AtkinsRéalis

Environmental Impact Assessment Report (EIAR) Volume 2 – Chapter 6 – Population and Human Health

Uisce Éireann

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0089328DG0005

BALLINA AND LOUGH TALT WATER SUPPLY UPGRADE

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Contents

Abbreviations **6-i**

Glossary **6-ii**

6. Population and Human Health **6-1**

6.1 Introduction 6-1

6.2 Legislation and Policy Context 6-1

6.3 Study Assessment and Methodology 6-7
6.3.1 Guidance 6-7
6.3.2 Cross referencing 6-8
6.3.3 Population groups 6-8
6.3.4 Identification of human receptors 6-8
6.3.5 Study Area 6-9
6.3.6 Desktop Study 6-11
6.3.7 Surveys 6-11
6.3.8 Data Limitations 6-11
6.3.9 Determining Effect Significance 6-11

6.4 Receiving Environment 6-15
6.4.1 The Proposed Development 6-15
6.4.2 Establishing the Population Profile 6-17
6.4.3 Population Baseline 6-19
6.4.4 Human Health 6-26
6.4.5 Wider or Vulnerable Groups 6-38

6.5 Potential Impact of the Proposed Development 6-41
6.5.1 Do Nothing Scenario 6-52
6.5.2 Construction Phase 6-52
6.5.3 Operation Phase 6-66

6.6 Mitigation Measures 6-70

6.7 Cumulative and Interactive Impacts 6-70
6.7.1 Cumulative Impact Assessment 6-70
6.7.2 Interactions 6-73

6.8 Residual Effects 6-76

6.9 Monitoring Requirements 6-77

6.10 References 6-78

Tables

Table 6-1 — Planning policy, legislation, technical guidance and standards 6-1

Table 6-2 — Criteria for determining the sensitivity of physical and human receptors to changes to wider health determinants 6-12

Table 6-3 — Criteria for assessing health magnitude of impact 6-13

Table 6-4 — EIA significance matrix for determining health effects (source IEMA, 2022) 6-13
Table 6-5 — Significance conclusion and reasoning related to public health (source IEMA, 2022)....6-14
Table 6-6 — Census Population Data 6-21
Table 6-7 — Population by Age....6-22
Table 6-8 — Agricultural Structure of the Study Area in 2020 6-23
Table 6-9 — Population aged 5 years and over by means of travel to work, school or college 6-25
Table 6-10 — General Health, 2022....6-26
Table 6-11 — Pobal HP Deprivation Indices (Pobal, 2022) 6-27
Table 6-12 — Housing (CSO, 2022) 6-28
Table 6-13 — Housing stock and occupancy status of permanent dwellings by electoral division (CSO, 2022) 6-28
Table 6-14 — Education Figures (CSO, 2022)....6-30
Table 6-15 — Population aged 15 and over labour force....6-31
Table 6-16 — Receptors within Study Area 6-34
Table 6-17 — Wider and Vulnerable Groups 6-39
Table 6-18 — Scoping Decision 6-42
Table 6-19 — Health receptor sensitivity to health determinants....6-51
Table 6-20 — Construction Impact Assessment 6-57
Table 6-21 — Operation Impact Assessment....6-69
Table 6-22 — Estimated work force numbers for cumulative projects 6-71
Table 6-23 — Interactions between Environmental Aspects of the Proposed Development....6-74

Figures

Figure 6-1 — Study Area for Population and Human Health Assessment....6-10
Figure 6-2 — Overview of the Proposed Development....6-16
Figure 6-3 — Electoral Divisions within the study area 6-18
Figure 6-4 — Lough Talt Regional Water Supply Area 6-20
Figure 6-5 — Receptors Map 6-36

Abbreviations

Abbreviation	Term
AADT	Average Annual Daily Traffic
BPS	Booster Pumping Station
BPT	Break Pressure Tank
CCRA	Climate Change Risk Assessment
CEMP	Construction Environmental Management Plan
CSO	Central statistics Office
CWTMP	Construction Works Traffic Management Plan
ED	Electoral Division
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EPA	Environmental Protection Agency
ESRI	Economic and Social Research Institute
EU	European Union
GHG	Greenhouse Gas
HSA	Health and Safety Authority
HDV	Heavy Duty Vehicle
HGV	Heavy Goods Vehicle
HIA	Health Impact Assessment
IEMA	Institute of Environmental Management and Assessment
ISEP	Institute of Sustainability and Environmental Professionals
NPF	National Planning Framework
pNHA	Proposed Natural Heritage Area
CWPTMP	Construction Works Preliminary Traffic Management Plan
RWI&PS	Raw Water Intake and Pumping Station
SAC	Special Area of Conservation
SPA	Special Protection Area
TII	Transport Infrastructure Ireland
VMS	Variable Message Sign
WFD	Water Framework Directive
WHO	World Health Organisation
WTP	Water Treatment Plant

Glossary

Term	Meaning
Vulnerable Group	A group of the population sensitive to changes in wider determinants of health i.e. physical activity, in a given context. Can include groups such as ethnic minorities, people with disabilities, people who are homeless, people living in poverty, those struggling with addiction and substance abuse, and isolated older people (IEMA, 2022).
Wider determinants of health	Biological, behavioural, socio-economic, cultural or environmental factors which contribute to the health status of individuals or populations (IEMA, 2022).

6. Population and Human Health

6.1 Introduction

This Chapter of the Environmental Impact Assessment Report (EIAR) assesses the likely significant effects of the proposed Ballina and Lough Talt Water Supply Upgrade (the Proposed Development) on the impacted population. This Chapter also summarises the regulatory and policy framework related to Population and Human Health. It describes the methods used to assess the identified impacts, the existing baseline conditions, combines impact magnitude with sensitivities to derive an 'effect significance' as proposed in IEMA guidance. It also looks at the proposed mitigation measures required to prevent, reduce or offset any significant adverse impacts and the anticipated likely residual impacts after mitigation measures have been applied.

6.2 Legislation and Policy Context

This assessment has been undertaken with consideration of the requirements of key legislative and policy documents, relevant legislation that were considered during the assessment process for this project are as follows:

- Planning and Development Regulations 2001 (as amended);
- Planning and Development Act, 2000 (as amended);
- Planning and Development Act, 2024 (as amended);
- Guidelines on the information to be contained in Environmental Impact Assessment Reports. Environmental Protection Agency (EPA), 2022;
- European Union (EU) Environmental Impact Assessment (EIA) Directive 2011/92/EU as amended by Directive 2014/52/EU (hereafter referred to as the "EIA Directive");
- European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018 (hereafter referred to as the "EIA Regulations"):
  - Article 3(1) of the EIA Directive outlines that 'The environmental impact assessment shall identify, describe and assess in an appropriate manner, in the light of each individual case, the direct and indirect significant effects of a project on the following factors: a) population and human health'. Schedule 6 of the EIA Regulations includes a requirement that the EIA must identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of a proposed development on Population and Human Health; and
- The EIA Regulations 2018 (Government of Ireland 2018).

A summary of the planning policy, legislation, technical guidance and standards relevant to Population and Human Health is provided below in Table 6-1.

Table 6-1 — Planning policy, legislation, technical guidance and standards

Document Title	Description / Relevance
Policy	
Project Ireland 2040 National Planning Framework (NPF), April 2025	The National Planning Framework (NPF) is the long-term strategy for strategic planning and sustainable development up to 2040. The NPF was originally published in February 2018 and the first revision was adopted in April 2025. The revised NPF seeks to plan for population growth which is expected to grow by one million between 2022 and 2040.

Document Title	Description / Relevance
	The Site is located within the Northern and Western Regional Assembly Area. Between 2022 and 2040, the NPF seeks to target growth in the region with aims to grow the population by approximately 180,000 people. Chapter 6 of the NPF is focused on People, Homes and Communities and sets objectives in relation to 'Healthy Communities', 'Diverse and Inclusive Ireland', and 'Housing': a. National Policy Objective 36 – seeks to support the objectives of public health policy including the Healthy Ireland Framework and the National Activity Plan through integrating such policies with planning policy. b. National Policy Objective 37 – seeks to prioritise walking and cycling accessibility to existing and proposed developments, and integrate physical activity for all ages by integrating safe and convenient alternatives to the car into the design of communities. c. National Policy Objective 38 – seeks to plan for a more diverse and socially inclusive society that targets equality of opportunity and a better quality of life for all citizens, through improved integration and greater accessibility in the delivery of sustainable communities and the provision of associated services. d. National Policy Objective 40 – aims to develop local planning, housing and health facilities and services, transport/ accessibility and leisure policies with a focus on meeting the needs and opportunities of an ageing population. e. National Policy Objective 43 – Prioritise the provision of new homes at locations that can support sustainable development and at an appropriate scale of provision relative to location. Other relevant National Policy Objectives include: f. 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. g. National Policy Objective 93 – seeks to improve air quality and to prevent people being exposed to unacceptable levels of pollution in urban and rural areas through integrated land use and spatial planning. h. National Policy Objective 94 – seeks to promote the pro-active management of noise where it is likely to have significant adverse impacts on health and quality of life. Chapter 6, Healthy Communities states that "*decisions made regarding land use and the built environment, including transportation, affect these health risks in a variety of ways, for example through influencing air and water quality, traffic safety, opportunities for physical activity and social interactions as well as access to workplace, education, healthcare and other facilities and services such as food and alcohol outlets*".
Project Ireland 2040: The National Development Plan 2021-2030	This plan sets out the Government's over-arching investment strategy and budget for the period 2021-2030. ▪ Chapter 15 focuses on access to quality childcare, education and health Services. The plan sets out several strategic investment priorities including

