Galway Port LRD

Climate Change Impact Assessment

Final Report

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The Land Development Agency

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This report comprises work commissioned by Thornton O'Connor on behalf of the Land Development Agency, by an instruction dated 13th June 2025. Ashling Laffey, Conor O'Neill and Jemima Kivikoski of JBA Consulting carried out this work.

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Unless otherwise stated in this Report, the assessments made assume that the sites and facilities will continue to be used for their current purpose without significant changes.

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Abbreviations

AEP	Annual Exceedance Probability
CCIA	Climate Change Impact Assessment
CDP	City Development Plan
CEMP	Construction and Environment Management Plan
FB	Freeboard
FFL	Finish Floor Levels
FRA	Flood Risk Assessment
GHG	Greenhouse Gas
HEFS	High-End Future Scenario
LRD	Large Residential Development
MRFS	Mid-Range Future Scenario
NAP	National Adaptation Plan
NDC	Nationally Determined Contribution
NMF	National Mitigation Framework
NPF	National Planning Framework
OWMP	Operational Waste Management Plan
RWMP	Resource and Waste Management Plan
SDG	Sustainable Development Goal
SuDS	Sustainable Urban Drainage System
TTIA	Traffic and Transport Impact Assessment
UNFCCC	United Nations Framework Convention on Climate Change

1 Introduction

1.1 Background

JBA Consulting was commissioned by the Land Development Agency to carry out a Climate Change Impact Assessment (CCIA) for the Proposed Galway Port Large Residential Development (LRD) at lands in Galway Port, Galway.

This CCIA Report considers the potential impact of climate change on the Proposed Development and whether the design demonstrates adequate climate mitigation and resilience to climate change related impacts in accordance with the Galway City Development Plan (CDP) 2023-2029.

This report was prepared by Jemima Kivikoski, Ashling Laffey, Conor O'Neill, and Tom Sampson.

Jemima Kivikoski BSc Pg Dip Env Sc has 2 years' experience as an environmental consultant. She has worked on several Environmental Impact Assessments (EIARs), Flood Risk Assessments (FRAs) and CCIAs for both the public and private sectors including LRDs.

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1.2 Climate Change

It is widely recognised that the Earth's climate is changing at a pace exceeding normal variation. This is primarily attributed to a rise in Greenhouse Gas (GHG) emissions as a result of human activity[1]. It is now likely that global temperature will warm by 1.5°C by 2050 resulting in more extreme weather patterns and prompting severe weather events. Changes in Ireland's climate mirror the global trend, which is evident in temperature records broken

[1] Climate Change: Synthesis Report Summary for Policymakers, Intergovernmental Panel on Climate Change, 2023

annually, alongside an increase in flood and storm events incurring significant environmental, social, and economic impacts and losses.

Severe weather across the country has exposed the vulnerability of all sectors and highlights a national adaptation deficit[2]. Policy response across sectors must now address the causes and consequences of climate change through a reduction of emissions in parallel with adaptation actions. Mitigation and adaptation are inherently linked, and it is important to recognise that achieving net-zero will not prevent the continued changes in the climate system with multi-decadal or longer feedback times. Adaptation is crucial for future sustainable development and climate resilient communities.

1.3 Policy Context

The United Nations Framework Convention on Climate Change (UNFCCC) is an international environmental treaty adopted in May 1992. The framework's objective is "*to stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system*". Although no binding limits on emissions or enforcement procedures were enacted, the framework formed the foundation for future climate policy.

Within the context of the UNFCCC, the Kyoto Protocol (2005) and Paris Agreement (2016) made more meaningful steps by setting binding emissions targets and the long-term objective to limit global temperature rise to 1.5°C. The Paris Agreement stipulates that countries must submit Nationally Determined Contributions (NDCs) every 5 years which most often take the form of national climate action plans (CAPs). Through these plans, countries communicate how they will reach the goals of the Agreement through increasingly ambitious climate objectives and rigorous adaptation action across sectors.

In 2015, the UN published the Agenda for 2030 identifying the 17 Sustainable Development Goals (SDGs). While not legally binding, the SDGs represent global ambition to sustainable development and offer a roadmap of practical guidance for the international community.

1.3.1 European[3]

The European Green Deal was published in 2019 affirming the 1.5°C objective of the Paris agreement and defining actions for the implementation of SDGs. Borne from this are several pieces of key legislation, including:

- The European Climate Law which commits the EU to achieving climate neutrality by 2050.
- The Fit for 55 Package which included revisions to the Renewable Energy Directive (2009/28/EC) and the Energy Efficiency Directive (EU/2023/1791).

[2] Ireland's Climate Change Assessment: Synthesis Report, Environmental Protection Agency, 2023

[3] Cifuentes-Faura J. European Union policies and their role in combating climate change over the years. Air Qual Atmos Health. 2022;15(8):1333-1340. doi: 10.1007/s11869-022-01156-5. Epub 2022 Jan 8. PMID: 35035604; PMCID: PMC8742565.

- The Circular Economy Action Plan sets binding targets for Member States for waste reduction, use of recycled materials, and recycling rates.
- The Biodiversity Strategy promotes the integration of biodiversity considerations into the planning process.

