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1 INTRODUCTION

This Environmental Impact Assessment Report (EIAR) for the proposed Limerick City Greenway (UL to NTP) has been prepared by Ryan Hanley on behalf of Limerick City and County Council (LCCC) who propose to implement and maintain the project. The EIAR forms an integral part of the applications for consent of the Project, acting as a basis for public consultation and informed comment.

1.1 BRIEF DESCRIPTION OF THE PROPOSED DEVELOPMENT

The Limerick City Greenway (UL to NTP) Project will form an extension to the already constructed Limerick Smarter Travel, Route 2, which involved the upgrade of an existing pathway, 1.5km in length between University of Limerick and the Guinness Bridge along the bank of the River Shannon which connects directly into the city centre.

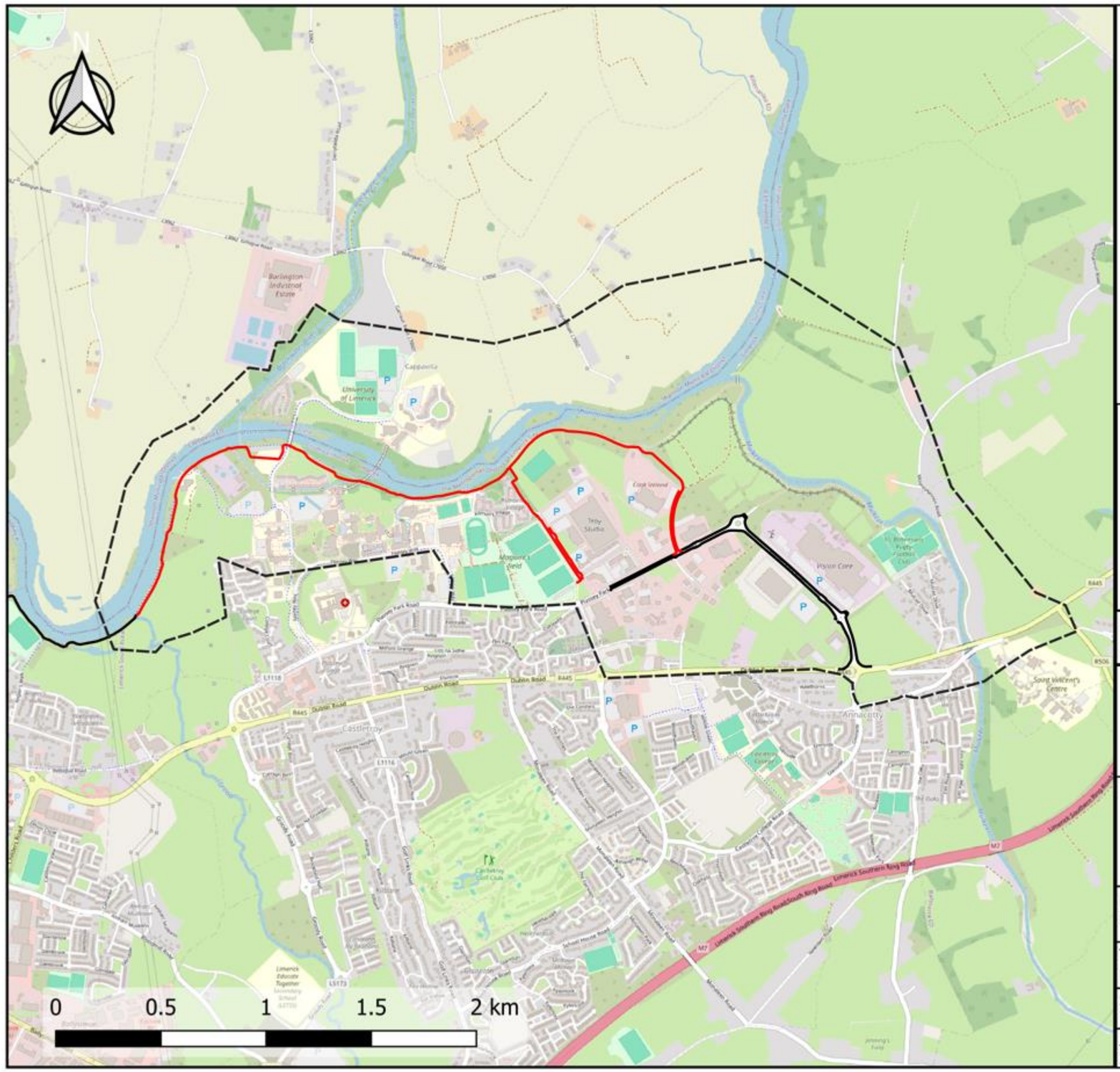
The proposed Greenway route will continue from the existing Limerick Smarter Travel, Route 2 west of the River Groody bridge and extend along an existing section of paved and gravel pathway along the River Shannon, providing for access to and from the University of Limerick (UL) and the National Technology Park (NTP) in Castletroy. The proposed Greenway will connect along University Road and McLaughlan Road to Plassey Park Road.

The proposed works are provided in detail in Chapter 4 of this report and Project drawings included in Appendix A.

1.2 STUDY AREA

The Study Area covers approximately 5.8 km^2 in the Counties of Limerick and Clare encompassing the main UL campus, the NTP, sections of the Dublin Road (R445) and northern banks of the Lower River Shannon, including the UL campus located in Cappavilla, Co. Clare (Figure 1.1).

The Study Area is situated within the Lower Shannon River Catchment, with two main water bodies present including the Lower River Shannon which traverses through the centre of the Study Area and Mulkear River to the east of the Study Area. A small section of the Blackwater (Clare) river is present to the north of the Study Area near the Cappavilla UL campus.



Map Legend

- Proposed Greenway Route
- Existing Active Travel Infrastructure Link
- Study Area
- Project Location

RYAN HANLEY

CLIENT

Comhairle Cathrach & Contae Luimnigh
Limerick City & County Council

PROJECT
Limerick City Greenway

TITLE
Proposed Route Layout

SCALE	DATE	DRAWN	CHECKED	APPROVED
1:25000	11/24	AC	PR	BL

JOB N.	Report Title	REVISION
2535	EIAR	0

Figure 1.1 Location of the Limerick City Greenway Study Area and the associated watercourses

1.3 Strategic Planning and Development Context

This section sets out current European Union (EU), national, regional and where relevant local policy and legislation related to flood management, its place within the planning and development system and how the Limerick City Greenway (UL to NTP) is considered in the context of this policy and legislation.