Document Title	Description / Relevance
	health service capacity, the national cancer strategy, primary care centre programme, enhanced community care, social care for older people, disability services, mental health projects, national maternity strategy as well as paediatric health care services. ▪ Chapter 14 focuses on the Sustainable Management of Water and Other Environmental Resources. It states how the NPF highlights the centrality of our sustainable water resources to the implementation of the NPF to underpin our environmental and economic well-being into the future.
Healthy Ireland, 2013	A Government programme to bring about good health, access to services, healthy environments, and the promotion of resilience and to ensure that people can enjoy their physical and mental, health and wellbeing. The programme includes 18 policies targeting different health priorities for the country, these include: a. Strategic Action Plan b. Healthy Ireland Framework c. Healthy Workplace Framework d. Healthy Campus Framework e. Physical Activity f. Obesity g. Smoking h. Alcohol i. Sexual health j. Skin Cancer k. Vitamin D l. Folic Acid m. Nutrition Guidelines for Food Parcels n. The Healthy Ireland Survey o. Healthy Ireland Outcomes Framework p. Mental Health Promotion Plan q. Sláintecare Healthy Communities r. Period Poverty
Healthy Ireland Framework 2013 - 2025	The Healthy Ireland Framework is based on a vision '*A Healthy Ireland, where everyone can enjoy physical and mental health and wellbeing to their full potential, where wellbeing is valued and supported at every level of society and is everyone's responsibility'.* The framework sets four goals: a. Increase the proportion of people who are healthy at all stages of life b. Reduce health inequalities c. Protect the public from threats to health and wellbeing d. Create an environment where every individual and sector of society can play their part in achieving a healthy Ireland.
Northern and Western Regional Assembly	The strategy sets out how communities should plan for additional population and employment growth. It sets a number of Growth Ambitions, Growth Ambition 4: Quality of Life – Inclusive Region. It highlights that strengthening local economies,

Document Title	Description / Relevance
Regional Spatial and Economic Strategy 2020-2032	meeting people's social needs and addressing problems of poverty and social exclusion are central to building sustainable communities. The strategy adopts an approach which embraces an inclusive approach to development and focuses on the aims to integrate economic growth through 'People, Place and Resilience'. Policies driving the inclusive growth focus on: a. Talent and education b. Healthy Places c. Age Friendly d. Lifelong Learning e. Housing and Childcare
Mayo County Development Plan 2022–2028	The Mayo County Development Plan 2022–2028 sets out the roadmap for the overall proper planning and sustainable development of County Mayo over the plan period. The plan supports and manages the physical, economic and social development of the County. ▪ Chapter 7: Infrastructure highlights the strategic aim "to protect, improve and provide water, wastewater, surface water and flood alleviation services throughout the county, required to support and enhance the key aims of best place to live, work, visit and invest and facilitate the transition to a low carbon and climate resilient society". ▪ Chapter 8: Sustainable Communities " The strategic aim of this chapter is to develop and support vibrant sustainable communities in Mayo where people can live, work and enjoy access to a wide range of community, health, educational facilities and amenities, suitable to all ages and needs, in both urban and rural areas, thereby supporting a high quality of life for all to enjoy."
Sligo County Development Plan 2024-2030	The Sligo County Development Plan 2024–2030 serves as the blueprint for development in County Sligo, the County Development Plan is the overarching strategic framework document for sustainable development in spatial, economic, social and environmental terms for the county. ▪ Chapter 27 – Community and Social Infrastructure outlines how "access to social and community infrastructure is essential to well-being, social inclusion and the creation of sustainable communities." ▪ Chapter 30 – Water Infrastructure states that "The sustainable growth of County Sligo is dependent on the satisfactory delivery and management of public and private water infrastructure. Furthermore, this infrastructure needs to be provided in a manner that protects public health and is environmentally appropriate and economically effective. It is envisaged that, subject to the necessary upgrades being carried out, there will be adequate capacity to meet the projected increase in the population of County Sligo up to 2030 and beyond."
Ballina Local Area Plan 2024-2030	The Ballina Local Area Plan 2024-2030 sets out an overall strategy for the proper planning and sustainable development of the town of Ballina. ▪ Chapter 6 Housing and Sustainable Communities aims to facilitate and deliver liveable, high-quality, nearly zero-energy, integrated residential development that provides for an appropriate demographic mix in tandem with the delivery of good social and physical infrastructure to support the development of vibrant and diverse communities. ▪ Chapter 10 Infrastructure and Environmental Services aims to phase future growth in line with the capacity of supporting physical infrastructure and to

Document Title	Description / Relevance
	ensure it occurs in accordance with the principles of proper planning and sustainable development. The plan dictates that the availability of high-quality physical infrastructure networks and environmental services is critical to securing investment, creating sustainable and attractive places, ensuring health and well-being while also safeguarding the environment. Increased water security is critical to facilitate the growth of Ballina.
Water Action Plan 2024: A River Basin Management Plan for Ireland 2022-2027	This plan sets out the measures that are necessary to protect and restore water quality in Ireland, detailing a new approach to protect and restore its rivers, lakes, estuaries and coastal waters over the third cycle of the EU Water Framework Directive (WFD). The overall aim of the plan is to ensure that Ireland's natural waters are sustainably managed and that freshwater resources are protected, to maintain and improve Ireland's water environment. Some of the most significant developments under this Plan include continued investment in wastewater infrastructure of over €2.3 billion over the period 2020 – 2024 by Uisce Éireann. A measure set out in the plan includes: ▪ A National Hydromorphology Programme is being established. The Programme will be supported by a Hydromorphology Expert Group and is intended to facilitate the implementation of Water Framework Directive (WFD) objectives relating to the control of pressures on hydromorphology.
Guidance	
Health Impact Assessment Guidance: A Manual, 2021	Guidance for Ireland and Northern Ireland incorporating recent developments and best practice in Health Impact Assessment. The guidance provides guidance on definitions and determinants of health, and health inequalities. It also provides guidance on undertaking assessments and the full process of screening, through to evaluation.
Health Impact Ireland: Institute of Public Health, 2021	Health Impact Assessment (HIA) is a process used to determine the impact of proposed policies, laws, programmes or plans on the health of communities to ensure they are more inclusive, more equitable, and more sustainable for everyone. The HIA process can be used at national, regional or local level and supports government strategies in Ireland and Northern Ireland to improve population health and reduce health inequalities. The Institute launched the fourth edition of HIA Guidance for Ireland and Northern Ireland, incorporating the most recent developments and best practice in the field. The updated HIA Guidance is endorsed by the International Association for Impact Assessment and by the European Public Health Association. HIA can be used by policy and decision-makers in government, statutory agencies, community groups and voluntary organisations to ensure new proposals reduce any health risks and promote health opportunities for specific groups as well as the wider community.
Determining Significance for Human Health in EIA (IEMA) 2022	Published in November 2022, this guidance covers the consideration of health as a topic in EIAR. It presents a framework that supports a proportionate approach that can apply to all scales of EIA. As noted in this guidance, it is applicable to development schemes within Ireland.
Effective Scoping of Human Health in EIA (IEMA), 2022	Published in November 2022, this guidance covers the consideration of health as a topic in EIA. It presents a framework that supports a proportionate approach that can apply to all scales of EIA. As noted in this guidance, it is applicable to development schemes within Ireland and is aimed to aid the determination of the scope of the human health chapter of an EIA.

Document Title	Description / Relevance
	It aims to support the determination of the scope of the human health EIA chapter.
Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (2018)[1]	These Guidelines are issued to planning authorities and An Coimisiún Pleanála (the Coimisiún) under section 28 of the Planning and Development Act 2000, as amended (the Act), and both are required to have regard to the Guidelines in the performance of their functions under the Act. Paragraph 4.16 outlines that consideration of human health effects resulting from the construction and operation of a project should focus on health issues arising in the context of other environmental factors listed in Article 3 of the Directive/ Section 171A of the Act, namely: ▪ Population ▪ Biodiversity, with particular attention to protected species and habitats ▪ Land, soil, water, air and climate ▪ Material assets, cultural heritage and the landscape ▪ Interaction between the above factors
Guidelines on the information to be contained in Environmental Impact Assessment Reports, Environmental Protection Agency (EPA), 2022	These guidelines set out what information needs to be contained within an EIAR as well as the methods used in preparing it. This guidance details the process of preparing an EIAR.

Further to the reference to Table 6-1 in the EPA Guidelines the following points are noted:

- Guidelines on the information to be contained in EIAR, Environmental Protection Agency (EPA) 2022, hereafter referred to as the EPA Guidelines 2022, highlights the amendments to Article 3(1) of amended European Union (EU) Environmental Impact Assessment (EIA) Directive 2011/92/EU as amended by Directive 2014/52/EU (the "EIA Directive") which states that:

  "*The environmental impact assessment shall identify, describe and assess in an appropriate manner, in light of each individual case, the direct and indirect significant effects of a project on the following factors: a) population and human health; […]"*
- The EPA Guidelines 2022 state that:

  "in an EIAR, the assessment of impacts on population and human health should refer to the assessments of those factors under which human health effects might occur, as addressed elsewhere in this EIAR e.g. under the environmental factors of air, water, soil etc"
- Moreover, Annex IV, paragraph 5(d) of the Guidelines for Planning Authorities and An Coimisiún Pleanála on carrying out EIA (2018) requires an EIAR to contain:

  "A description of the likely significant effects of the project on the environment resulting from, inter alia, "the risks to human health"
- When outlining the scope of environmental factors covered by the EIA Directive within Guidance on the Preparation of the EIAR (European Commission, 2017), "population and human health" is defined as follows:

  "Human health is a very broad factor that would be highly Project dependent. The notion of human health should be considered in the context of the other factors in Article 3(1) of the EIA Directive and thus environmentally related health issues (such as health effects caused by the release of toxic substances to the environment, health risks arising from major hazards associated with the Project, effects caused by

[1] Department of Housing, Planning and Local Government, 2018. https://assets.gov.ie/static/documents/guidelines-for-planning-authorities-and-an-bord-pleanala-on-carrying-out-environmental.pdf

changes in disease vectors caused by the Project, changes in living conditions, effects on vulnerable groups, exposure to traffic noise or air pollutants) are obvious aspects to study. In addition, these would concern the commissioning, operation, and decommissioning of a Project in relation to workers on the Project and surrounding population."