The 2013 EU Strategy on Adaptation to Climate Change encouraged all Member States to adopt comprehensive adaptation strategies. It sought better informed decision making through the identification and addressing of gaps in knowledge about adaptation. The European Climate Adaptation Platform Climate-ADAPT, was developed as a resource to help users access and share information on adaptation.

1.3.2 National

The principal climate legislation in Ireland is the Climate Action and Low Carbon Act 2015 (as amended), herein referred to as 'the Act'. The Act was amended by the Climate Action and Low Carbon Amendment Act in 2021 which strengthened governance mechanisms and commits to bolder climate targets in line with the European Climate Law. Legally binding targets of the Act are:

- A 51% GHG emission reduction by 2030 and;
- A climate neutral economy by 2050.

Under the Act, the National Mitigation Plan (NMP) and National Adaptation Framework (NAF) were published in 2017 and 2018 and address the causes and consequences of climate change in Ireland, respectively.

Aligned to both the NMP and NAF, the National Planning Framework (NPF) also named "Project Ireland 2040", was published in 2018 and revised in 2025 which integrates climate adaptation into strategic land-use planning and new infrastructure development.

Several policy objectives within the NPF reflect the Act, the NMP, and the NAF:

- ***National Policy Objective 66*** - The planning system will be responsive to our national environmental challenges and ensure that development occurs within environmental limits, having regard to the medium and longer-term requirements of all relevant environmental and climate legislation and the sustainable management of our natural capital.
- ***National Policy Objective 67*** - Support the circular and bio economy including in particular through greater efficiency in land and materials management, promoting the sustainable re-use and refurbishment of existing buildings and structures, while conserving cultural and natural heritage, the greater use of renewable resources and by reducing the rate of land use change from urban sprawl and new development.
- ***National Policy Objective 68*** - Support the growth and development of efficient district heating, electrification of heating, and utilisation of geothermal energy.
- ***National Policy Objective 69*** - Reduce our carbon footprint by integrating climate action into the planning system in support of national targets for climate

policy mitigation and adaptation objectives, as well as targets for greenhouse gas emissions reductions as expressed in the most recently adopted carbon budgets.

- ***National Policy Objective 70*** - Promote renewable energy use and generation at appropriate locations within the built and natural environment to meet national objectives towards achieving a climate neutral economy by 2050.
- ***National Policy Objective 71*** - Support the development and upgrading of the national electricity grid infrastructure, including supporting the delivery of renewable electricity generating development.
- ***National Policy Objective 73*** - Support the co-location of renewable technologies with other supporting technologies and complementary land uses, including agriculture, amenity, forestry and opportunities to enhance biodiversity and promote heritage assets, at appropriate locations which are determined based upon the best available scientific evidence in line with EU and national legislative frameworks.
- ***National Policy Objective 72*** - Each Regional Assembly must plan, through their Regional Spatial and Economic Strategy, for the delivery of the regional renewable electricity capacity allocations indicated for onshore wind and solar reflected in Table 9.1 below, and identify allocations for each of the local authorities, based on the best available scientific evidence and in accordance with legislative requirements, in order to meet the overall national target.
- ***National Policy Objective 76*** - Sustainably manage waste generation including construction and demolition waste, invest in different types of waste treatment and support circular economy principles, prioritising prevention, reuse, recycling and recovery, to support a healthy environment, economy and society.
- ***National Policy Objective 77*** - Enhance water quality and resource management by:
    - Ensuring that River Basin Management Plan objectives are fully considered throughout the physical planning process.
    - Integrating sustainable water management solutions, such as Sustainable Urban Drainage (SUDS), non-porous surfacing and green roofs, and nature based solutions, to create safe places.
- ***National Policy Objective 78*** - Promote sustainable development by ensuring flooding and flood risk management informs place-making by:
    - Avoiding inappropriate development in areas at risk of flooding that do not pass the Justification Test, in accordance with the Guidelines on the Planning System and Flood Risk Management;
    - Taking account of the potential impacts of climate change on flooding and flood risk, in line with national policy regarding climate adaptation.
- ***National Policy Objective 79*** - Support the management of stormwater, rainwater and surface water flood and pollution risk through the use of nature-based solutions and sustainable drainage systems, including the retrofitting of existing environments to support nature-based solutions.

- ***National Policy Objective 80*** - Support the retrofitting of existing environments to cater for surface water run-off through the use of nature-based solutions.
- ***National Policy Objective 82*** - Integrated planning for Green and Blue Infrastructure will be incorporated into the preparation of statutory land use plans while maintaining ecosystem services and ecosystem functions and conserving and/or restoring biodiversity.
- ***National Policy Objective 85*** - In line with the National Biodiversity Action Plan; the conservation, enhancement, mitigation and restoration of biodiversity is to be supported by:
    - Integrating policies and objectives for the protection and restoration of biodiversity, including the principles of the mitigation hierarchy of - avoid, minimise, restore and offset - of potential biodiversity impacts, in statutory land use plan.
    - Retention of existing habitats which are currently important for maintaining biodiversity (at local/regional/national/international levels), in the first instance, is preferable to replacement/restoration of habitats, in the interests of ensuring continuity of habitat provision and reduction of associated risks and costs.
- ***National Policy Objective 86*** - In line with the objectives of the National Biodiversity Action Plan, planning authorities should seek to address no net loss of biodiversity within their plan making functions
- ***National Policy Objective 92*** - Ensure the alignment of planned growth with the efficient and sustainable use and development of water resources and water services infrastructure, in order to manage and conserve water resources in a manner that supports a healthy society, economic development requirements and a cleaner environment.