1.3.1 European Regulations

In June 2021, the European Parliament and Council agreed upon a new funding regulation for the 2021 - 2027 Multiannual Financial Framework (MFF). The new regulation, Regulation (EU) 2021/1058 of the European Parliament and of the Council of 24th of June 2021 concerns two EU Structural Funds which are traditionally the primary sources of EU investments for cycle projects: the European Regional Development Fund (ERDF) and the Cohesion Fund (CF).

Investments under the ERDF should contribute to the development of a comprehensive high-speed digital infrastructure network, and to promoting pollution-free and sustainable multimodal mobility with a focus on public transport, shared mobility, walking and cycling, as a part of the transition to the net-zero carbon economy.

As outlined in Article 3 of this Regulation, policy objectives (PO) which benefit cycling as a mode of transport, include:

- Article 3, 1(b) (viii): PO 2 - promoting sustainable multimodal urban mobility, as part of transition to a net zero carbon economy;
- Article 3, 1(c): PO 3 - a more connected Europe by enhancing mobility;
- Article 3, 1(c) (ii): PO 3 - developing and enhancing sustainable, climate resilient, intelligent, and intermodal national, regional, and local mobility, including improved access to TEN-T (trans-European transport network) and cross-border mobility;

Furthermore, in relation to Annex I of the ERDF regulations it states "*dedicated cycling infrastructure supported*" as one of the output indicators (RCO 58) and the "*annual users of dedicated cycling infrastructure*" as a results indicator (RCO 64) for PO 2.

1.3.2 European Strategies

1.3.2.1 Sustainable and Smart Mobility Strategy

On the 9th of December 2020, the European Commission published its *Sustainable and Smart Mobility Strategy* with the intended outcome to achieve a 90% cut in emissions by 2050 through delivering a "*smart, competitive, safe, accessible and affordable transport system*" in order for the EU to achieve climate neutrality as outlined in the European Green Deal.

The Strategy is structured around three key objectives:

- Objective 1: Sustainable mobility – An irreversible shift to zero-emission mobility;
- Objective 2: Smart mobility - achieving seamless, safe and efficient connectivity; and
- Objective 3: Resilient mobility – a more resilient single European transport area: for inclusive connectivity.

The Strategy identifies a total of 82 initiatives in 10 key areas for action ("flagships"), one of which relates to cycling and cycling infrastructure:

Flagship 3 – Making interurban and urban mobility more sustainable and healthy

- "As set out in the 2030 climate target plan, increasing the modal shares of collective transport, walking and cycling, as well as automated, connected and multimodal mobility will significantly lower pollution and congestion from transport, especially in cities and improve the health and well-being of people".
- "Active transport modes, such as cycling, have seen growth with cities announcing over 2300 km of extra cycling infrastructure. This should be doubled in the next decade towards 5000 km in safe bike lanes".
- "Revising the Urban Mobility Package to promote and support these sustainable and healthy transport modes, the Commission will contribute to the improvement of the current European framework for urban mobility.
- "European policies and financial support should also reflect the importance of urban mobility…" including provisions for "…safe infrastructure for walking and cycling".

1.3.2.2 EU Cycling Strategy

In June 2017, the European Cyclists' Federation (ECF) published the EU Cycling Strategy: Recommendations for Delivering Green Growth and an Effective Mobility in 2030 aimed at increasing cycling and bringing substantial added value to EU policy goals and devised to inspire the EU Commission to develop their own EU Cycling Strategy.

Four objectives are central to this Strategy:

1. Grow cycle use by 50 % at an average across the EU;
2. Halve rates for killed and seriously injured cyclists (in km cycled);
3. Invest €3 billion in cycling in the period 2021 – 27, and €6 billion from 2028 –34.
4. At a qualitative level, it is strongly advised that cycling is treated as an equal partner in the mobility system.

It is important to note that this publication is not the EU Cycling Strategy itself but calls upon the EU's executive branch to include the development of an official EU Cycling Strategy in the Commission Work Programme 2018 or subsequent initiatives. The publication was submitted to the European Commission where it was positively received and to include the cycling strategy as part of the 2018 initiative on multimodality.

1.3.3 National Legislation, Policy and Guidelines

1.3.3.1 National Planning Framework

The National Planning Framework (NPF) is the Government's high-level strategic plan for shaping the future growth and development of Ireland to the year 2040. Various Policy Objectives are outlined within the Report which include:

- National Policy Objective 9 - which refers to the extent to which trips may be made by sustainable modes of travel, i.e. walking, cycling and the scale of planned investment in such;
- National Policy Objective 27 - Ensure the integration of safe and convenient alternatives to the car into the design of our communities, by prioritising walking and cycling accessibility; and

- National Policy Objective 64 - Improve air quality and help prevent people being exposed to unacceptable levels of pollution in our urban and rural areas through integrated land use and spatial planning that supports public transport, walking and cycling as more favourable modes of transport.

The Policies will ensure the delivery of the National Strategic Objectives (NSO) as outlined in the National Development Plan (discussed below in Section 1.3.3.2) including:

- NSO1 Compact Growth - Ensure a transition to a more sustainable modes of travel including walking and cycling;
- NSO4 Sustainable Mobility - Develop a comprehensive network of safe cycling routes in metropolitan areas; and
- NS07 Enhanced Amenities and Heritage - Implementation of planning and transport strategies for urban areas with a major focus on improving walking and cycling routes.

1.3.3.2 National Development Plan 2021 - 2030

As part of Project Ireland 2040, the National Development Plan (NDP) sets out the Government's over-arching investment strategy and budget for the period 2021-2030. It is an ambitious plan that balances the significant demand for public investment across all sectors and regions of Ireland with a major focus on improving the delivery of infrastructure projects. Various National Strategic Outcomes (NSO) are noted within the NDP which target specific goals/objectives, some of which relate to cycling infrastructure.