6.3 Study Assessment and Methodology

Despite the requirement to consider 'population and human health' amongst the other environmental topics for assessment the Planning and Development Regulations 2001, as amended (Part 10, Environmental Impact Assessment) do not establish the way in which this is to be addressed and there is no prescribed EIA definition for 'population and human health'.

6.3.1 Guidance

Using professional judgement and best practice guidance, the assessment is based upon the Institute of Environmental Management and Assessment (IEMA[2]) guidance, in particular, their guide to 'Effective Scoping of Human Health (2022) and their guide to 'Determining Significance for Human Health in Environmental Impact Assessment'[3] (2022). These publications are applicable to Ireland and have been developed by an IEMA Working Group that includes representation from the Institute of Public Health (Ireland), subsequent to (and making reference to) a wide range of other pertinent guidance documents including from the World Health Organisation (WHO), European Commission, International Association for Impact Assessment, and Institute of Public Health (Ireland). It is then considered that the IEMA guidance forms a robust and comprehensive means to scope and assess population health impacts as a result of the Development.

IEMA sets out the requirements for assessing the direct and indirect effects, in an appropriate manner, of a Proposed Development on human health. This also notes, along with the WHO, that health can be defined as 'a state of complete physical, mental and social wellbeing and not merely the absence of disease or infirmity'.

Health is influenced by a range of factors, termed the 'wider determinants of health'. Determinants of health span the bio-physical, social, behavioural, economic and institutional factors. The IEMA guidance document provides a framework for concluding on the significance of population health effects that can be applied across the wider determinants of health.

The IEMA guidance document recognises that significance at the level of individuals is not proportionate, and as such establishes a method for assessing significance at a population level, or disproportionate effects to relevant sub-populations, i.e. groups of more sensitive individuals.

This Population and Human Health Assessment has also been undertaken in accordance with relevant EPA Guidance (Guidelines on the Information to be contained in Environmental Impact Assessment Reports 2022) and EU Commission Guidance, as follows:

- Assessment of baseline, including identification and assessment of receiving environment and relevant receptors;
- Identification of environmental design and mitigation measures included in the construction methodology;
- Identification of the potential effects, and assessment of the magnitude of potential effects, and their significance;
- Consideration of mitigation measures; and,
- Assessment of residual effects.

[2] The Institute of Environmental Management and Assessment (IEMA) was recently renamed to 'The Institute of Sustainability and Environmental Professionals' (ISEP) although guidance is still branded and referenced hereafter as IEMA guidance.
[3] iema-eia-guide-to-determining-significance-for-human-health-nov-2022.pdf

6.3.2 Cross referencing

It is to be recognised that many of the effects on population and human health are considered within the specific relevant chapters of this EIAR. Potential interactions between health and other environmental factors are recognised in the EPA guidelines 2022 (Section 3), with noise, vibration, landscape, roads, traffic and transportation of particular note[4]. Consideration based on professional judgement has also been made and specific technical assessments are included within the following chapters:

- Chapter 8 – Agronomy;
- Chapter 10 – Water (Hydrology and Hydrogeology);
- Chapter 11 – Air Quality;
- Chapter 12 – Climate;
- Chapter 13 – Noise and Vibration;
- Chapter 15 – Roads, Traffic & Transportation;
- Chapter 16 – Material Assets; and
- Chapter 19 – Risk of Major Accidents and Disasters.

This chapter considers relevant information included within the above sections that relate to human health however technical chapters should be consulted for further information. This chapter also identifies those health receptors in the area i.e. local residents and those working, visiting or using facilities in the Study Area.

6.3.3 Population groups

In general terms, the assessment considers the potential significant effects of the Proposed Development on two types of population. The first is the general or wider population / groups (e.g. workers and contractors constructing / demolishing and operating the Proposed Development, workers at nearby local businesses, residents living in houses, operators and users of community land and facilities, owners and users of commercial premises, users of footpaths and cycle routes, users of open space, recreation and leisure facilities, vehicle travellers, public transport users).

The second type of population considered is ‘vulnerable groups’ identified within the general population who may be more susceptible to changes to the baseline conditions as a result of the Proposed Development. Note that it is important to recognise that the assessment does not seek to determine significance of effect on individuals – this would not be proportionate and would be inappropriate. Rather it takes a population health approach where the health outcomes of a group are considered.

6.3.4 Identification of human receptors

The assessment has set out to identify the key physical and human receptors in the main Study Area which have potential to be affected by the Proposed Development, including the presence of any human vulnerable or sensitive groups. As such, the assessment considers the potential effects of the Proposed Development on two types of receptors: physical receptors (e.g. residential properties, schools, community facilities, local businesses, commercial interests, recreation routes or spaces, roads, footpaths etc.) and then the human receptors that are present or use these physical receptors.

[4] EPA Guidelines on the information to be contained in EIAR – Section 3.7.6

6.3.5 Study Area

In relation to population and human health, it is to be noted that effects vary between geographical areas. The geographic scope should have regard to the populations within relevant geographic zones of influence or Study Areas. This may include site-specific population, local, regional, national, and international populations. IEMA guidance notes that the populations of relevant geographic areas should be defined to aid understanding of the individual and combined health effects due to the Proposed Development.

For this assessment on population and human health, the 'Study Area' has been defined as the area within 500 m of the Red Line Boundary of the Proposed Development as seen and as described in Section 6.4.2. This aligns with the approach set out in IEMA guidance and is considered to be appropriate to the scale of the project's potential impacts that captures relevant geographic zones of influence. This includes areas requiring construction / small scale demolition, re-purposing of plant and potential impacts to population and human health. This is considered representative of the local area, however, where it is considered there may be impacts beyond this area, these will be described. As such, while there is a focus on the 'Study Area', relevant data from Electoral Divisions (EDs) and other wider data sets has also been considered in order to provide an overview of the wider surrounding area. For details on the final Red Line Boundary please refer to the site layout plan drawings which accompany the planning application documentation. Information on the alternatives considered and how the red-line boundary has been derived are included in Chapter 4.

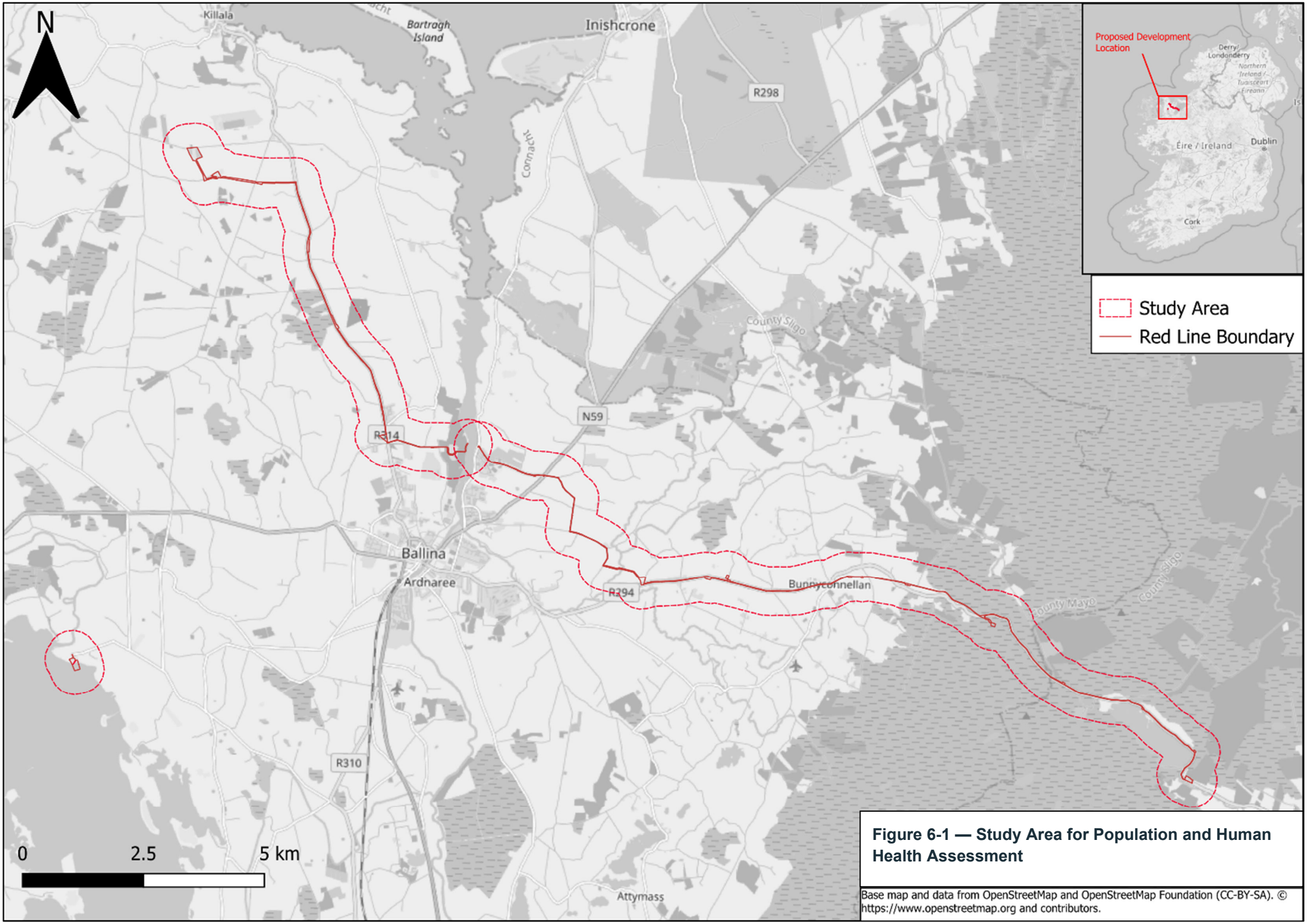


Figure 6-1 — Study Area for Population and Human Health Assessment

Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors.

