Water Sports Pavilion, waterfront access, viewing areas, seating areas and other public realm enhancements will further improve visitor experience, community amenity, wellbeing and the attractiveness of Hodson Bay as a tourism and recreation destination. Collectively, these improvements represent a direct positive interaction between Material Assets and Population and Human Health through enhanced accessibility, safety, recreation, social interaction, community wellbeing and economic benefits. The resulting interaction is assessed as Moderate Positive, Long-Term and Permanent.

16.3

Biodiversity

Biodiversity and Land, Soils & Geology

Construction Phase

To facilitate the Proposed Development, areas of buildings and artificial surfaces as well as areas of amenity grassland will be permanently lost, temporarily disturbed, or changed. These habitats are considered to be of Local Importance (Lower Value) and as such are not considered Key Ecological

Receptors. Whilst the Proposed Development will impact upon these habitats, these effects are not ecologically significant, given the low value of the habitats for biodiversity and their abundance in the wider area.

The Proposed Development was designed specifically to retain individual trees and treelines within the Proposed Development Site where possible. This would constitute effects at a local geographic scale on receptors ranging from Local Importance (Higher Value) to International Importance. These potential impacts have been assessed in Ch. 6 Biodiversity of this EIAR. There will be a Short to Medium Term, Negative residual effect at the local geographic scale while newly planted trees across the site establish into mature trees and treeline habitat.

Biodiversity and Hydrology & Hydrogeology

Construction Phase

Construction activities including earthworks, excavation, piling and marina extension works have the potential to increase suspended solids and introduce pollutants to surface waters if not appropriately managed. Residual hydrological effects could interact with aquatic habitats and species through changes in water quality and disturbance of aquatic ecological receptors. Following implementation of sediment control measures, pollution prevention measures, cofferdam and dewatering controls and the wider CEMP measures, residual hydrological effects on aquatic habitats species, or designated sites as a result of water quality deterioration is assessed as Not Significant.

Operational Phase

The operational stage of the Proposed Development will result in the production of foul water as well as potential for surface water runoff to sensitive aquatic habitats and associated receptors (outlined above). If not adequately managed, there is potential for impacts on groundwater and surface water quality. Surface water and foul water management systems will be implemented and as such will remove the potential for water quality deterioration during the operational phase of the Proposed Development.

On this basis, the identified interaction during the construction and operational phase is Not Significant.

Biodiversity and Air Quality

Construction Phase

During the construction phase of the Proposed Development, increased vehicular and dust emissions within and around the Site have the potential to be a nuisance to flora and fauna through dust soiling, thereby having a Short-term, Slight, Negative effect. Dust deposition due to demolition, earthworks, construction and trackout has the potential to affect sensitive habitats and plant communities within 50m of dust generating sources. The mitigation measures outlined in Ch 9 Air Quality and the CEMP (Appendix 4-2) of the EIAR will ensure that the potential for negative effects is reduced or eliminated.

Operational Phase

During the operational phase, the potential for effects on biodiversity from vehicular and dust emissions are imperceptible. The Traffic and Transport Assessment (Section 14.1, Chapter 14) indicates that the operational phase will generate a net increase of approximately 432 two-way vehicle trips per day and the associated peak hour increase is approximately 44 two-way vehicle movements per hour during the summer season. The Proposed Development will result in an increase in berthing capacity and likely will generate an associated increase in boating activity in the area. However, scale in increased activity is not considered sufficient to result in any discernible impact on local air quality, and no measurable increase in dust emissions or exhaust fumes is anticipated. The predicted increase in traffic volumes is slight and will result in a corresponding slight increase in traffic-related air pollutant emissions. The receiving environment is not considered sensitive to minor changes in traffic flows, and the magnitude of impact is therefore considered low.

The provision of enhanced active travel infrastructure will encourage access by walking and cycling, while the inclusion of electrical vehicle charging points will facilitate the uptake of low-emission vehicles.

Overall, the operational phase of the Proposed Development will result in a Long-term, Imperceptible Negative effect on air quality for biodiversity.

On this basis, the identified interaction during the construction and operational phase is Not Significant.

Biodiversity and Climate

Construction Phase

The construction phase of the Proposed Development will lead to emissions from plant and machinery use and transport (i.e. exhaust emissions). Following implementation of the mitigation measures presented in Chapter 10, residual effects of greenhouse gas emissions arising from the construction phase of the Proposed Development will have a Permanent, Imperceptible, Negative effect on climate as once emitted to the atmosphere, the greenhouse gas emissions cannot be displaced. Climate change effects can lead to an increase in intense weather events, causing increased disturbance to biodiversity. The potential for interaction of biodiversity and climate effects is considered to be imperceptible due to the low quantity of greenhouse gases that will be emitted during construction of the Proposed Development.