Together, the Act, the NMP, the NAF, and the NPF form a structured and comprehensive climate strategy bound to EU and International legal obligations.

Development Specific Policy Objectives of the NPF:

NPF Objectives regarding maritime:

National Policy Objective 50 Ensure that the strategic development requirements of Tier 1 and Tier 2 Ports, ports of regional significance, State Fishing Harbours and smaller harbours are addressed as part of Regional Spatial and Economic Strategies, and plans at local level to ensure the effective growth and sustainable development of the city regions and regional and rural areas, in accordance with National Ports Policy.

National Policy Objective 52 Ensure that Ireland's coastal resource is managed to sustain its physical character and environmental quality.

National Policy Objective 53 In line with the collective aims of national policy regarding climate adaptation and the associated legislative provisions, to take account of the effects of sea level changes and coastal erosion in planning and development management and to support the implementation of adaptation responses to limit risks to communities and coastal ecosystems from the impacts of coastal change.

1.3.3 Local

Local authorities align their individual development plans to the NPF ensuring that local development collectively contributes to overarching national planning objectives. Galway City Council signed the Local Authority Climate Action Charter in October 2019[4] which commits local authorities to robust efforts in advancing climate action at regional and local levels while adhering to the UN SDGs, in particular Goal 13 Climate Action. Councils will collaborate and partner with local enterprise, community groups, residents as well as public, private, and educational sectors on climate action initiatives.

The Galway City Development Plan 2023-2029 upholds the commitments of national, European and global climate change policy by outlining a holistic approach to climate mitigation and adaptation across all chapters.

The CDP outlines a framework for developing the region into a climate-neutral climate-resilient community. To achieve this goal, cross-cutting policies that incorporate climate action have been integrated into each chapter of the CDP including:

- Chapter 2 Climate Action
  - Deals specifically with climate action, providing a policy context and outlining relevant planning outcomes.
- Chapter 3 Housing and Sustainable Neighbourhoods
  - Supports the integration of green infrastructure, energy efficiency and life time adaptability in the layout of new developments.
- Chapter 4 Sustainable Mobility and Transportation
  - Supports the expansion of the EV charging network
- Chapter 5 Natural Heritage, Recreation and Amenity
  - Promotes nature based solutions to contribute to climate resilience
- Chapter 6 Economy, Enterprise and Retail
  - Supports the transition to a low carbon economy.
- Chapter 7 Community and Culture
  - Ensures that community facilities and services are delivered in tandem with new residential developments.
- Chapter 8 Built Heritage, Placemaking and Urban Design
  - Encourages innovation in architecture and promote energy efficiency and green design
- Chapter 9 Environment and Infrastructure
  - Protects against light pollution and requires the design of energy efficient lighting schemes for all new developments.
- Chapter 10 Compact Growth and Regeneration

4 Galway City Council Local Authority Climate Action Plan 2024-2029. Available at: https://www.galwaycity.ie/services/climate-action/climate-action-plan

- Supports the re-development on regeneration and brownfield sites and measures to address dereliction and vacancy

The Plan also sets out development standards for the built environment, which shall demonstrate climate action in development proposals. Seven key issues were identified as being of significance for accomplishing national and local sustainability objectives. These are contained in CDP Section 11.31 and are as follows:

- How the location, siting, layout, design and drainage proposals maximise climate adaptation opportunities.
- How the SuDS strategy integrates the four pillars of SuDS Design – water quantity, water quality, amenity and biodiversity.
- The use of green roofs and other green infrastructure as a means of contributing towards sustainable urban drainage, improving biodiversity and influencing heat loss/gain from the building.
- Energy efficiency through thermal insulation, passive ventilation and cooling, passive solar design and any technologies used to help occupants better manage energy usage.
- The use of district, renewable and/or low-carbon energy supply opportunities.
- How the proposals at all stages embrace the Circular Economy approach in relation to waste management from construction through to the operation of the building(s).
- How noise and air pollution will be managed across all stages of development from construction through to operation of the building(s).

Section 11.31 of the CDP requires all planning applications involving developments of 25 or more homes to be accompanied by a Scheme Sustainability Statement. The Scheme Sustainability Statement should as a minimum demonstrate how the above items inform the proposal. The Scheme Sustainability Statement should demonstrate how these considerations were explored and taken forward through the evolution of the development scheme, and where they have not been taken forward, reasons should be given as to why they are not technically feasible or viable.

This CCIA forms the Scheme Sustainability Statement for the proposed development.

2 Proposed Development

2.1 Description

The Land Development Agency intend to apply for permission for a 'Large-Scale Residential Development' (LRD) at a site of 1.61 Ha in Galway Port at Dock Road and Lough Atalia Road, Galway City, and extending to include parts of both roads for road infrastructure works and water services infrastructure works.

The proposed development principally consists of the demolition of the existing office / bus depot building (370.2 sq m) and ancillary building (26 sq m); the partial demolition of the existing ESB sub-station (67.4 sq m); the demolition of existing boundary walls at the south-west and north-west; and the construction of a mixed-use development.