6.3.6 Desktop Study

The assessment has been carried out through a desk-based study of data available online, the following additional publications and data sources were consulted in the preparation of this Chapter:

- Central Statistics Office (CSO) 2022 and 2016 census data: https://www.cso.ie/en/statistics/population/censusofpopulation2022/ ;
- Google Maps;
- Sport Ireland: https://www.sportireland.ie/outdoors/find-your-trails;
- Health Service Executive data website www.hse.ie;
- Planning Applications Online Search at: https://www.sligococo.ie/planning/SearchPlanningApplications/ and https://www.mayo.ie/planning/search;
- Government of Ireland: https://www.gov.ie/en/;
- Transport Infrastructure Ireland: https://www.tii.ie/en/;
- Economic & Social Research Institute: https://www.esri.ie/ ;
- Pobal Deprivation Indices: https://data.pobal.ie/portal/apps/sites/#/pobal-maps ;
- World Health Organisation Online Search: https://www.who.int/data/gho/data/major-themes/health-and-well;
- Eircode: https://www.eircode.ie/;
- Mayo Age Friendly Programme 2022-2026; and,
- Sligo Age Friendly Strategy 2023-2026.

6.3.7 Surveys

While surveys specific to population and human health are not required, this assessment benefits from those surveys undertaken as part of the wider EIA, including those described in Chapter 8 – Agronomy, Chapter 13 – Noise and Vibration and Chapter 15 – Roads, Traffic & Transportation.

6.3.8 Data Limitations

This assessment is based on publicly available statistics and evidence sources. No new primary research or bespoke analysis of non-public data was undertaken for the assessment.

The most up to date publicly available baseline data has been collected and reported. This includes indicators on occasion where the available public data is pre-Covid-19, or that have yet to show the full impacts of the pandemic for public health. These limitations and a precautionary approach have been adopted when analysing such data.

The health assessment partially draws from and builds upon the technical outputs from other technical chapters of the EIAR. As a consequence, the assumptions and limitations of those assessments also apply to any information used in this chapter (e.g. for modelling work undertaken). It is, however, considered that the information available provides a suitable basis for assessment.

6.3.9 Determining Effect Significance

6.3.9.1 Determining value and sensitivity of human health issues

The criteria for determining the sensitivity for health receptors have been taken from the IEMA 'Guide to Determining Significance for Human Health in Environmental Impact Assessment' (2022), as set out in Table 6-2. Due to the nature

of the receptor, it is likely that the sensitivity of many health receptors will span more than one sensitivity. Where this is the case, professional judgement has been applied to determine the most appropriate sensitivity.

Table 6-2 — Criteria for determining the sensitivity of physical and human receptors to changes to wider health determinants

Category / Level	Indicative criteria (as set out in IEMA guidance, 2022)
High	High levels of deprivation (including pockets of deprivation); reliance on resources shared (between the population and the project); existing wide inequalities between the most and least healthy; a community whose outlook is predominantly anxiety or concern; people who are prevented from undertaking daily activities; dependants; people with very poor health status; and / or people with a very low capacity to adapt.
Medium	Moderate levels of deprivation; few alternatives to shared resources; existing widening inequalities between the most and least healthy; a community whose outlook is predominantly uncertainty with some concern; people who are highly limited from undertaking daily activities; people providing or requiring a lot of care; people with poor health status; and/or people with a limited capacity to adapt.
Low	Low levels of deprivation; many alternatives to shared resources; existing narrowing inequalities between the most and least healthy; a community whose outlook is predominantly ambivalence with some concern; people who are slightly limited from undertaking daily activities; people providing or requiring some care; people with fair health status; and/or people with a high capacity to adapt.
Very Low / Negligible	Very low levels of deprivation; no shared resources; existing narrow inequalities between the most and least healthy; a community whose outlook is predominantly support with some concern; people who are not limited from undertaking daily activities; people who are independent (not a carer or dependant); people with good health status; and/or people with a very high capacity to adapt.

The sensitivity of an individual or population sub-group encompasses its ability to withstand exposures and the range of associated effects, and the physiological (e.g. co-morbidities or disabilities) and socio-economic factors that increase its susceptibility to the exposure. However, it is important to stress that assessment of EIA significance at the level of individuals is not proportionate (paragraph 5.2, IEMA, 2022) and therefore the assessment of the Proposed Development explores the effects at a population and sub-population level.

Table 6-19 sets out the sensitivity to health determinants for wider and vulnerable groups.

6.3.9.2 Impact Assessment

Determining impact magnitude

The magnitude of any change to the baseline conditions has been assessed in accordance with the criteria set out in Table 6-3. Effects are assessed for the construction and operational phases.

Determining impact magnitude of human health issues

In respect of Human health, magnitude is derived through assessment against indicative criteria taken from IEMA, 2022.

Table 6-3 — Criteria for assessing health magnitude of impact

Category/Level	High level description of the magnitude of impact for the physical receptors	High level description of the magnitude of impact for the human receptors
High	Loss of resource and/or quality and integrity of resource; severe damage to key characteristics, features or elements.	High exposure or scale; long-term duration; continuous frequency; severity predominantly related to mortality or changes in morbidity (physical or mental health) for very severe illness/ injury outcomes; majority of population affected; permanent change; substantial service quality implications
Medium	Loss of resource, but not adversely affecting the integrity; partial loss of/damage to key characteristics, features or elements.	Low exposure or medium scale; medium-term duration; frequent events; severity predominantly related to moderate changes in morbidity or major change in quality-of-life; large minority of population affected; gradual reversal; small service quality implications
Low	Some measurable change in attributes, quality or vulnerability; minor loss of, or alteration to one (maybe more) key characteristics, features or elements.	Very low exposure or small scale; short-term duration; occasional events; severity predominantly related to minor change in morbidity or moderate change in quality-of-life; small minority of population affected; rapid reversal; slight service quality implications
Negligible	Very minor loss or detrimental alteration to one or more characteristics, features or elements.	Negligible exposure or scale; very short-term duration; one-off frequency; severity predominantly relates to a minor change in quality-of-life; very few people affected; immediate reversal once activity complete; no service quality implication.
No Change	No loss or detrimental alteration to one or more characteristics, features or elements; no observable effects in either direction.	No impact to the wider health determinant or to sensitive groups.

Determining significance of impact on human health Issues

The impact to human health from the Proposed Development is a function of the impact magnitude and receptor sensitivity as shown in Table 6-4. Impacts can be beneficial or adverse. Major or moderate impacts are deemed to be significant, and minor and negligible impacts are deemed to be not significant.

When determining significance, professional judgement is exercised as it is likely in any given analysis that some effects will span categories.

Table 6-4 — EIA significance matrix for determining health effects (source IEMA, 2022)

	Sensitivity			
	High	**Medium**	**Low**	**Very Low**
Magnitude High	Major	Major / moderate	Moderate / minor	Minor / negligible

	Medium	Major / moderate	Moderate	Minor	Minor / negligible
	Low	Moderate / minor	Minor	Minor	Negligible
	Negligible	Minor / negligible	Minor / negligible	Negligible	Negligible

Table 6-5 — Significance conclusion and reasoning related to public health (source IEMA, 2022)

Significance	Indicative criteria (judgment based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
Major (significant)	▪ Changes, due to the project, have a substantial effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size (magnitude and sensitivity levels), and as informed by consultation themes among stakeholders, particularly public health stakeholders, which show consensus on the importance of the effect. ▪ Change, due to the project, could result in a regulatory threshold or statutory standard being crossed (if applicable). ▪ There is likely to be a substantial change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a causal relationship between changes that would result from the project and changes to health outcomes. ▪ In addition, health priorities for the relevant Study Area are of specific relevance to the determinant of health or population group affected by the project.
Moderate (significant)	▪ Changes, due to the project, have an influential effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by referencing relevant policy and effect size, and as informed by consultation themes among stakeholders, which may show mixed views. ▪ Change, due to the project, could result in a regulatory threshold or statutory standard being approached (if applicable). ▪ There is likely to be a small change in the health baseline of the population, including as evidenced by the effect size and scientific literature showing there is a clear relationship between changes that would result from the project and changes to health outcomes. ▪ In addition, health priorities for the relevant Study Area are of general relevance to the determinant of health or population group affected by the project.
Minor (not significant)	▪ Changes, due to the project, have a marginal effect on the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by effect size of limited policy influence and/or that no relevant consultation themes emerge among stakeholders. ▪ Change, due to the project, would be well within a regulatory threshold or statutory standard (if applicable); but could result in a guideline being crossed (if applicable). ▪ There is likely to be a slight change in the health baseline of the population, including as evidenced by the effect size and/or scientific literature showing there is only a suggestive relationship between changes that would result from the project and changes to health outcomes. ▪ In addition, health priorities for the relevant Study Area are of low relevance to the determinant of health or population group affected by the project.
Negligible (not significant)	▪ Changes, due to the project, are not related to the ability to deliver current health policy and/or the ability to narrow health inequalities, including as evidenced by effect size or lack

Significance	Indicative criteria (judgment based on most relevant criteria, it is likely in any given analysis that some criteria will span categories)
	of relevant policy, and as informed by the project having no responses on this issue among stakeholders. ▪ Change, due to the project, would not affect a regulatory threshold, statutory standard or guideline (if applicable). ▪ There is likely to be a very limited change in the health baseline of the population, including as evidenced by the effect size and/or scientific literature showing there is an unsupported relationship between changes that would result from the project and changes to health outcomes. ▪ In addition, health priorities for the relevant Study Area are not relevant to the determinant of health or population group affected by the project.