It is noted within the Climate Action and Environment section of the NDP the need for "travelling by cleaner and greener transport" and a "shift away from the private car to greater use of active travel (walking and cycling) and public transport", which supports NSO4 Sustainable Mobility. Allocations provided under the NDP largely support the development, or protection and renewal, of infrastructure assets such as cycle-tracks. Encouraging people to adopt more sustainable mobility options, particularly cycling and walking, forms a major element of the NDP Review which gives effect to the Programme for Government commitment to focus investment in this area.

NSO2 Enhanced Regional Accessibility seeks to enhance intra-regional accessibility through improving transport links between key urban centres of population and their respective regions. The NDP sets out details of a new National Active Travel Programme which will complement the active travel investments in cities, towns and villages and deliver significant additional walking and cycling infrastructure around the country by 2025. Through the National Active Travel Programme, the government is firmly committed to encouraging the use of walking, cycling and other active travel methods. In 2021, the NTA allocated just over €240 million to active travel infrastructure projects. Over the next 10 years approximately €360 million per annum will be invested in walking and cycling infrastructure in cities, towns, and villages across the country. This investment will help support the delivery of significant levels of new and improved walking and cycling infrastructure.

The National Cycle Network Plan, published by the Department of Transport in 2023 has mapped existing cycling infrastructure in both urban and rural areas, including Greenways, and will serve to inform future planning and project delivery decisions in relation to walking and cycling infrastructure for the remainder of the decade.

1.3.3.3 The National Cycle Network Plan (2023)

Transport Infrastructure Ireland (TII) has worked with key stakeholders to develop a National Cycling Network Plan (NCN) on behalf of the Department of Transport which will be a valuable resource in relation to active travel connectivity around Ireland. The plan, published in 2023, links cities and towns of over 5,000 people with a safe, connected and inviting cycle network. One of the most ambitious and wide-reaching infrastructure plans in the history of the State, the proposed cycle network of approximately 3,500km will connect more than 200 settlements and 2.8m people. The NCN will link to destinations such as transport hubs, centres of education, centres of employment, leisure, and tourist destinations with the intention of facilitating greater cycling and walking amongst students, leisure users, tourists, and commuters alike. The NCN aligns with the NTA's CycleConnects programme of urban and county-level cycle networks, as well as other cycle routes and networks in various stages of development, including the EuroVelo routes, national and regional greenways, and the Strategic Plan for Greenways in Northern Ireland.

The NCN Plan objectives, presented below, were developed to deliver the vision of the NCN, ensure consistency with national and regional policy objectives and provide a framework for assessing network corridor options and the impact of the NCN.

- 1.1: Increase the number of cycle trips by improving the provision of safe and attractive cycle infrastructure.
- 1.2: Enhance and protect local environments and biodiversity (e.g., pollinator plans, green corridors).
- 2.1: Connect to strategic destinations outside of urban areas as appropriate (including centres of education, centres of employment, and leisure destinations).
- 2.2: Support the development of cycling and walking culture in Ireland.
- 3.1: Connect identified urban areas of 5,000+ population and those urban areas listed in the NTA's urban cycle network strategy.
- 3.2: Connect to strategic destinations outside of urban areas as appropriate (including transport hubs, centres of education, centres of employment and, tourist leisure destinations), as appropriate.
- 3.3: Integrate with existing and proposed cycle infrastructure (including greenways, safe routes to schools, the EuroVelo network, Interreg projects), as appropriate.
- 3.4: Integrate with existing and proposed cycle infrastructure in Northern Ireland, as appropriate.
- 4.1: Encourage use of off-road infrastructure, where appropriate.
- 4.2: Where efficient and effective, encourage routes that use 'quiet', low traffic volume roads.
- 4.3: Promote the design of cycle infrastructure that is fully accessible to all users, regardless of age or ability.
- 4.4: Promote the design of cycle infrastructure that meets safety requirements.
- 4.5: Promote the design of cycle infrastructure that provides a safe and secure environment for all users
- 5.1: Propose corridors to maximise the number of users.
- 5.2: Incorporate existing greenways, disused railways, canals, bypassed national roads, regional and local roads, long distance trails, as appropriate.
- 5.3: Maximise the use of publicly owned land, where possible.
- 5.4: Provide a framework to support the targeted investment in associated active travel projects.
- 5.5: Take lessons from best practice internationally in development of national cycle networks, particularly the UK and EU high-cycling countries.
- 5.6: Future-proof cycle route capacity, taking account of population growth and additional demand from modal shift.

1.3.3.4 The National Sustainable Mobility Policy (2022)

The National Sustainable Mobility Policy sets out a strategic framework to 2030 for active travel (walking and cycling) and public transport journeys to help Ireland meet its climate obligations. It is accompanied by an action plan to 2025 which contains actions to improve and expand sustainable mobility options across the country by providing safe, green, accessible, and efficient alternatives to car journeys. It also includes demand management and behavioural change measures to manage daily travel demand more efficiently and to reduce the journeys taken by private cars. The overall vision outlined in the Policy is "to connect people and places with sustainable mobility that is safe, green, accessible and efficient". To this end, the policy is guided by three key principles, which are underpinned by ten high-level goals.

- Principle: Safe and Green Mobility
  - 1. Improve mobility safety.
  - 2. Decarbonise public transport.
  - 3. Expand availability of sustainable mobility in metropolitan areas.
  - 4. Expand availability of sustainable mobility in regional and rural areas.
  - 5. Encourage people to choose sustainable mobility over the private car.
- Principle: People Focused Mobility
  - 6. Take a whole journey approach to mobility, promoting inclusive access for all.
  - 7. Design infrastructure according to Universal Design Principles and the Hierarchy of Road users model.
  - 8. Promote sustainable mobility through research and citizen engagement.
- Principle: Better Integrated Mobility
  - 9. Better integrate land use and transport planning at all levels.
  - 10. Promote smart and integrated mobility through innovative technologies and development of appropriate regulation.