The proposed mixed-use development primarily comprises: 356 No. residential apartments (172 No. 1-bed, 169 No. 2-bed and 15 No. 3-bed); crèche (255.9 sq m); 2 No. café/restaurant units (totalling 428.4 sq m) and 1 No. retail unit (156.0 sq m). The development has a total floor area of 32,096.0 sq m and is primarily proposed in 4 No. blocks (identified as A–D) that generally range in height from 6 No. to 13 No. storeys.

The proposed development also includes: new internal street and pedestrian network, including a one-way vehicular route at the north-western side of the site and new junctions with Dock Road at the south-west and with the access road from Lough Atalia at the north-west; upgrades to Lough Atalia Road and the access road from it at the north-west of the site, including the provision of a new toucan pedestrian/cycle crossing at Lough Atalia Road; upgrades to the footpath and road interface with Dock Road to the south-west; 37 No. car parking spaces; 1 No. set-down/delivery bay; 748 No. cycle parking spaces; hard and soft landscaping, including public open spaces and communal amenity spaces; private amenity spaces as balconies and terraces facing all directions; boundary treatments; public lighting; bin stores; plant rooms; rooftop lift overruns; rooftop telecommunications and plant infrastructure and enclosure at Block C; recladding of the existing substation and pumping station; and all associated works above and below ground.

The subject site is bounded to the east and north by Lough Atalia. The subject site is bounded to the west and south by existing commercial properties and port land. Access to the site will be provided via Lough Atalia Road.

3 Climate Impacts and Action

Potential impacts to the Proposed Development as a result of climate change, adaptation to these impacts and climate mitigation measures in the design of the Proposed Development are discussed under the 7 primary action areas identified in the Galway City Development Plan (2023-2029).

- How the design maximises climate adaptation opportunity.
- How the SuDS strategy integrates 4 pillars of SuDS Design.
- Green infrastructure contributions to sustainable urban drainage, biodiversity and heat loss/gain.
- Energy efficiency in design.
- Use of district, renewable and/or low carbon energy supply.
- How proposals at all stages embrace circular economy.
- How noise and air pollution will be managed in construction and operation.

Adaptation measures protect infrastructure from certain risks associated with climate change. Mitigation measures lower carbon emissions and ultimately contribute to achieving Ireland's 2050 net zero commitments.

Sustainability issues with regard to the siting of the development and traffic and transport impacts are also considered in this section.

3.1 How the location, siting, layout, design and drainage proposals maximise climate adaptation opportunities.

A Stage 2 Flood Risk Assessment (FRA), prepared by TOBIN, confirms that the Proposed Development is at minimal risk of fluvial flooding, both currently and under future climate change scenarios. However, parts of the site are susceptible to coastal flooding under existing and future climate conditions. To mitigate this risk, finished floor levels (FFLs) for buildings will be set at a minimum of 5.35 mOD. This level includes an allowance for climate change projections and a 300mm freeboard above the 1 in 1000-year (0.1% AEP) Marine Flood Risk Scenario (MRFS) event, thereby futureproofing the development against rising sea levels.

The FRA states that the site is also at minimal risk from pluvial (rainfall-induced) flooding. Surface water will be managed through a Sustainable Urban Drainage System (SuDS), designed to maintain runoff rates equivalent to those of the existing greenfield site. This ensures climate resilience by reducing the risk of surface water flooding during extreme rainfall events. The climate change approach allowance follows The Flood Risk Management Climate Change Sectoral Adaptation Plan under the National Adaptation Framework and Climate Action Plan. This Adaptation Plan presents two future flood risk scenarios to consider when assessing flood risk:

- Mid-Range Future Scenario (MRFS)

- High-End Future Scenario (HEFS)

The below table indicates the allowances that should be added to estimates of extreme rainfall depths, peak flood flows, and mean sea levels for the future scenarios.

Figure 3-1: Climate Change Adaptation Allowances for Future Flood Risk Scenarios

Parameter	MRFS	HEFS
Extreme Rainfall Depths	+20%	+30%
Peak River Flood Flows	+20%	+30%
Mean Sea Level Rise	+0.5m	+1m

The MRFS and HEFS are OPW defined future scenarios used in the Catchment Flood Risk Assessment and Management (CFRAM) program. These scenarios are explicitly aligned with the Intergovernmental Panel on Climate Change's (IPCC) Relative Concentration Pathways (RCPs) in Ireland's National Climate Change Risk Assessment (INCCRA). The MRFS falls under RCP 4.5 which represents a 2 - 3 °C increase in global temperature by 2100. The HEFS falls under RCP 8.5 which represents an increase in global temperature of approximately 5 °C.

Within the FRA, the proposed development has been assessed against the Mid-Range Future Scenario as it represents a likely scenario. The development incorporates SuDS features that enhance the climate resilience of the development, particularly in relation to an increase in rainfall intensity, through the management of surface water runoff via two onsite attenuation storage tanks, permeable paving, green roofs, and rain gardens.