For each judgement of significance made, a narrative has been provided to explain which factors have been considered. The following considerations have been made, where relevant, to provide consistency in the formation of the judgement of significance by the assessor, which is an approach that is advocated in the IEMA guidance:

- Whether there would be a high level of exposure or widespread impact.
- Whether the population exposed to an impact is particularly sensitive due to preexisting vulnerabilities or inequalities.
- The duration of effects and whether they would be reversible.
- The level of acceptability, including whether statutory thresholds for pollutants would be exceeded and/or whether the issue is a public health priority.
- The severity of the related health outcomes (i.e. whether it is related to a change in mortality or morbidity).
- The strength of evidence for an association between a change in a determinant and health outcomes.
- Whether a large proportion of the population would likely be affected.
- Whether the impact is likely to increase or tackle health inequalities at a population level.

6.4 Receiving Environment

6.4.1 The Proposed Development

Uisce Éireann propose to carry out upgrades to the potable water network serving north County Mayo and south County Sligo as part of the Proposed Development. This will allow Uisce Éireann to continue to provide a safe, robust and reliable potable water supply to residents within Ballina town and the surrounding region in future, whilst facilitating future population growth and development in the area. The proposed upgrades will also allow Uisce Éireann to provide more capacity to transfer water in the network and will also facilitate extension of the network to the area currently served by the Lough Talt water supply.

The strategic importance of the Proposed Development is such that there is no plan to decommission these structures, and Uisce Éireann is committed to maintaining and repairing them into the future. There is some small scale demolition of structures proposed within the existing sites being upgraded. Potential effects towards population and human health during demolition will therefore be considered within construction phase impacts.

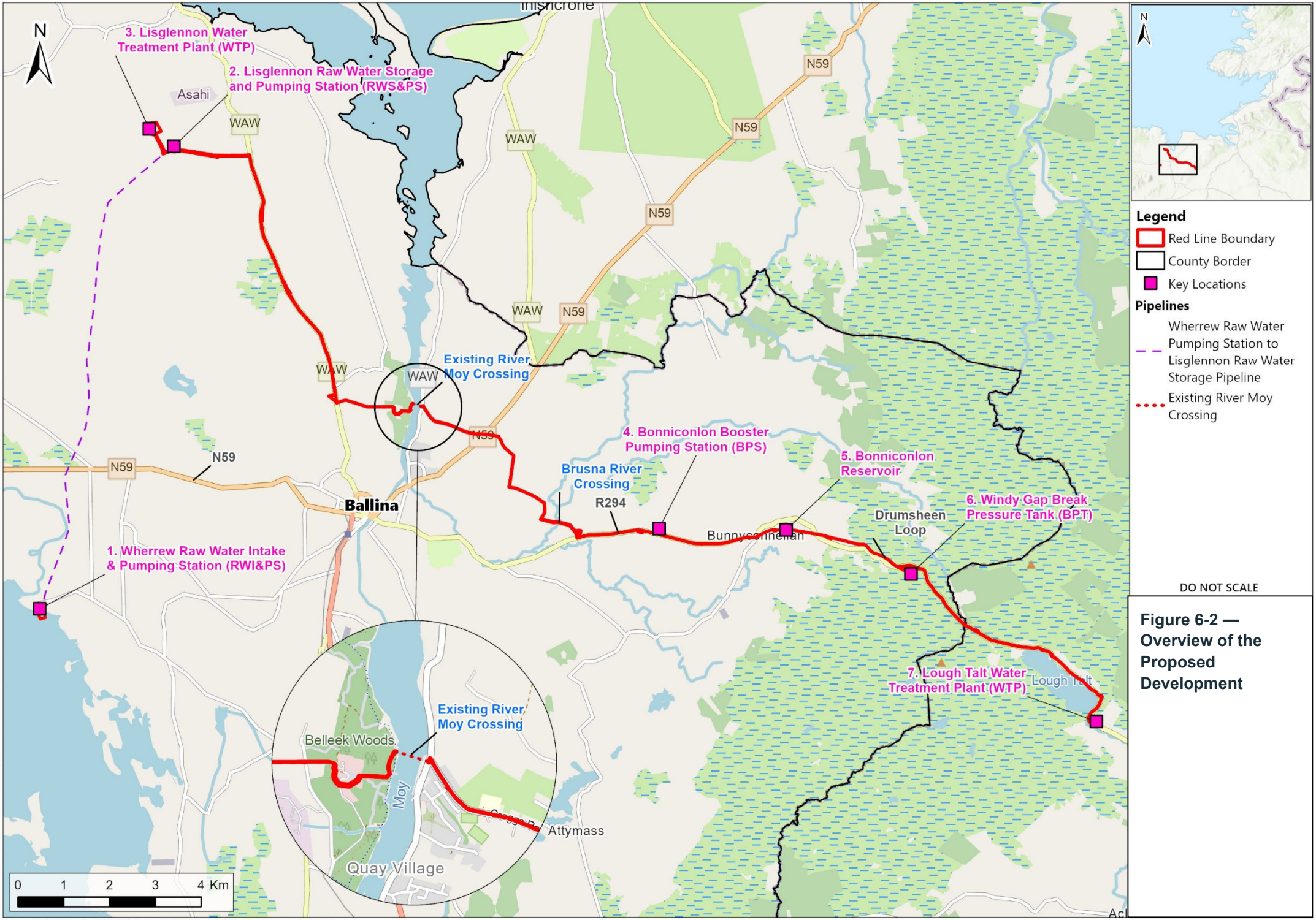


Figure 6-2 — Overview of the Proposed Development

6.4.2 Establishing the Population Profile

This section provides a description of the known baseline characteristics for population and human health. The baseline conditions are subdivided into subheadings reflecting the population and human health sub-topics considered to be relevant to the Proposed Development following IEMA guidance (2022).

A range of publicly available data sources have been used to determine the population and health baseline (see Section 6.3.6). It is important to understand the health profile of the local and wider areas.

The human health study area has regard to localised health effects and wider health effects. Bio-physical health determinants (such as changes to noise exposure) are likely to have a localised impact as potential changes in hazard exposures are limited by physical dispersion characteristics. Social and behavioural determinants (such as changes to community factors) are likely to have both localised and wider impacts.

The Wider Study Area for baseline statistics relating to health effects focuses on EDs, with Mayo and Sligo Counties and Ireland averages as comparators. Regard is also given to the Study Areas of other EIAR chapters. The following geographically defined human health populations are used in the assessment:

- The Study Area intersects the following 10 EDs: Ardagh; Carrowmore; Ballysakeery; Ballina rural; Ardnaree north; Ardnaree south rural; Kilgarvan; Sallymount; Kilmacteige; and Breencorragh (Figure 6-3)
- The ‘local’ area is the local authority of Mayo and Sligo Counties.
- The ‘regional’ area is the province of Connaught in the west of Ireland.
- The ‘national’ area is Republic of Ireland (and beyond for transboundary effects).

The health assessment has regard to the zones of influence defined by other EIAR chapters that are interrelated technical disciplines for the health assessment. Those chapters provide data inputs to the health assessment. Those zones of influence are relevant and inform the health chapter’s consideration of effect magnitude.

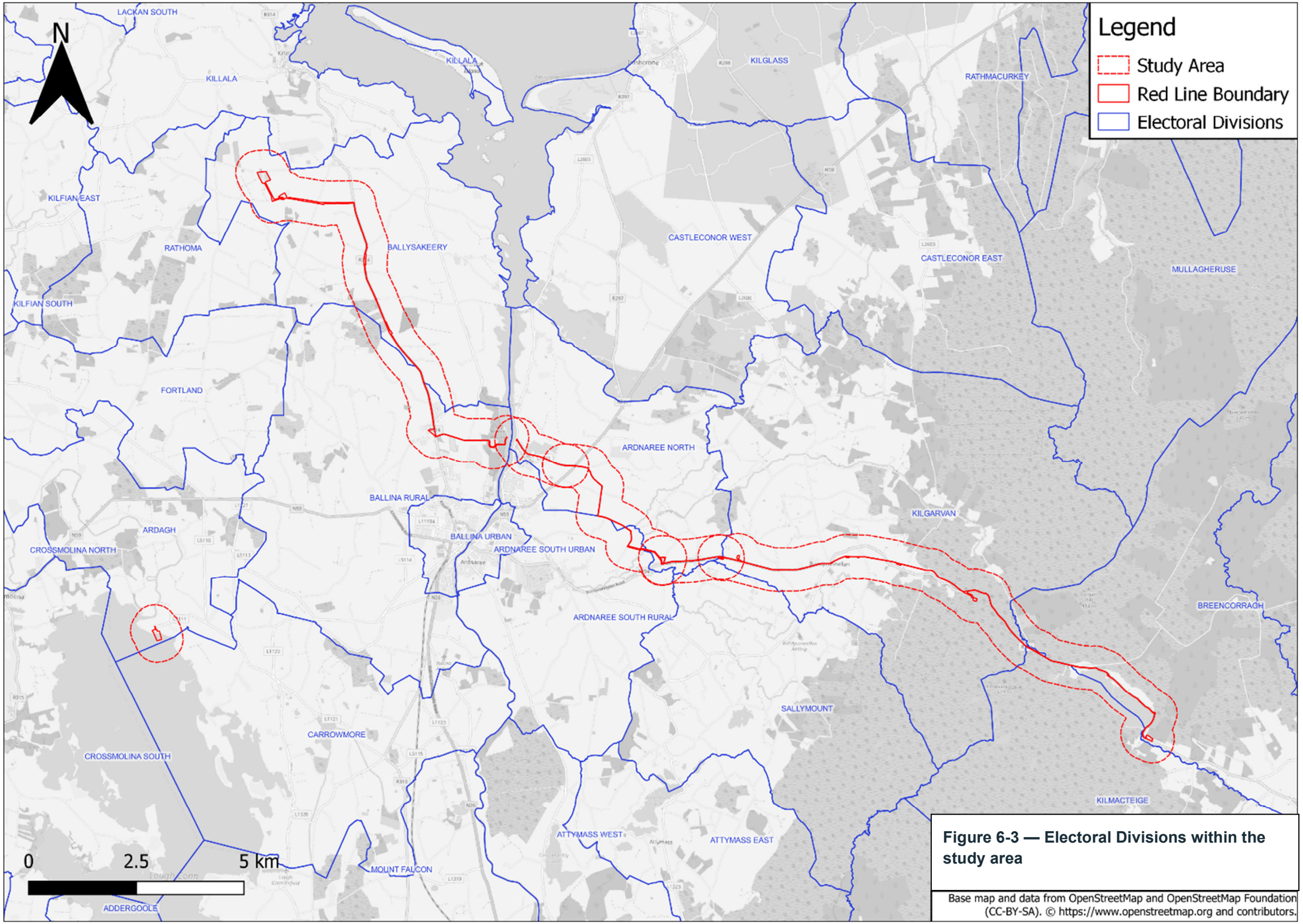


Figure 6-3 — Electoral Divisions within the study area

Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors.