1.3.4 Regional Policy

1.3.4.1 Regional Spatial and Economic Strategy for the Southern Region (2020)

The Regional Spatial and Economic Strategy for the Southern Region (RSES) was published in January 2020 by the Southern Regional Assembly. The RSES is a regional-level framework to ensure improved coordination in planning and development policy across local authority boundaries is underpinned by the National Planning Framework (NPF) and NDP and establishes a broad framework for the way in which our society, environment, economy, and the use of land should evolve.

Within the document reference is made towards "Priorities for the Limerick Shannon Metropolitan Area Transport Strategy" and outlines objectives such as:

- Development of a strategic metropolitan wide cycle network with several high-capacity flagship routes catering for a range of journey purposes.

1.3.5 Local Planning Policy

1.3.5.1 Limerick Development Plan 2022 - 2028

The Limerick Development Plan, which was issued in June 2021, came into effect in July 2022 and sets out a strategic vision intended to guide the sustainable future growth of Limerick to 2028. The Plan is underpinned

by a number of interlinked strategic objectives, three of which relate to the promotion of cycling as a greener means of transport within the county and the importance of connection to open spaces:

- Strategic Objective 2: Transition to an environmentally sustainable carbon neutral economy;
- Strategic Objective 6: Reduce car dependency and promote and facilitate sustainable modes of transport, prioritising walking and cycling; and
- Strategic Objective 8: Protect, enhance and connect areas of natural heritage, green infrastructure and open space.

Furthermore, the Core Strategy Policies outlined in the Plan, particularly "Policy CSP P2 Compact Growth" references the compact growth of Limerick City Metropolitan Area, towns and villages which can be served by walking and cycling networks, to ensure that development proceeds sustainably.

Within the Sustainable Mobility and Transport Section of the Plan, it is noted throughout that walking and cycling are the most sustainable forms of transport, assisting with climate change mitigation and important for promoting healthy communities. Reference is made towards the NPF and RSES ensuring that during the lifetime of the Draft Plan, the Council will strengthen the links between land use and transportation planning and will seek to promote sustainable transport, by providing attractive, inclusive, and connected walking and cycling networks. Policies outlined in the Sustainable Mobility and Transport Section include:

- Policy TR P2 Promotion of Sustainable Patterns of Transport Use - encourage more sustainable patterns of travel and greater use of sustainable forms of transport, including public transport, cycling and walking; and
- Policy TR P3 Sustainable Mobility and Regional Accessibility - It is a policy of the Council to support sustainable mobility, enhanced regional accessibility and connectivity within Limerick, in accordance with the National Strategic Outcomes of the NPF.

A key objective outlined in the Plan includes "Objective TR O14 Walking and Cycling Infrastructure" whereby it is the objective of the Council to improve and provide clear, safe and direct pedestrian linkages, cycle networks and to maintain and expand the pedestrian route network, infrastructure and where possible retrofit cycle and pedestrian routes into the existing urban road network. Additionally, "Objective TR O15 Limerick Cycle Network" states that it is an objective of the Council to implement in full the Cycle Network as outlined in the Limerick Shannon Metropolitan Area Transport Strategy.

The Council will continue the roll out of active travel initiatives across Limerick, including promoting and facilitating safe walking and cycling.

1.3.5.2 Limerick Shannon Metropolitan Area Transport Strategy 2040

The Limerick Shannon Metropolitan Area Transport Strategy (LSMATS) delivers a high-quality, accessible, integrated and more sustainable transport network that supports the role of the Limerick-Shannon Metropolitan Area as the major growth engine of the Mid-West Region. In order to achieve this, several principles are proposed including Principle 03 which sets to prioritise sustainable transport to reduce car dependency.

The LSMATS sets out the Strategy Outcomes which will include:

- Prioritised public transport, walking and cycling in urban areas across the Limerick-Shannon Metropolitan Area; and
- Reduced transport-related emissions through a provision of a cleaner, greener public transport fleet, a modal shift to walking and cycling.

Throughout the LSMA, the need for a prioritisation and expansion of walking and cycling to promote modal shift is highlighted. A key study, the Limerick Metropolitan Cycle Network Study, was referenced which has the vision of developing a consistent, clear, and continuous network of urban and suburban cycle networks throughout the Limerick Metropolitan Area. Objective CC1 is outlined which states the development of a Comprehensive Strategic Cycling Network and to:

- Deliver an integrated, fully connected high-quality cycle network linking all major origins and destinations within the LSMA;
- Develop an Inter-Urban network connecting Limerick City and Metropolitan town centres; and
- Maintain and enhance existing infrastructure to a high standard.

1.3.5.3 Limerick Metropolitan Cycle Network Study

In 2016, Limerick City and County Council in collaboration with the National Transport Authority (NTA) published the Limerick Metropolitan Cycle Network Study in order to direct and prioritise investment in cycle infrastructure. The vision of the Cycle Network Study was to develop a consistent, clear, and continuous network of urban and suburban cycle networks throughout the Limerick Metropolitan Area to ensure cycling becomes a realistic choice as a mode of transport.

Within this report five routes comprising an integrated network of cycle lanes and pedestrian links intended to give greater connectivity to the city centre are included:

- Route 1 – Corbally to Limerick City Centre;
- Route 2 – UL to City Centre along the River Shannon and Canal;
- Route 3 – UL, Castletroy and National Technology Park to City Centre;
- Route 4 – Southill, Ballysimon, Monaleen, and Castletroy to City Centre; and
- Route 5 – Southill and Roxoboro Shopping Centre to City Centre.

This Study highlights the requirements needed in achieving a modal shift to cycling and brings to focus initiatives to encourage a cultural change and acceptance of cycling as the norm in the Limerick Metropolitan Area.

1.4 Legislative Requirements for an Environmental Impact Assessment (EIA)

The European Union Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment was amended by Directive 2014/52/EU (the "EIA Directive") which was transposed into Irish Law by the European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (S.I. No. 296 of 2018) (the "Irish EIA Regulations").

This EIAR complies with the EIA Directive and with the Irish EIA Regulations and will be made available for inspection by the public as part of the pre-planning consultation as required under Section 247 of the Planning and Development Act, 2000 (as amended). This EIAR will be submitted to An Bord Pleanála as part of the Project documentation. The Minister will then carry out an independent assessment of the environmental impacts of the Project to ensure the EIAR is in compliance with national and EU statutory requirements.