The design strategy, as set out in the Galway Port Architectural Design Statement, incorporates robust, low-maintenance materials such as brickwork for primary façades, selected specifically for their resilience to Galway's coastal Atlantic climate. These design choices contribute to climate adaptation by enhancing building durability in the face of more frequent and severe weather conditions. The report also outlines the opportunity for future greenway connections that integrate the site into a wider blue-green network via the promenade in defined public space and construction of a new pedestrian and cycle bridge. The current proposal has been designed to adapt to future infrastructural upgrades and has been intentionally structured to tie in seamlessly with different scenarios, ensuring long-term viability, flexibility, and integration with wider infrastructural and regeneration objectives.

3.2 How the SuDS strategy integrates the four pillars of SuDS Design – water quantity, water quality, amenity and biodiversity.

TOBIN has prepared a Civil Works Design Report outlining a comprehensive SuDS strategy for the Proposed Development, aligned with the Greater Dublin Strategic Drainage

Study (GDSDS) standards. The existing site is greenfield with no drainage infrastructure, making it well suited to implementing integrated SuDS measures that minimise the impact of urbanisation.

The proposed SuDS strategy incorporates the following key storage types:

- Interception storage via infiltration tanks and surface features such as rain gardens, permeable paving, and water butts
- Attenuation storage through underground tanks sized to manage stormwater runoff
- Petrol interceptors to treat runoff and remove hydrocarbons before discharge
- These measures are complemented by drainage kerbs and filter strips, which enable source control and support treatment through infiltration where space allows.

The four pillars of SuDS design are addressed as follows:

3.2.1 Water quantity

Spatial constraints limit the use of large-scale SuDS measures but the employment of interception storage measures at source and soakaway structures achieve this requirement. The main drainage system is also designed to achieve the required thresholds in the event of localised exceedance of SuDS measures, or seasonally sensitive capacity reductions, thereby ensuring that greenfield run-off rates are maintained.

3.2.2 Water quality

Water quality is addressed through a combination of engineered and nature-based solutions. A petrol interceptor is included to manage hydrocarbon pollution, particularly from trafficked areas. In addition, rain gardens, drainage kerbs and infiltration trenches provide filtration and allow for passive treatment of surface water, especially in the appropriate green zones.

3.2.3 Amenity

The proposed rain gardens and tree pits integrate with the broader landscaping strategy to meet this requirement. These features enhance the visual quality of the development and support passive cooling and shading. Full design details will be refined at the detailed design stage.

3.2.4 Biodiversity

The landscaping design requires further development in the detailed design stage to accommodate further SuDS measures to leverage opportunities for biodiversity. However, the SuDS measures already proposed support the landscaping measures that will be employed to meet the biodiversity goals of the development.

3.3 The use of green roofs and other green infrastructure as a means of

contributing towards sustainable urban drainage, improving biodiversity and influencing heat loss/gain from the building.

The landscape strategy includes permeable surfaces, and soft landscaping that replace previously hardstanding industrial areas. Due to the history of ground contamination at the site, current attenuation storage and pipe capacities have been calculated wherein no infiltration is permitted. During construction, as ground condition information becomes available, infiltration mechanisms will be introduced. These interventions protect water quality, improve microclimates, and create accessible green space for the public.

A Galway Inner Harbour Masterplan prepared by Scott Tallon Walker Architects outlines a strong commitment to green infrastructure across the Proposed Development. Buildings will incorporate green roofs, walls, and roof gardens designed in line with best practices for sustainable construction. These features provide multiple benefits, as outlined in the following sub-sections.

3.3.1 Sustainable Urban Drainage:

Green roofs contribute to stormwater attenuation by absorbing and slowing rainfall, reducing peak runoff volumes and enhancing infiltration.

3.3.2 Biodiversity:

The use of diverse planting schemes including wildflower meadows, pollinator-friendly species, and 249 new native Irish trees including Alder, Scots Pine and Hazel support habitat creation and ecological connectivity for invertebrates, birds and bats.

3.3.3 Heat loss/gain:

Green roofs and walls provide natural insulation, reducing heat loss in winter and mitigating heat gain in summer, which contributes to improved energy efficiency and occupant comfort. Vegetation across roofs and public open spaces helps to lower ambient temperatures and reduce the urban heat island effect.

3.4 Energy efficiency through thermal insulation, passive ventilation and cooling, passive solar design and any technologies used to help occupants better manage energy usage.

The design of the proposed development considers and promotes energy efficiency in the following ways:

3.4.1 Building/solar orientation:

Specific Planning Policy Requirement 4 of the Apartment Design Guidelines requires that at least 25% of apartment units be dual aspect[5]. As outlined in Section 5.22 of the Architectural Design Statement for the proposed development, of the 356 proposed units,

[5] Specific Planning Policy Requirement 4 of the Apartment Design Guidelines

134 no. are dual aspect, equivalent to 37.6% of the total. Taken individually, each block exceeds the 25% requirement:

- Block A – 29 of 81 units, 35.8%
- Block B – 37 of 105 units, 35.2%
- Block C – 22 of 66 units, 33.3%
- Block D – 46 of 104 units, 44.2%

Dual aspect units will benefit from cross-ventilation, wider views, and improved access to morning and evening sunlight.

There are no directly north-facing, single aspect units. The single aspect units that are northeast facing in Block A and north-west facing in Block C overlook the central communal amenity and public open space, providing them with an attractive amenity view. The single aspect units that are north-west facing in Block B benefit from evening light and attractive views towards the City Centre and Forthill.