6.4.2.1 Population Profile

The aim of the following information is primarily to put into context the local health circumstances and population profile of the communities surrounding the Proposed Development, drawing from available statistics. Where possible, data has been collected for the 10 EDs intersected by the Study Area. Where ED data is not available, data for Mayo and Sligo Counties has been used to compare with the national average. It should be noted that the description of the whole population, and the populations within the local and wider study area, does not exclude the probability that there will be some individuals or groups of people who do not conform to the overall profile.

6.4.3 Population Baseline

The Proposed Development is located within a rural area dominated by agricultural land uses and the pipelines run under the R314, N59, R294 and numerous local roads. The closest towns are Bonniconlon, Ballina, Killala and Crossmolina which are located approximately adjacent to, 2 km south, 2.3 km north and 3.3 km east from the Proposed Development respectively.

Demographic data published by the CSO identifies the nature of the population in the vicinity of the Proposed Development that could be impacted. As shown in Table 6-6, the total population of the EDs is 10,839. It therefore does not correspond to the wider Lough Talt Regional Water Supply Area which serves a large rural supply area in south County Sligo with a population of approximately 13,663 people (Figure 6-4).

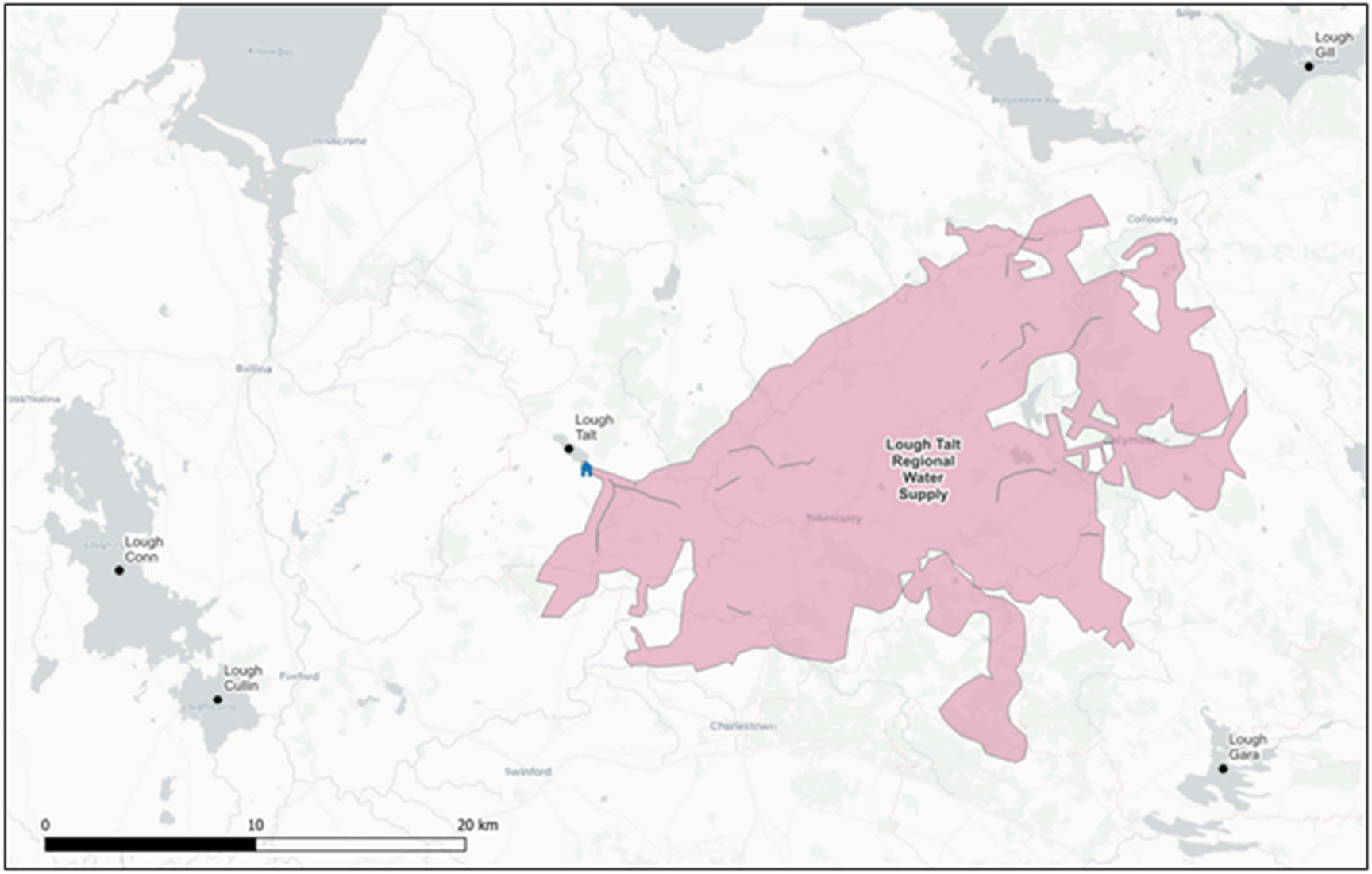


Figure 6-4 — Lough Talt Regional Water Supply Area

Table 6-6 — Census Population Data

Area	Total Population 2016	Total Population 2022	Population Change from 2016 to 2022
State	4,761,865	5,149,139	8.1%
County Mayo	130,507	137,970	5.7%
County Sligo	65,535	70,198	7.1%
10 EDs combined	10,481	10,839	3.4%
Ardagh ED	359	365	1.7%
Carrowmore ED	909	896	-1.4%
Ballysakeery ED	613	620	1.1%
Ballina Rural ED	2,985	3,199	7.2%
Ardnaree North ED	966	954	-1.2%
Ardnaree south rural ED	3,084	3,096	0.4%
Kilgarvan ED	747	857	14.7%
Sallymount ED	480	509	6.0%
Kilmacteige (Sligo) ED	224	226	0.9%
Breencorragh (Sligo) ED	114	117	2.6%

There has been a consistently high level of population growth within the state and Counties Mayo and Sligo over this period, with this growth anticipated to continue in the future. The EDs along the Proposed Development overall have experienced a smaller population increase with some of the divisions slightly declining.

As stated in the relevant county development plans the 2031 population projections for County Mayo and County Sligo are respectively 147,000-150,500 and 74,000-75,500. A central tenet of the chosen scenario for Mayo is the inclusion of complementary policies and objectives in the plan to enhance the attractiveness of the county for remote working, smarter work practices, and the provision of infrastructure at appropriate locations and scale to facilitate same. Throughout County Sligo, people live and work outside of villages and towns in a dispersed settlement pattern. In the past, these areas have been largely dependent on farming, but with the decline of agricultural employment, there is a need to sustain these rural communities through other means.

6.4.3.1 Age Profile

The age profile of the Study Area is similar to that of the County and State (Table 6-7).

Table 6-7 — Population by Age

Area/Year	Population Aged 0-14	Population Aged 15-24	Population Aged 25-44	Population aged 45-64	Population Aged 65+
State 2022	19.7%	12.5%	27.6%	25.1%	15.1%
State 2016	21.1%	12.1%	29.5%	23.8%	13.4%
County Mayo 2016	20.3%	10.8%	24.6%	26.6%	17.6%
County Mayo 2022	19.1%	10.9%	23.5%	26.8%	19.8%
County Sligo 2016	20.3%	12.2%	25.5%	25.7%	16.2%
County Sligo 2022	19.1%	12.3%	24.0%	26.2%	18.4%
Combined EDs 2016	23.2%	10.6%	25.6%	26.1%	14.6%
Combined EDs 2022	21.7%	11.6%	22.9%	27.0%	16.8%

6.4.3.2 Residential and Private Property

The Study Area is located partly within County Mayo and County Sligo, and is in proximity to Ballina town. The area is rural and dominated by agricultural land, so the majority of properties are detached and accessed via a limited network of rural roads including the Culleens Road, L1120, Creggs Road and L5132. The majority of residents within the Study Area live in Ballina town with linear settlement patterns centred around the local road network.