Article 5 of the EIA Directive provides where an EIA is required, the developer shall prepare and submit an EIAR. The information to be provided by the developer shall include at least:

(a) a description of the project comprising information on the site, design, size and other relevant features of the project;

(b) a description of the likely significant effects of the project on the environment;

(c) a description of the features of the project and/or measures envisaged in order to avoid, prevent or reduce and, if possible, offset likely significant adverse effects on the environment;

(d) a description of the reasonable alternatives studied by the developer, which are relevant to the project and its specific characteristics, and an indication of the main reasons for the option chosen, taking into account the effects of the project on the environment;

(e) a non-technical summary of the information referred to in points (a) to (d); and (f) any additional information specified in Annex IV relevant to the specific characteristics of a particular project or type of project and to the environmental features likely to be affected.

Ryan Hanley was engaged as environmental consultants on the proposed project and commissioned to prepare this EIAR in accordance with the requirements of the EIA Directive and the Irish EIA Regulations.

The EIAR provides information on the receiving environment and assesses the likely significant effects of the proposed project on it and proposes mitigation measures to avoid or reduce these effects. It then provides an assessment of the residual effects of the Project taking into account the implementation of mitigation. The function of this EIAR is to provide information to allow the competent authority to conduct the EIA of the proposed project.

All elements of the project have been assessed individually, and cumulatively together, and then in combination with other plans and projects as part of this EIAR.

Guidance

The Environmental Protection Agency (EPA) published its 'Guidelines on the Information to be Contained in Environmental Impact Assessment Reports' (EPA, 2022), which are intended to guide practitioners preparing an EIAR and the EIAR complies with these Guidelines.

In preparing this EIAR regard has also been taken of the provisions of the 'Guidelines for Planning Authorities and An Bord Pleanála on Carrying out Environmental Impact Assessment', published by the Department of the Department of Housing, Planning and Local Government (DHPLG) in August 2018.

The European Commission also published a number of guidance documents in December 2017 in relation to Environmental Impact Assessment of Projects (Directive 2011/92/EU as amended by 2014/52/EU) including 'Guidance on Screening' and 'Guidance on the preparation of the Environmental Impact Assessment Report'. Ryan Hanley has prepared the EIAR with in accordance with these guidelines also.

1.5 PURPOSE AND SCOPE OF THE EIAR

The purpose of this EIAR is to enable the competent authority to carry out an assessment of the likely significant effects on the environment of the Limerick City Greenway (UL to NTP) before it is constructed. The EIAR describes the current state of the environment in the vicinity of the proposed development site in an effort to quantify the possible effects, if any, of the construction and operational stages, the recommended mitigation measures and any residual impacts of the proposed development on the environment. It then provides details of the alternatives considered and the full details of all elements and stages of the proposed development. Following this, the environmental impacts of the proposed development are assessed individually, and cumulatively together, and then in combination with other plans and projects. The requirements for the Greenway will continue for the foreseeable future, thus this EIAR does not consider

environmental effects associated with a decommissioning stage of the Project. The assessment process that led to the compilation of this document served to highlight any areas where mitigation measures may be necessary in order to protect the receiving environment from any significant negative effects as a result of the proposed development. Where necessary and appropriate, mitigation measures and prescribed and residual impacts are then assessed.

LCCC's objective is to pursue the most efficient and positive design of the proposed Greenway in order to enable the Project to be incorporated into the receiving environment insofar as possible and to plan for the identified effects so that measures are in place to ensure that any adverse impacts are avoided, reduced, or remedied as appropriate.

1.6 Structure and Content of the EIAR

1.6.1 General Structure

An EIA is a process of examining and assessing the environment in tandem with a proposed development to ensure that all potential environmental impacts are documented and taken into the consideration of the overall formulation of the proposed development inter alia through the design process. This process allows for the creation of a series of steps in the assessment of potential impacts on various elements of the environment. The overall structuring of this EIAR has regard to the information requirements of the Directives and Irish Statutory Regulations. The purpose of the EIAR is to introduce the proposed development, define its location and the extent of works, identify the key environmental issues and receptors in the vicinity, consider the potential impacts of the proposal on these receptors.

This EIAR uses the grouped structure method to describe the existing environment, the potential impacts of the proposed development therein, the proposed mitigation measures and the residual impacts that remain thereafter. An assessment of the alternative options considered along with background information relating to the proposed development, scoping and consultation undertaken and a description of the proposed development are presented in separate sections. The grouped format sections describe the impacts of the proposed development in terms of:

- Population and Human Health;
- Biodiversity;
- Land Use, Soils and Geology;
- Water (hydrology and hydrogeology);
- Air Quality & Climate/ Noise & Vibration;
- Landscape and Visual;
- Cultural Heritage;
- Material Assets (including traffic and transportation), and;
- In combination effects and Interactions of the Foregoing

Each of these factors shall be discussed under the headings "Description of Existing Environment", "Assessment Methodology", "Potential Impacts", "Mitigation" and "Residual Impacts". The EIAR also includes a non-technical summary, which is a condensed and easily comprehensible version of the EIAR document. The non-technical summary is laid out in a similar format to the main EIAR document and comprises a description of the proposed development followed by the existing environment, impacts and mitigation measures presented in the grouped format.

1.6.2 Description of Impacts

As stated in the '*Guidelines on the Information to be contained in Environmental Impact Statements*' (EPA, May 2022), an assessment of the likely significant effects of a proposed development is a statutory requirement of the EIA process. The statutory criteria for the presentation of the characteristics of potential impacts requires that potential significant impacts are described with reference to the extent, magnitude, complexity, probability, duration, frequency, reversibility and trans frontier nature (if applicable) of the impact.