Operational Phase

Greenhouse gas emissions may result during the operational phase due to increased visitor and vehicular traffic associated with the Proposed Development. The Proposed Development is forecast to generate approximately 432 additional two-way vehicle trips per day, with an associated peak hour increase of approximately 44 two-way vehicle movements.

When considering the greenhouse gas emissions associated with the operational phase of the Proposed Development, within the context of the national commercial built environment and Transport Sector Emissions Ceilings detailed in Section 10.2.2 of Chapter 10, the Proposed Development will have a Permanent, Imperceptible, Negative effect on climate change and global GHG concentrations.

Climate change effects can lead to an increase in intense weather events, causing increased disturbance to biodiversity. The potential for interaction of biodiversity and climate effects is considered to be imperceptible due to the low quantity of greenhouse gases that will be emitted during operation of the Proposed Development.

On this basis, the identified interaction during the construction and operational phase is Not Significant.

Biodiversity and Noise & Vibration

Construction Phase

Site activity during the construction phase could give rise to noise that could be a nuisance for fauna that use the Site. Best practice mitigation measures are included in Ch 6 Biodiversity, Ch 11 Noise & Vibration and the CEMP (Appendix 4-2) to minimise the potential negative effect of noise generated during the construction phase on biodiversity. Taking into account the mitigation measures the effect of noise on biodiversity is considered to be Short-term, Slight and Negative.

Operational Phase

No anticipated interactive effect.

On this basis, the identified interaction during the construction and operational phase is Not Significant.

16.3.2 Land, Soils and Geology

Land, Soils & Geology and Hydrology & Hydrogeology

Construction Phase

Construction stage activities including earth moving, site levelling, near-water cofferdam installation, and in-water piling activities across the permanent footprint. The main risk will be from sediment laden surface water runoff from bare soil and soil storage areas during construction works. The construction will involve levelling operations. These near-water and in-water works are adjacent to and within the designated sites above. The works will involve the extraction of sediments and bedrock across the Site for potential reuse on-site and disposal off-site. The working of sediments and bedrock near-water and in-water will disturb the in-situ geological environment and has the potential to create suspended solids; the latter of which is assessed in Chapter 8 of this EIAR.

Much of the surface water generally percolates to ground or enters the stormwater network through gullies and this will be allowed to continue during the construction stage. However, construction activities can result in the release of suspended solids to local drainage features and could result in an increase in the suspended sediment load, which may affect the water quality of Lough Ree.

Following implementation of the proposed mitigation measures in Section 8.5.3.1 of Chapter 8, the residual effects will be Indirect, Short-term, Imperceptible Negative. On this basis, the identified interaction during the construction phase is Not Significant.

Land, Soils & Geology and Air Quality

Construction Phase

The construction works associated with the Proposed Development will give rise to localised dust emissions. The earthwork requirements are classified as “Small” in accordance with The Institute of Air Quality Management in the UK (IAQM) guidance which is considered in the dust impact assessment. Without adequate mitigation, the potential effects of dust from the construction phase of the Proposed Development are considered to be equivalent to Short-term, Significant, Negative effects.

With the implementation of the mitigation measures set out in Chapter 9 Air Quality, the residual effect of Proposed Development on air quality from dust soiling is considered to be a Short-term, Slight, Negative effect on the surrounding area and on ecological receptors. On this basis, the identified interaction during the construction phase is Not Significant.

Land, Soils & Geology and Cultural Heritage

Construction Phase

Interaction arises where excavation within soils may encounter previously unrecorded archaeological remains. Archaeological monitoring of ground disturbance in all greenfield areas is proposed for the construction phase. Should archaeology be encountered, the National Monuments Service will be consulted and appropriate mitigation determined, including preservation in situ or preservation by record. On this basis, the identified interaction during the construction phase is Not Significant.

Land, Soils & Geology and Landscape & Visual

Construction Phase

Potential landscape effects during the Construction Phase include earthworks and activities of machinery, and as a result, bring about a short-term change in the character of the landscape. Therefore, the effect on the landscape through the groundworks and construction activities predicted to be Direct, Short-Term, Moderate and Negative. Landscape and Visual construction phase mitigation measures including

screening are set out in Chapter 13 of this EIAR. On this basis, the identified interaction during the construction and operational phase is Not Significant.

Operational Phase

The completed development will transform areas of existing artificial surfaces and underutilised lands, and upgrade existing marina and water sports structures into an enhanced waterfront environment with improved visual coherence, increased landscape quality and stronger connectivity between the public realm and Lough Ree. The resulting interaction between Land, Soils and Geology and Landscape and Visual is assessed as Moderate Positive, Long-Term and Permanent.