3.4.2 Passive ventilation[6] and cooling

As detailed in the drawings prepared by ALTU, all ground floor level floor-to-ceiling heights exceed 2.7 m. In fact, the ground floors have particularly generous floor-to-ceiling heights of 3.6 m. This will give flexibility to the spaces, and for ground floor level units specifically, it will maximise light ingress and make their living environments especially spacious and attractive. The high provision of dual aspect units mentioned above will also increase passive ventilation. The maximised levels of ventilation will also increase cooling efficiency for the development.

3.4.3 Other technologies/design strategies to help manage energy use:

The proposed development has been designed to make use of daylight to reduce energy needs. By achieving Spatial Daylight Autonomy (SDA), the proposed design maximises the amount of natural light in each room, reducing the requirements for energy use for artificial lighting.

The performance targets for Spatial Daylight Autonomy (SDA) are based on BRE 209, as follows:

- >50% of kitchens achieving at least 200 lux;
- >50% of living rooms achieving at least 150 lux; and
- >50% of bedroom areas achieving at least 100 lux over at least half of the daylight hours

The 908 No. rooms perform well given the development's urban context and the need to achieve a higher-density, mixed-use proposal with the incorporation of an attractive tree planting regimen[7]:

[6] Specific Planning Policy Requirement 5 of the Apartment Design Guidelines
[7] Planning Report, Thornton O'Connor Town Planning (2025)

- 89% of assessed rooms (808 No. of 908 No.) are compliant in a scenario without trees.
- 88% of assessed rooms (799 No. of 908 No.) are compliant in a scenario with trees.

Sunlight (contribute to lower energy use through natural lighting over electrical lighting):

- 92% of assessed units (328 No. of 356 No.) are compliant in a scenario without trees.
- 92% of assessed units (328 No. of 356 No.) are compliant in a scenario with trees.

3.5 The use of district, renewable and/or low-carbon energy supply opportunities.

Axiseng prepared a Climate Action Energy Statement to assess the proposed development against the requirements of Part L of the Building Regulations. Part L of the Building Regulations outlines the standards for energy conservation and performance in buildings and is sometimes referred to as NZEB (Nearly Zero Energy Buildings). It sets out specific requirements for the energy performance of new and existing buildings and requires the use of renewable energy sources.

The Report outlines that renewable technologies will be used in the proposed development. Heating and cooling will be generally achieved with the use of a VRF renewable energy system, and domestic hot water will be provided with a heat pump system. Corridors, stairs, and storage areas will be heated by radiators served by air-to-water heat pumps. The proposed heating system makes use of a group or district heating system. All of these measures exceed the requirements for renewables in line with Part L requirements. Preliminary BER ratings range from A3 for retail spaces to A2 for residential spaces, which is in compliance with NZEB standards.

3.6 How the proposals at all stages embrace the Circular Economy approach in relation to waste management from construction through to the operation of the building(s).

3.6.1 Design Stage to Construction

AWN Consulting prepared a Resource & Waste Management Plan (RWMP) for the proposed development. The RWMP was prepared in accordance with the National Waste Management Plan for a Circular Economy 2024-2030 and aims to ensure maximum recycling, reuse and recovery of waste with diversion from landfill wherever possible. The RWMP also references the Circular Economy and Miscellaneous Provisions Act 2022, which defines "Circular Economy" for the first time in Irish law.

The RWMP outlines how the principles of the circular economy have been and will be incorporated into the proposed development, from the design stage to the demolition and construction stages.

The design team integrated the RWMP into design workshops in order to prioritise waste reduction and avoidance, through the following approaches:

3.6.1.1 Designing for Prevention, Reuse and Recycling

The design team and client considered the following in the design of the development:

- The potential for any reusable site assets, such as buildings, structures, equipment, materials, soil, etc.
- The potential for refurbishment and refit of existing structures rather than demolition.
- Enabling the optimum recovery of assets on site.

3.6.1.2 Designing for Green Procurement

The design team and contractors have committed to green procurement through innovation in tenders and incentivising tenders to recognise sustainable approaches. The RWMP also suggests that the contractor and subcontractors/suppliers use measures such as 'just in time' delivery and ordering procedures that avoid excessive waste.

3.6.1.3 Designing for Off-Site Construction

Use of off-site manufacturing can significantly reduce residual wastes. Off-site techniques such as modular buildings, pre-cast structural concrete panels, and use of prefabricated elements have all been considered in the design process.

3.6.1.4 Designing for Materials Optimisation During Construction

This includes investigating the use of standardised sizes for certain materials to help reduce the amount of offcuts produced on site, focusing on promotion and development of off-site manufacture.

3.6.1.5 Designing for Flexibility and Deconstruction

Design flexibility has and will be investigated throughout the design process to ensure that where possible products (including buildings) only contain materials that can be recycled and are designed to be easily disassembled.

3.6.1.6 Resource and Waste Management

The RWMP outlines the proposed resource and waste management strategies for the demolition and construction stages, with a focus on reducing, reusing, and recycling waste preferentially.

3.6.2 Operational Stage

AWN Consulting have prepared an Operational Waste Management Plan (OWMP) for the proposed development. The OWMP aims to ensure maximum recycling, reuse, and

recovery of waste, and was prepared in accordance with the current legal and industry standards, including the Galway CDP 2023-2029.