The classification of impacts in this EIAR will follow the definitions provided in the Glossary of Impacts contained in the following guidance documents produced by the Environmental Protection Agency (EPA):

- Guidelines on the Information to be contained in Environmental Impact Assessment Reports – '(EPA 2022).
- 'Advice Notes on Current Practice in the Preparation of Environmental Impact Statements' (EPA, 2003)
- 'Guidelines on the Information to be contained in Environmental Impact Statements' (EPA, 2002)
- Revised Guidelines on the Information to be contained in Environmental Impact Statements – Draft September 2015 '(EPA 2015)
- 'Advice Notes for Preparing Environmental Impact Statements – Draft September 2015' (EPA 2015).

This EIAR has also complied with the publication 'Environmental Impact Assessment of Projects - Guidance on the preparation of the Environmental Impact Assessment Report' (European Commission, 2017).

Table 1.1 presents the glossary of impacts as published in the EPA guidance documents. Standard definitions are provided in this glossary, which permit the evaluation and classification of the quality, significance, extents, probability, duration, and type of impacts associated with a proposed development on the receiving environment. The use of pre-existing standardised terms for the classification of impacts ensures that the EIA employs a systematic approach, which can be replicated across all disciplines covered in the EIAR, as advised in '*Guidelines on the Information to be contained in Environmental Impact Assessment Reports* (EPA, 2022). The consistent application of terminology throughout the EIAR facilitates the assessment of the proposed development on the receiving environment.

Table 1.1 Effect Classification Terminology (EPA, 2022)

Impact Characteristic	Term	Description
Quality	Positive	A change which improves the quality of the environment
	Neutral	No effects or effects that are imperceptible, within normal bounds of variation or within the margin of forecasting error.
	Negative	A change which reduces the quality of the environment
Significance	Imperceptible	An effect capable of measurement but without significant consequences
	Not significant	An effect which causes noticeable changes in the character of the environment but without significant consequences.
	Slight	An effect which causes noticeable changes in the character of the environment without affecting its sensitivities

Impact Characteristic	Term	Description
	Moderate	An effect that alters the character of the environment in a manner consistent with existing and emerging baseline trends
	Significant	An effect, which by its character, magnitude, duration, or intensity alters a sensitive aspect of the environment
	Very significant	An effect which, by its character, magnitude, duration, or intensity significantly alters most of a sensitive aspect of the environment
	Profound	An effect which obliterates sensitive characteristics
Extent & Context	Extent	Describe the size of the area, number of sites and the proportion of a population affected by an effect
	Context	Describe whether the extent, duration, or frequency will conform or contrast with established (baseline) conditions
Probability	Likely	Effects that can reasonably be expected to occur because of the planned project if all mitigation measures are properly implemented
	Unlikely	Effects that can reasonably be expected not to occur because of the planned project if all mitigation measures are properly implemented
Duration and Frequency	Momentary	Effects lasting from seconds to minutes
	Brief	Effects lasting less than a day
	Temporary	Effects lasting less than a year
	Short-term	Effects lasting one to seven years
	Medium-term	Effects lasting seven to fifteen years
	Long-term	Effects lasting fifteen to sixty years
	Permanent	Effect lasting over sixty years
	Reversible	Effects that can be undone, for example through remediation or restoration
	Frequency	Describe how often the effect will occur. (once, rarely, occasionally, frequently, constantly – or hourly, daily, weekly, monthly, annually)
Type	Indirect	Impacts on the environment, which are not a direct result of the project, often produced away from the project site or because of a complex pathway
	Cumulative	The addition of many minor or significant effects, including effects of other projects, to create larger, more significant effects.

Impact Characteristic	Term	Description
	Do Nothing	The environment as it would be in the future should the subject project not be carried out
	Worst Case	The effects arising from a project in the case where mitigation measures substantially fail
	Indeterminable	When the full consequences of a change in the environment cannot be described
	Irreversible	When the character, distinctiveness, diversity, or reproductive capacity of an environment is permanently lost
	Residual	Degree of environmental change that will occur after the proposed mitigation measures have taken effect
	Synergistic	Where the resultant effect is of greater significance than the sum of its constituents

Each impact is described in terms of its quality, extent, duration, significance, and type, where possible. A 'Do-Nothing' impact is also predicted in respect of each environmental theme in the EIAR. Residual impacts are also presented following any impact for which mitigation measures are prescribed. The remaining impact types are presented as required or applicable throughout the EIAR.

1.7 PROJECT TEAM

1.7.1 Protect Team Responsibilities

This EIAR was prepared by Ryan Hanley with expert technical contributions provided by specialists. Ryan Hanley were also appointed as consultant engineers for the design of the Project. The companies and staff listed in Table 1.2 were responsible for completion of the EIAR of the proposed development. Further details regarding project team members are provided below.

Table 1.2 Project Team

Company	Principal Staff Involved in Project	Qualifications & Affiliations	EIAR Input and Biopic
Ryan Hanley, Galway Business Park, Upper Newcastle Rd., Dangan, Galway	Trevor Stafford	MSc Environmental Sustainability – Part Time (2021 – Present) Diploma in Project Management, DBS, 2010 BSc in Environmental Management, University of Wolverhampton, 2004 Diploma in Applied Freshwater and Marine Biology, GMIT 2003 Certificate in Aquaculture, GMIT 2002 MIEMA	Trevor has over 17 years' experience in Environmental Services sector including periods within both the Public and Private Sectors. Trevor is a Senior Ecologist and is responsible for the delivery of environmental and ecological assessments to support a range of proposed developments including greenways, active travel, water, wastewater, utilities and flood relief schemes. Trevor was responsible for production of Chapter 8 Water, and for overseeing other chapters.
	Henry Kenny	BSc (Hons) Environmental Science, National University of Ireland, Galway MSc. Environmental Engineering, Queen's University Belfast	Henry has over 16 years' experience in Environmental Services sector including periods within both the Public and Private Sectors. Henry is currently on Ryan Hanley project teams for Lifford FRS in Co. Donegal, Ballinasloe FRS in Co. Galway, Adare FRS and Athea FRS in Co. Limerick. Henry has extensive field experience in Site Investigation (SI) to inform environmental projects including geoenvironmental logs, soil and water