There are 782 residential receptors that have been identified within the Study Area. Of those the following approximate numbers of properties have been identified within 100 m of the Red Line Boundary:

- Lisglennon Water Treatment Plant (WTP) – three detached properties surrounding the WTP and two accessed directly off road intersected by the Red Line Boundary in Ballinteean.
- Proposed Pipeline B - Ballinteean Road (L11109) – two detached properties just off the road
- Proposed Pipeline B - R314 – 26 detached properties just off the regional road, two off the attached Culleens Road (L21121), 26 mixed semi-detached and detached properties in Abbey Court, and 22 semi-detached and two detached properties along Oaklawn Road (L11451)
- Proposed Pipeline B - L5140 – three detached properties just off the road and one detached property along Killala Road (R314)
- Proposed Pipeline B - L1120 – 13 detached properties just off the road
- Proposed Pipeline C - Creggs Road (L1101) – 42 just off the road, 50 mixed semi-detached and detached properties just off Rathmeel lawns (L11015), and eight detached properties just off road between L10112 and L5132
- Proposed Pipeline C - L5132 – five detached properties just off the road

- Proposed Pipeline C and D - R294 – 67 detached and 10 semi-detached just off the regional road, four detached properties just off the L51341 road, and six detached and 19 semi-detached properties just off the Cois Na hAbhann road (L11020). The Bonniconlon Booster Pumping Station (BPS) is located at the junction of the L5135 at R294, and is over 100 m west from the nearest detached dwelling
- Proposed Pipeline D - L1102 – three detached properties just off the road
- Proposed Pipeline D and E - L51172 - nine detached properties just off the road
- Bonniconlon Reservoir – there is one detached property immediately north of the proposed new Bonniconlon Reservoir, just off the L5227 road
- In proximity to Wherrew Raw Water Intake and Pumping Station (Wherrew RWI&PS) – four detached houses

There are no residential dwellings within 100m of the Windy Gap Break Pressure Tank (BPT) or the Bonniconlon BPS.

6.4.3.3 Development land and businesses (non-agricultural)

Belleek Castle Hotel grounds are located within the Red Line Boundary. There are 107 businesses that have been identified within the Study Area. The following businesses have been identified within 100 m of the Red Line Boundary:

- Proposed Pipeline B - R314 - G&G Engineering Ltd (manufacturer), Kings Garden Centre, Certa Ballina (Oil supplier), Hackett Commercials (Truck repair), Liam Hacket (Fuel Station), Top Oil – Hughs O'Boyle Fuel Oil (oil supplier), Quinns Veterinary Surgery and McVann Furniture
- Proposed Pipeline B - L1120 - Belleek Park Caravan & Camping, Belleek Castle Hotel
- Proposed Pipeline C - Quay Road - Moy Boat Club
- Proposed Pipeline C - Creggs Road - Corduff Gunning & Co
- Proposed Pipeline C and D - R294 - West Coast Glow (cosmetics), Martin Dervin Autos (car body shop), Gallaghers Village Tavern, Emma's Nail Room, Amanda Conlon Makeup Artist, Kelly and Conlon Funeral Home, Gallaghers Funeral Home, Tuffys Gala Bonniconlon
- Proposed Pipeline D - L51172 - EGMS Automotive

Agriculture

The Census of Agriculture Mapping (CSO, 2022) shows the agricultural structure of the Study Area, as is shown in Table 6-8. The data indicates that agriculture is a key land use, and driver of the local economy in the Study Area with a mixture of livestock and arable farming.

Table 6-8 — Agricultural Structure of the Study Area in 2020

Electoral Division	Number of holdings	Average size of holding (hectares)	Livestock units	Area Farmed (hectares)	Median Age of holder
Ardagh	56	24.3	1,492	1,360.8	57.5
Carrowmore	84	20.4	1,912	1,716.4	60
Ballysakeery	76	25.3	2,249	1,925.4	54
Ballina rural	117	22.8	3,097	2,668.0	58
Ardnaree north	59	20.7	1,607	1,224.1	59
Ardnaree south rural	70	16.6	1,233	1,158.8	63
Kilgarvan	131	19.4	2,266	2,538.2	61

Electoral Division	Number of holdings	Average size of holding (hectares)	Livestock units	Area Farmed (hectares)	Median Age of holder
Sallymount	80	19	1,679	1,522.1	59.5
Kilmacteige	53	23.1	927	1,223.7	56
Breencorragh	45	37.8	803	1,699.2	54
Total	*771*	*22.94*	*17,265*	*17,036.7*	*58.2*

Effects on the agricultural environment arising from the Proposed Development will be considered in Chapter 8 – Agronomy of the EIAR and will be integrated into the Population and Human Health assessment. See Section 8.3 of Chapter 8 for a review of baseline conditions in respect of agronomy.

6.4.3.4 Community land and assets

Land managed by Coillte surrounding the Belleek Castle hotel is intersected by the Red Line Boundary. This area is likely used recreationally by locals as it contains multiple forest footpaths that connect to other PRoWs and communal areas along the River Moy. Approximately 57 commercial properties have been identified within the Study Area. Of those, the following have been identified within 100 m of the Red Line Boundary:

- In proximity to Lisglennon WTP - Mullafarry Presbyterian Church
- Proposed Pipeline B - R314 – The Mulberry Tree Learning Centre (Nursery)
- Proposed Pipeline C - Creggs Road L-1101 - Lynn Academy of Music, St Oliver Plunkett National School, Quay National School, Ballina Rugby Football Club, Heffernan Park
- Proposed Pipeline C - L51333 – Behy National School
- Proposed Pipeline D - R294 – Bonniconlon Garda Station, Bonniconlon National School, Cearra National School, Church of the Immaculate Heart of Mary, Bonniconlon GAA Club, and The Lake Church Lough Talt.

Additionally, the following facilities are located in the Study Area and may be affected during construction of the pipeline and associated works:

- Proposed Pipeline B - R314 - Killala Road - Culleens National School, The Mulberry Tree Learning Centre, An Post, Rathroeen Landfill
- Proposed Pipeline C - Quay Road – River Moy Search and Rescue
- Proposed Pipeline B - Belleek Woods walking trails
- Proposed Pipeline D - L1125 – Bonniconlon Hall

There are 36 Local Community safety partnerships currently being established across Ireland. The aim of each Local Community Safety Partnership is to prioritise the voice of local communities in identifying community safety issues in their area. To do this Safety Partnerships will consult with their local communities to develop a bespoke Local Community Safety Plan. The Study Area falls within the Sligo and Mayo local community safety partnerships[5].

6.4.3.5 Transport modes, access and connections – Walking, Cycling and Horse riders

The large number of people in the Study Area that are reliant on using cars/vans on the roadways, commuting in the mornings and evenings may have traffic implications during the construction of the Proposed Development. Some

[5] https://www.gov.ie/en/department-of-justice-home-affairs-and-migration/publications/local-community-safety-partnerships/

roads, particularly smaller local roads may need to be closed during the movement of large loads in conjunction with the Proposed Development.

Table 6-9 — Population aged 5 years and over by means of travel to work, school or college

Means of Travel	State	Mayo	Sligo
On Foot	456,291	7,848	5,441
Bicycle	97,212	788	608
Bus, minibus or coach	323,923	6,434	3,087
Train or Tram	85,316	227	165
Motorcycle or scooter	9,150	77	68
Car Driver	1,254,419	37,217	18,084
Car passenger	691,044	21,280	10,966
Van	148,823	5,965	2,455
Other (incl. lorry)	14,092	513	236
Work mainly at or from home	266,726	5,446	3,826
Not stated	266,412	4,916	3,161
Total	3,613,408	90,711	48,097

Whilst the Proposed Development is within a largely rural area, the new Lisglennon to Lough Talt Treated Water Pipeline and associated facilities partly follow the R314, as well as the L1120, Creggs Road in Ballina, the L5132, the L51333, R294 and L51172 for approx. 25.7 km of its length.

A search of Sport Ireland's 'Get Ireland Active' mapping tool (2022) confirms that there are no Blueways, Horse Riding Trails, Mountain Access Trails, Mountain Biking Trails, Off Road Cycling Trails, Paddling Trails, or Pilgrim Paths within the Proposed Development or Study Area. Belleek Wood Greenway Cycling Trail, Belleek Multi Access Walking Trail, EuroVelo 1 Ireland – Atlantic Coast Route (road cycling trail), Glen Loop – Bonniconlon Walking Trail and Sligo Way (Long Distance Waymarked Way) trails are located within the Study Area. See Table 6-16 for more detail.

Effects on traffic arising from the Proposed Development during construction and operation are considered in Chapter 15 – Roads, Traffic & Transportation of the EIAR and have been integrated into the Population and Human health assessment. See Section 15.3 of Chapter 15 for a review of baseline conditions in respect of transport impacts and the Preliminary Construction Works Traffic Management Plan (PCWTMP) in respect of access restrictions.

6.4.3.6 Future Population Baseline

The Economic and Social Research Institute (ESRI) population projections (ESRI, 2026) indicate that nationally, in the baseline population scenario, the population is expected to increase by 922,000 between 2022 and 2040, resulting in a total population of over 6.106 million people by the end of the period. The numbers of people aged 65 and over will increase by around 66% to 1.3 million people by 2040, making up approximately 21% of the population. Additionally, the population aged over 85 is expected to increase by over 140% (DHLGH, 2025). ESRI projections also indicate that the number of people aged 15 or under will decline from 20% to 16% between 2020-2040. This means that the average age of Ireland will increase, but the overall number of young people will not decrease significantly. The dependency ratio (those aged under 16 and those over 65 in relation to the working age population) is projected to increase to 65% of the total population by 2040 which is up from 53% in 2016.

At a regional level, the West Region is projected to see a 12.2% population increase between 2022 and 2042 (CSO, 2025). This is slightly higher than the projected change for Ireland (11.3%), and lower than the Mid-East which is projected to see population growth by 19.7% which is the highest for all regions. For the West Region the total dependency ratio is expected to drop from 57.2 in 2022 to 55.1% in 2032, before rising to 60.7% by 2042. This follows the similar trend of all other regions in Ireland, and the region will have similar dependency ratios to other regions in the Country such as the Midland (59.6%) and South-East (61.7%) regions dependencies by 2042.