The OWMP contains strategies which will ensure a high level of recycling, reuse, and recovery during the operational phase of the development. All recyclable materials will be segregated at source to reduce waste contractor costs and ensure maximum diversion of materials from landfill, thus contributing to the targets set out in the National Waste Management Plan for a Circular Economy 2024-2030 and ensuring that the development is compliant with the requirements of the Galway CDP and Galway City Council Waste Bye-Laws.

The Architectural Design Statement outlines the reasoning behind selection of building materials and designs. For example, brickwork will form the primary façade, with brick being a time-tested material in the Irish context. Brick is robust and low maintenance, and is resilient to the coastal climate, with minimal upkeep required compared to rendered or clad finishes.

It is also noted that stone cladding, a traditional feature of Galway's architecture, has been omitted from the design. This was a deliberate choice and was done to acknowledge several challenges associated with its use, including its ongoing high maintenance requirements, especially in an exposed coastal setting where salt spray, staining, and erosion would all be heightened. These design choices will result in lower maintenance needs in the operational phase, and will reduce requirements for replacements or repairs.

3.7 How noise and air pollution will be managed across all stages of development from construction through to operation of the building(s).

3.7.1 Construction

Chapter 8 of the Environmental Impact Assessment Report (EIAR) for the proposed development assesses air quality. It was determined that no significant residual effects on air quality are expected either during construction or operation. The EIAR Chapter 8 includes mitigation measures for the protection of air quality and control of dust, which will be put in place by the contractor.

An Outline Construction Environmental Management Plan (CEMP) has been prepared for the proposed development by DNV. The CEMP defines the measures that will be implemented during the construction phase to manage, minimise, or mitigate potential environmental impacts that may arise from the proposed development.

Section 7.3.6 of the CEMP includes measures to control and minimise potential effects of noise and vibration during construction. The appointed contractor will comply with any conditions imposed by Galway City Council and will put in place best practice control measures for control of noise and vibration. The CEMP includes specific noise control measures which will be put in place.

Noise and vibration control inspections and audits will be conducted daily, and where required monitoring will be carried out during critical activities or at times of potential increased noise generation.

Section 7.3.7 of the CEMP includes measures for the control of dust and air quality during construction. The Dust Management Plan in the CEMP will be put in place by the contractor and includes mitigation measures to prevent dust affecting neighbouring properties and pathways.

Section 7.4 of the CEMP includes mitigation measures to control the release of greenhouse gas (GHG) emissions, including the use of renewable energy sources like solar panels to power construction activities, prevention of idling, encouragement of carpooling and sustainable procurement of low carbon materials.

3.7.2 Operation

Wave Dynamics have prepared an Acoustic Design Statement for the proposed development which includes a Noise Impact Assessment for both internal and external noise levels. The report includes recommendations in terms of materials, glazing, and ventilation measures which will act to reduce internal noise to acceptable levels. It is also predicted in the report that sufficient outdoor space with acceptable noise levels will be provided in the development.

3.8 Transport

The Traffic and Transport Assessment (TTA) report prepared for the proposed development confirms that the existing road network can adequately accommodate the worst-case vehicular demands associated with the fully occupied development.

The proposed development has a residential car parking ratio of 0.1, with 37 no. private residential car parking spaces to be provided for the 356 no. apartments. This ratio is in line with the Galway CDP requirements, and follows preplanning discussions which took place between the design team and Galway City Council Roads and Traffic officials[8]. Sufficient cycle parking which is secure, easy to use, and strategically situated around the site is included in the design of the development.

The proposed development is situated in Galway City Centre, with excellent access to non-car modes of transport, including bus, train, and easy walking and cycling access to the city centre. Easy access to these links, the location of the proposed development in close proximity to transport links and amenities, and the proposed car parking ratio will all encourage non-car transport choices for residents.

Appendix L of the TTA is a Travel Plan or Mobility Management Plan, which aims to reduce the demand for car use by increasing the attractiveness and practicality of sustainable transport options for the development. The Travel Plan will be put in place by the property management company once the development is occupied.

[8] Traffic and Transport Assessment Report, by NRB Consulting Engineers (2025)

Appendix O of the TTA is a Public Transport Capacity Assessment. The Capacity Assessment found that the proposed development will generate an increase in public transport demand in the area once operational, which can be fully accommodated on the existing and future improved services in the area without any noticeable effect.

The TTIA shows that the proposed development is excellently sited in terms of sustainable transport options and will encourage non-car modes of transport by way of its location and design. When considering this along with the proposed car parking provision, it is likely that the proposed development will not generate significant additional car trips.

3.9 Policy

The Proposed Development has also been reviewed based on a correlation with regional and local level climate policies which are based on national and broader policies. The Development demonstrates climate action and mitigation concepts specific to several Chapters of the Galway City Development Plan which will make a positive contribution to local and regional sustainable development goals. In particular the proposed development has been developed in line with the vision for climate action as set out in section 2 of the Galway City Development Plan.

- Policy 2.1 circular economy and policy 2.4 sustainable building design and construction through the consideration of sustainable materials and finishes which are resilient to the current and potential future conditions.
- Policy 2.2 climate action through consistency with the broad vision in the Galway City Development Plan, and the landscape design which promotes connection and awareness of climate issues.
- Policy 2.3 renewable energy is not a viable solution for the proposed site. The development does not constrain the ability to achieve the broader aims of this policy in the City Development Plan.