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			sampling. Henry has also experience in baseline noise, vibration and odour monitoring on transport, industrial and commercial projects. Henry is competent in the preparation, input to and review of technical environmental reports such as AA Screenings, NIS, EIA documents and EIAR Chapters. Henry has been involved in the preparation and organization of recent Public Consultations Events for the Ballinasloe FRS and Adare FRS. He played a key role in the delivery of the Raphoe EIAR in January 2023 which included Appropriate Assessments (AA), an Invasive Species Management Plan (ISMP) and a Construction Environmental Management Plan (CEMP). Henry was responsible for production of Chapter 7 Land use, Soils, Geology, Chapter 9 Air Quality: Noise and Vibration, and for overseeing and review of other chapters.
	Paola Rodolfi	BSc Biology (Marine Vertebrate Biology) Stony Brook University, New York, USA MSc. Environmental Management, Instituto Tecnologico de Buenos Aires, Argentina	Paola has over 10 years of experience in environmental management, preparing EIAR, NIS and other related reports. For EIA reports she has contributed to produce various chapters (population and human health, air quality, climate – ghg emissions calculations for plans and projects) for various types of plans and projects (land and marine planning, renewables, WwTP). Her experience further includes carbon assessment calculations, sustainability reports and GIS analysis tools. Her professional training includes the use of LCA tools for whole life carbon assessments, climate change impacts and carbon costing for projects using GaBi, OneClick LCA, and vulnerability assessments through risk assessment templates and questionnaires, adaptation viewers and open data tools. In addition to the use of other carbon databases and tools such as ERIC (UKEA), TII Carbon Tool, ICE Database, GHG Protocol.

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			Throughout her professional career, she participated in the UN REDD+ project to reduce emissions from deforestation and forest degradation. With Ryan Hanley, Paola has been involved in preparing Environmental Impact Assessment Reports, AA Screening reports, NIS, EIA Screening and Scoping reports for wastewater treatment plants, ICW, marine modelling works, and flood relief schemes. Paola was responsible for assisting in the production and review of Chapter 1 Introduction, Chapter 2 Alternatives, Chapter 5 Human Beings, Population and Human Health, Chapter 9 Air Quality: Noise and Vibration, Chapter 10 Climate, Chapter 12 Material Assets, Chapter 14 Interactions, and Chapter 15 Schedule of Mitigations.
	Breda Quinn	BSc (Hons) Science, Wildlife Biology Institute of Technology, Tralee, Co. Kerry (Now MTU)	Breda has five years' experience in the preparation of technical environmental reports such as Appropriate Assessment Screenings, Natura Impact Statements, EIA Screening and EclA's. Breda is also experienced in preparing and carrying out Winter Bird Surveys, Breeding Bird Surveys, Vantage Point Surveys, Invasive Species Surveys and Habitat Assessment Surveys. Breda was responsible for production of Chapter 6 Biodiversity, the Breeding Birds survey report, Winter Birds survey report, and the Invasive Species Management Plan (ISMP).

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	Angela Wallace	B.A. (Hons) in Archaeology & English, NUIG M.Sc. Science of Archaeological Materials, UCL Member Institute of Archaeologists of Ireland 2000-present. Member Federation of Archaeological Managers & Employers (FAME) 2020-present.	Angela is a senior archaeologist with 25 years of experience in all aspects of archaeology relating to planning and development, assessment, evaluation, test-excavation, excavation, post-excavation, and report production. Her work to date has involved all aspects of Archaeology on both infrastructural projects and private developments from design to construction stages. Prior to working for Ryan-Hanley, Angela founded her own archaeological consultancy in 2008; Atlantic Archaeology which is based in Enniscrone, Co. Sligo. Her successful practice has and continues to deliver archaeological elements on many small and large-scale projects countrywide. Angela also has experience on various community heritage and outreach projects. She has built up experience in developing effective, positive and engaging public communication strategies for archaeological projects. Angela is licensed by the National Monuments Service to undertake archaeological monitoring, testing and direct excavations in the Republic of Ireland. Angela has held over 100 licences on various projects from 1999-present. Angela was responsible for the completion of Chapter 12 Cultural Heritage.

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	Brendan Larkin	BA, BAI (Hons) Civil, Structural & Environmental Engineering, Trinity College Dublin (1998-2002) Masters of Business Administration (MBA, Distinction), Manchester Business School, The University of Manchester (2016) Chartered Engineer (CEng), Engineers Ireland (2011)	Brendan is Ryan Hanley's Lead Designer and Project Manager for the Limerick City Greenway (UL to NTP) project. Brendan has 21 years' experience in in the design, project management and construction stage supervision of water and wastewater engineering, greenways and cycle lanes, urban spaces, environmental and construction projects. Brendan was a contributor to Chapter 1 Introduction, Chapter 2 Alternatives, Chapter 3 Background, Chapter 4 Description, Chapter 13 Material Assets, and for overseeing production of the EIA report.
	Grace Kilbane	BSc (Hons) Science, National University of Ireland, Galway MSc (Hons) Ecological Management and Conservation Biology, Queen's University Belfast Associate Membership of the Chartered Institute of Ecology and Environmental Management (ACIEEM)	Grace has 4 years' experience in the preparation of technical environmental reports such as Appropriate Assessment Screenings, Natura Impact Statements, Environmental Impact Assessment documents and EIAR Chapters. Grace has been involved in the preparation of Constraints Reports, Public Consultations and other documents associated with the Environmental Impact Assessment process for several flood relief schemes including Lifford, The Neale and Ballinasloe. Grace was responsible for producing the EIA Scoping, early drafts of the AA Screening report, early drafts of various chapters in this EIA report, and the early draft of the Invasive Species Management Plan (ISMP).