16.3.3 Air Quality

Air Quality and Material Assets

Construction Phase

The transport of supporting infrastructure materials, construction and staff vehicles, and waste removal vehicles to/from the Proposed Development site, (see accompanying CEMP Appendix 4-2) will give rise to exhaust emissions associated with vehicle movements. This constitutes a Short-term, Slight, Negative effect in terms of air quality.

Operation Phase

The Proposed Development promotes sustainable travel, improves accessibility for all users, enhances road safety and provides sufficient parking capacity to support the continued operation and future growth of Hodson Bay as a strategic tourism, recreation and leisure destination.

Taking account of the embedded design measures and proposed mitigation, the operational phase is assessed as resulting in an overall Long-term, Slight and Positive effect on local air quality.

On this basis, the identified interaction during the construction and operational phase is Not Significant.

16.3.4 Climate

Climate and Material Assets

Construction Phase

The construction phase of the Proposed Development will require the use of construction plant and vehicles which will result in a slight increase in traffic and short-term exhaust emissions within and around the site. This will lead to an increase in greenhouse gas emissions. This is assessed further in Chapter 10 of this EIAR, and mitigation measures are presented to minimise any potential effects.

Emissions associated with the traffic generated from transport of materials, waste and personnel will have a short-term imperceptible negative effect on climate. However, once emitted to the atmosphere, the greenhouse gas emissions that will arise from construction phase activities will have a permanent imperceptible negative effect on climate. The potential for climate effects is considered to be imperceptible due to the quantity of greenhouse gases that will be emitted.

Operation Phase

The operational phase of the Proposed Development will see a slight increase in traffic volumes. There will be an increase of approximately 12–25% over existing peak hour traffic volumes during operational phase of the Proposed Development. This will lead to a slight increase in exhaust emissions which contributes to increasing greenhouse gas emissions. When greenhouse gas emissions associated with the Proposed Development, are considered within the context of the national commercial built environment

and Transport Sector Emissions Ceilings (see Chapter 10), the Proposed Development will have a Permanent, Imperceptible, Negative effect on climate change and global GHG concentrations. On this basis, the identified interaction during the construction and operational phase is Not Significant.

The operational phase introduces enhanced marina facilities, a new Water Sports Pavilion, EV charging infrastructure, active travel connections, solar PV panels and Nearly Zero Energy Building (NZEB) compliant buildings. These material assets contribute positively to climate mitigation through reduced operational energy demand and support for sustainable transport modes. This is considered to be a Long Term Positive Moderate effect on climate.

16.3.5 Vulnerability to Major Accidents and Natural Disasters

As described in Chapter 15 Vulnerability to Major Accidents and Natural Disasters, major accidents or natural disasters are hazards which have the potential to affect the Proposed Development and lead to environmental effects both directly and indirectly. These include accidents during both the construction and operation of the Proposed Development caused by operational failure and/or natural hazards. This includes aspects such as population and human health, biodiversity, land and soil, water, air quality, climate, cultural heritage, the landscape and material assets. The risk of a major accident and/or disaster during the construction of the Proposed Development is considered 'low' in accordance with the '*A Framework for Major Emergency Management - A Guide to Regional Risk Assessment*' (DoHLGH, 2010) Document.

Flooding in the vicinity of the Proposed Development site and along retained access routes is likely to occur. However, the vulnerability of the Proposed Development itself is low due to embedded flood mitigation measures including raised finished floor levels and freeboard allowances. Chapter 15 of the EIAR identifies mitigation measures to ensure potential for a major accident such as a contamination incident or a Traffic Incident is minimised.

The residual effects associated with the construction and operational phase of the Proposed Development are Not Significant. On this basis, the identified interaction during the construction and operational phase is Not Significant.

16.4 Mitigation and Residual Effects

Where any potential interactive negative effects have been identified in the above, a full suite of appropriate mitigation measures has already been included in the relevant sections (Chapters 5 -15) of the EIAR and are detailed in the CEMP (Appendix 4-2). The implementation of these mitigation measures will reduce and / or eliminate the potential for there to be effects. Information on potential residual effects and the significance of effects, is also presented in each relevant chapter. On this basis the effects arising from the identified interactions are Not Significant.

16.5 Conclusion

The main negative interactions arise during the construction phase and relate to temporary to short-term effects associated with traffic management, construction noise, dust generation, visual disturbance and temporary disruption to tourism and recreational activities. These effects are localised, temporary - short-term and will be reduced through implementation of the mitigation measures identified throughout the EIAR.

The main positive interactions occur during operation and relate to enhanced public access, active travel infrastructure, tourism development, recreation, health and wellbeing benefits, economic activity, and sustainable transport provision. These beneficial effects are considered long-term and reinforce the overall positive contribution of the Proposed Development to the Hodson Bay area. No significant negative residual interaction effects are predicted following implementation of the proposed mitigation measures.