Other specific policy objectives that the proposed development also aligns with include:

- Policy 3.3 Sustainable Neighbourhood Concept
- Policy 4.8 Modal Change: Public Transport
- Policy 5.5 Community Spaces: Greenways, Boreens and Public Rights of Way
- Policy 9.4 Sustainable Urban Drainage Systems

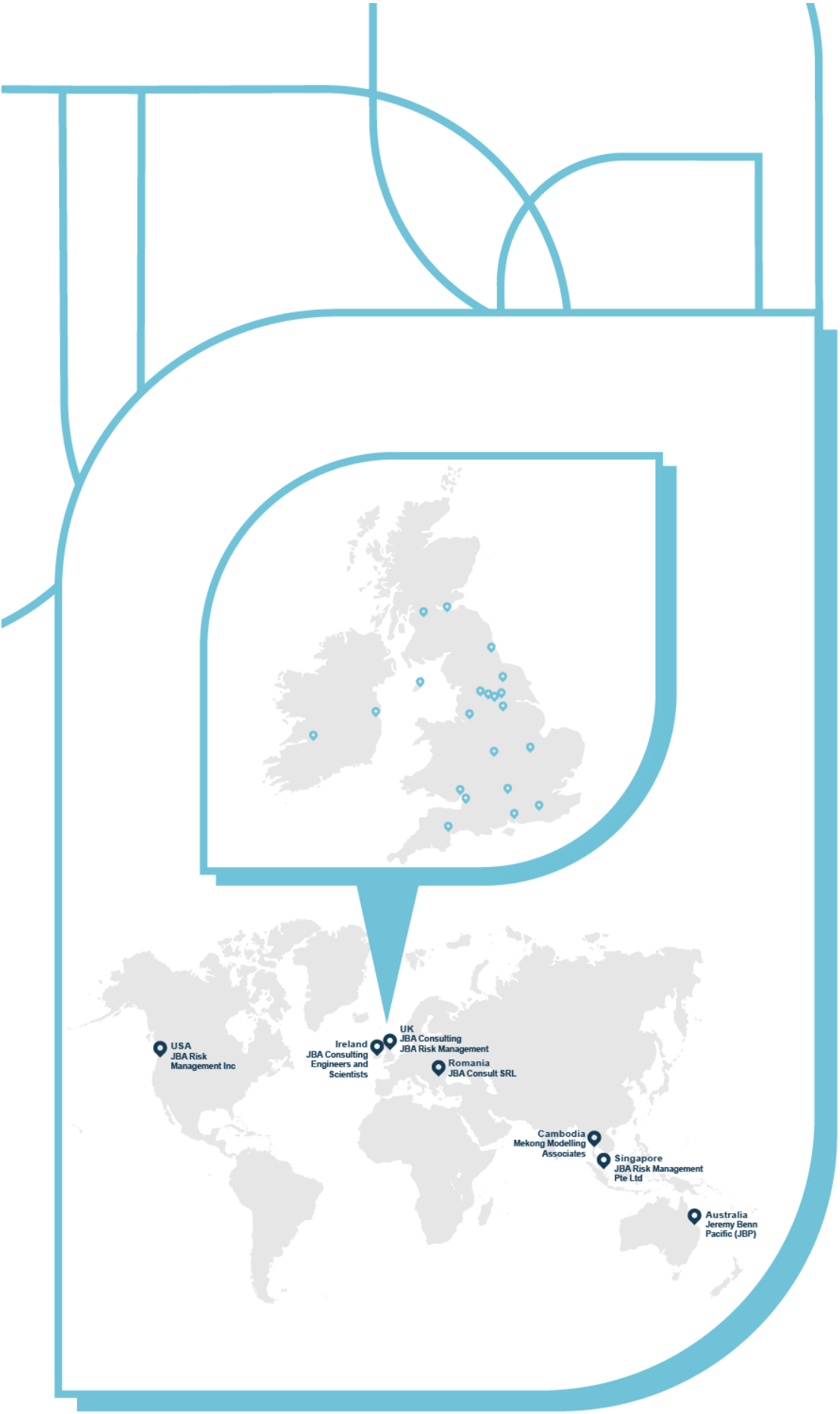
The Climate Action Energy Statement also concluded that the Development meets Nearly Zero Energy Building standards, which are set on the basis of overarching climate and net-zero goals. It is not expected that the development will prove to be a constraint against climate goals.

4 Summary and Conclusion

This report includes an assessment of the impacts of climate change on the Proposed Development and the adaptation or mitigation provision for these impacts in the design of the Proposed Development under the seven key issue areas identified in the Galway City Development Plan 2023-2029. The report summarises findings and recommendations from the following reports:

- Flood Risk Assessment, Tobin Consulting Engineers
- Part L Compliance Report, Axiseng
- Construction Environmental Management Plan, DNV
- Resource & Waste Management Plan, AWN Consulting
- Operational Waste Management Plan, AWN Consulting
- Architectural Design Statement, ALTU Architects
- Traffic and Transport Assessment, NRB Consulting Engineers

It has been determined that the proposed development, as designed, is compliant with the requirements of the Galway CDP, and offers particularly good sustainability positives in terms of transport.



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