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	Dr. Kathryn Carney	BE (Hons), Bachelor of Engineering (Civil), National University of Ireland Galway PhD Civil Engineering, National University of Ireland Galway Member of Engineers Ireland MIEI	Kathryn is a civil engineer with 9 years' post graduate experience in the field of civil and environmental engineering and has been responsible for the preparation and review of EIS/ EIAR chapters for several flood relief schemes including the Raphoe (Donegal), River Deel (Crossmolina), Blackpool (Cork) and Bandon (Addendum). Kathryn was involved in writing early drafts of various chapters in this EIAR in conjunction with Grace Kilbane.
	Damien McAndrew	Honours Bachelor Degree in Environmental Science, ATU Sligo 2020	Damien is an Environmental Scientist with over 3 years' experience working in the area of ecology. Damien is a Member of Bat Conservation Ireland and has >30 nights bat survey experience in dusk emergence/dawn re-entry surveys, with a demonstrated history in working on bat-sensitive projects. This includes Appropriate Assessment, Ecological Impact Assessment, Ecological Clerk of Works, and derogation licence applications on multiple demolition/construction projects throughout Ireland, along with Preliminary Roost Assessments for bat suitability, and the preparation of Toolbox Talks for Operations Staff in the event of encountering a bat during works. Damien is familiar with a range of software for Irish bat species identification and behavioural analysis. Damien has a demonstrated history working on Environmental Assessments for public and private tenders which includes reporting for Appropriate Assessments, Local Area Plans, Strategic Environmental Assessments, Flood Risk Assessments, Ecological Impact Assessments, and Invasive Species Reporting.

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			Damien carried out Bat Surveys for this project which are detailed in Chapter 6 Biodiversity.
	John Olney	BA (Hons) Archaeology and English, National University of Ireland Galway	John is Senior Archaeologist with over 18 years' experience in all aspects of field archaeology, assessment, survey, and report production. He has extensive experience of research through to excavation on both infrastructural projects and private developments. His work involves screening, scoping, and compiling Cultural Heritage chapters for EIAR, Archaeological Impact Assessment, Landscape & Visual Impact Assessment, Desk Based Assessments, and report writing to publication standards. He has extensive experience of Built Heritage Assessment and mitigation design across a range of projects. John was responsible for the early drafts of Chapter 12 Cultural Heritage and Chapter 13 Material Assets.
	Sarah Nolan	BSc. (Hons) Earth and Ocean Sciences, National University of Ireland, Galway MEngSc. Water, Waste and Environmental Engineering, University College Dublin	Sarah has 4 years' experience in the environmental sector including marine data management. Sarah also has experience in the production of Environmental Impact Assessment Reports (EIAR) for aquaculture sites in the west of Ireland. Within Ryan Hanley, Sarah has technical report writing experience in Appropriate Assessment (AA) Screening Reports, EIA Screening Reports, Construction Environmental Management Plans (CEMP). Sarah was responsible for contributing to Chapter 5 Human Beings, Population & Human Health, and Chapter 6 Biodiversity.

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Cunnane Stratton Reynolds - Landscape Planning and Design. 3 Molesworth Place, Dublin 2, D02 EP97	Keith Mitchell	M.A Hons (Landscape Architecture) Member of the Irish Landscape Institute Chartered Membership of The Landscape Institute (UK) Director Landscape Architect at CRS	Keith Mitchell is a Chartered Landscape Architect who trained in Scotland & the USA. He has 20 years professional experience in Landscape & Urban Design. His extensive experience in the field of Environmental Impact Assessment has focused on 'Landscape and Visual Impact Assessment', which he has carried out for a wide variety of development types. In addition, Keith is also a qualified Arborist who regularly undertakes tree surveys for private and public sector clients. Keith carried out an arborist survey for this project and worked closely with Evelyn Sikora during the production of Chapter 11 Landscape and Visual Impact Assessment.
	Evelyn Sikora	BA Landscape Architecture, MA planning and Sustainable Development (UCC) Member of the Irish Landscape Institute (MILI). Senior Landscape Planner at CRS	Evelyn specialises in Landscape and Visual Assessment and has experience in a range of projects, including for Strategic Infrastructure projects, throughout Ireland. These include wind and solar farms, road schemes, flood relief projects, telecommunications and infrastructure, quarries, residential and commercial developments, in both rural and urban contexts. She also has experience in assessing landscape character as part of Landscape and Visual Assessment work, as well as experience in project management of Environmental Impact Assessment Reports. Evelyn produced Chapter 11 Landscape and Visual Impact Assessment in conjunction with Keith Mitchell.

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Delichon Ecology	Eamonn Delaney	BSc, MSc, MCIEEM Cecol	Eamonn has 15 years consultancy experience based in Co. Galway. He is a Full and Chartered member of the Chartered Institute of Ecology and Environmental Management (CIEEM) specialising in ecological field survey work and assessment (avifauna, terrestrial mammals, flora, habitat survey and classification) and in the interpretation and implementation of Irish and EU legislation relating to wildlife, biodiversity, and environmental planning. He has extensive experience in the delivery of Appropriate Assessments, Ecological Impact Assessments and Environmental Impact Assessment biodiversity chapters for a range of project types including transport infrastructure, water infrastructure, renewable energy, recreation and amenity, residential and commercial development. Eamonn undertook winter and breeding bird surveys for this project and wrote the reports that were considered in Chapter 6 Biodiversity of this EIAR.
O'Donnell Environmental	Tom O'Donnell	BSc (Hons) MSc CEnv MCIEEM	Tom is a Chartered Environmentalist with over 15 years professional experience in Ireland, the UK, and New Zealand. His experience includes involvement from the Planning Process by undertaking ecological surveys and reporting such as Ecological Impact Assessment Reports (EclA), Appropriate Assessment Screening Reports, Natura Impact Statement Reports and the Biodiversity chapters of Environmental Impact Assessment Reports (EIAR). Tom undertook a bat survey for this project and delivered a bat survey report that was included in Chapter 6 Biodiversity of this EIAR.

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APEM Ltd	Dr. Alex Seeney	PhD University of Stirling MSc Freshwater and Coastal Sciences, Queen Mary University of London	Principal Fisheries Scientist at APEM. Alex completed the first draft of Chapter 8 Water.
	Dr. Lauren Vickers	PhD Fisheries Science, University of Hull BSc Aquatic Zoology, University of Hull CEnv, MIFM	Associate Director (Fisheries Scientist) at APEM. Lauren contributed to the first draft of Chapter 8 Water.

1.8 PROJECT CONSTRAINTS

No specific constraints have been identified as limiting the assessment of likely significant impacts detailed in this EIAR. Where data limitations have been encountered these are described within the individual chapters.

1.9 REFERENCES

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