6.4.4 Human Health

6.4.4.1 General Health

Table 6-10 — General Health, 2022

General Health	State	County Mayo	County Sligo
Very Good	53.2%	51.4%	52.7%
Good	29.7%	32.1%	30.1%
Fair	8.6%	10.2%	9.6%
Bad	1.4%	1.6%	1.5%
Very Bad	0.3%	0.3%	0.3%
Not Stated	6.7%	4.5%	5.7%
Persons with a disability	22%	21.8%	23.0%

There is likely a slight correlation here between a lower level of general health in the study counties linked to the higher aged population. As stated above it is important for the counties to support their aging populations with adequate healthcare provisions. Both counties are also predominantly rural populations, particularly within the Study Area there are no large towns or large villages, therefore the population living in these areas are likely living further from healthcare facilities making them harder to access. A decline in physical health can often subsequently lead to a decline in mental health. Priorities for older people at risk of social exclusion in Mayo and Sligo include maintaining their health and wellbeing, reducing social isolation, improving access to support, information, services and accessibility and mobility generally and also to provide for the needs of carers. The implementation of the 'Age Friendly' programmes in Mayo and Sligo (Age Friendly Ireland, 2026) assists in the inclusion and improved health and wellbeing for older people in the county.

A key factor in upkeeping an areas mental and physical health is access to thriving recreational facilities/provisions including the lakes within the Study Area for the Proposed Development; Lough Talt and Lough Conn which are discussed further below. Adverse water quality is a key issue that affects health and wellbeing (Levallois et al, 2019), therefore ensuring that local water bodies are of an acceptable water quality standard is important. A healthy catchment provides high-quality drinking water and supports local livelihoods such as agriculture, food production, tourism and water based recreational activities.

6.4.4.2 Deprivation

The Pobal HP Deprivation index (Pobal, 2022) is the core index for the Republic of Ireland. Both County Mayo and County Sligo are described as marginally below average on the deprivation indices for 2022 and 2016. However, County Mayo between this period has become slightly more deprived whereas County Sligo has become less deprived. Of the 10 EDs intersected by the Proposed Development, two were identified as marginally above average in 2022 (Ardnaree north and Ardnaree south rural) and the rest marginally below average. However, all have shown improvement between 2016 to 2022, with Breencorragh and Rathoma showing the greatest improvements. Ballina rural was the only ED to show a decrease.

Table 6-11 — Pobal HP Deprivation Indices (Pobal, 2022)

Area	2022	2016	Change
County Mayo	-3.10	-3.08	-0.02
County Sligo	-0.25	-1.57	+1.32
Ardagh	-2.96	-3.28	+0.32
Fortland	-2.93	-5.27	+2.34
Rathoma	-3.38	-10.08	+6.7
Ballysakeery	-3.68	-5.10	+1.41
Ballina rural	-4.06	-3.64	-0.42
Ardnaree north	2.43	1.47	+0.96
Ardnaree south rural	2.50	1.69	+0.81
Kilgarvan	-4.34	-7.13	+2.79
Sallymount	-4.53	-5.56	+1.03
Kilmacteige	-3.45	-6.36	+2.91
Breencorragh	-1.33	-8.48	+7.15

6.4.4.3 Physical Activity

The proposed National Cycle Network has potential routes running through the Study Area, from Castlebar to Ballina to Sligo (Department of Transport, 2024) as identified within the National Cycle Network Plan.

A search of Sport Ireland's 'Get Ireland Active' mapping tool (Sport Ireland, 2026) confirms that there are no Blueways, Horse Riding Trails, Mountain Access Trails, Mountain Biking Trails, Off Road Cycling Trails, Paddling Trails, or Pilgrim Paths within the Proposed Development or Study Area. Belleek Wood Greenway Cycling Trail, Belleek Multi Access Walking Trail, EuroVelo 1 Ireland – Atlantic Coast Route (road cycling trail), Glen Loop – Bunnyconnellan Walking Trail, Drumsheen Loop – Bunnyconnellan walking trail and Sligo Way (Long Distance Waymarked Way) trails are located within the Study Area and intersected by the Red Line Boundary.

6.4.4.4 Risk Taking Behaviour

As previously noted, the Proposed Development is within a largely rural area which is sparsely populated but it is in close proximity to Ballina town. It also runs under the N59, R314, the R294 and numerous local roads. Despite this, it is not anticipated that risk taking behaviour is a major concern within the Study Area as it is a more rural and sparsely populated area with an older population, and all construction sites and new treatment facilities will be secured, with no access to unauthorised personnel.

6.4.4.5 Diet and nutrition

The Proposed Development is located within multiple agricultural fields, likely to be used for light grazing and silage cutting. Baseline data in relation to agriculture in the area is included in Section 6.4.3.4.

6.4.4.6 Housing

There are fewer people per house and houses are not as full in the study counties. The state housing stock has increased to 1,836,728 in 2022, showing a 5% increase since the last census in 2016, with the people per household remaining the same. Across the same time period, Mayo's housing stock in 2026 was 48,745 having increased by 3.58%, population increased by 6% and the people per household reported as 2.6 in 2022. County Sligo housing

stock was 24,761 having increased by 2.89% (CSO, 2023), population increased by 7% and the people per household was also reported as 2.6. The increase in housing stock is slower in the study counties in comparison to the state.

The number of vacant dwellings decreased from 15,452 to 14,909 between 2016 and 2022 (3.64%) in County Mayo, and decreased from 6,571 to 5,987 in County Sligo (9.75%). Nationally, the number of vacant dwellings fell by almost 20,000 (-11%) to 163,433 and the number of holiday homes rose by 8% from 62,148 to 66,956 (CSO, 2023).

Table 6-12 — Housing (CSO, 2022)

	State	County Mayo	County Sligo
Total Housing Stock	1,836,728	51,996	26,801
People per household	2.7	2.6	2.5
Average no. of bedrooms per house	3	3	3
Owned with mortgage or loan	531,207	12,950	6,674
Owned outright	679,718	24,929	11,297
Rented from private landlord	330,632	7,885	4,428
Rented from Local Authority	153,192	2,533	2,367
Rented from voluntary/co-operative housing body	29,880	533	383
Occupied free of rent	31,864	1,248	542
Not stated	80,235	1,918	1,110
Vacant dwellings (not including temporarily absent but including unoccupied holiday homes)	230,389	14,909	5,987
Houses with water supplied by public mains	1,471,060	31,581	20,809

At a local level, the housing stock and vacancy rate for the relevant EDs are summarised in Table 6-13.

Table 6-13 — Housing stock and occupancy status of permanent dwellings by electoral division (CSO, 2022)

	Occupied	Temporarily absent	Unoccupied holiday homes	Other vacant dwellings
Ardagh	131	1	9	15
Carrowmore	318	8	18	32
Ballysakeery	221	5	6	22
Ballina rural	1,105	26	33	104
Ardnaree north	336	5	26	39
Ardnaree south rural	1,090	21	36	84
Kilgarvan	325	3	19	60
Sallymount	171	5	8	51
Kilmacteige	84	1	4	21

	Occupied	Temporarily absent	Unoccupied holiday homes	Other vacant dwellings
Breencorragh	48	0	7	10

6.4.4.6.1 Land Use and Settlement Patterns

The Proposed Development does not run through any areas with specific zonings. The Sligo County Development Plan 2024-2030 outlines how the people of Sligo should have access to good quality housing to purchase or rent at an affordable price in areas supported by high quality physical and social infrastructure. A key objective is to promote the compact growth of towns and villages. One way of achieving this is by increasing the density of development in existing built-up areas and new urban extensions. The nearest built up village to the current Lough Talt WTP is Tobbercurry. It has been set applicable density ranges from 25 to 40 units/ha at the edges, while in the central areas new development "should respond positively to the scale, form and character of existing development, and to the capacity of services and infrastructure". However, these increased housing availability targets are dependent on the available services such as water. The increased security of water provisions that the Proposed Development will bring allows for more housing to be provided for the increasing population of the Water Supply Zone which encompasses most of the county. Policy P-UHOU-1: 'Ensure that residential development takes place in a manner and at a pace that does not exceed the capacity of water and wastewater treatment infrastructure. To support the gaining population of the county it is also a focus of the development plan to provide age-friendly housing, this includes providing level access and connection to the outdoors, and are capable of incorporating assistive technology to support ageing.' The plan also acknowledges the high rate of vacant properties in comparison to the national average and recognise it is likely and desirable that this vacant stock will accommodate some of the additional housing units estimated to be required over the period of the plan. Sligo County Council recognises the value of reusing existing buildings to support the compact growth of towns and sustainable development and to boost the housing stock.

The Mayo County Development Plan 2022-2028 sets out a core settlement strategy, which partly aims to support the health and wellbeing of the people of Mayo, providing an attractive destination and place in which to live, work, invest, do business and visit, offering high quality employment and educational opportunities. Some of the strategic aims include housing, through facilitating the sustainable growth of all rural areas, town villages and countryside, and promoting consolidation and compact development of all urban and rural settlements. Other strategic aims include the development of settlements, with sustainable levels of population, employment activity and enhanced levels of amenity which encourage a high-quality life and well-being. Supporting sustainable synergy with the rural countryside. The Proposed Development intersects the rural town of Bonniconlon, which is described as a tier 4 rural settlement, with populations typically between 5—500 persons and is serviced by Uisce Éireann Infrastructure. Facilitating population growth through the provision of housing is considered paramount to ensuring the future vitality and viability of these types of settlements. Two core areas within the Bonniconlon Settlement (Page 38, Vol. 3, 2022) are intersected by the Proposed Development, which are areas where development is generally encouraged as a starting point in settlement development. No other land zoning areas are intersected, there are two amenity areas and one core enhancement area adjacent to the Red Line Boundary.

The area is rural, the majority of land is agricultural, so the majority of properties are detached and accessed via a limited network of rural roads.

Section 6.4.3.2 contains a review of baseline conditions in respect of residential and private property.

6.4.4.7 Relocation

Section 6.4.3.2 contains a review of baseline conditions in respect of residential and private property.

6.4.4.8 Open Space, leisure and play

See Section 6.4.3.4 for a review of baseline conditions in respect of community land and assets, which will include any areas of open space, leisure and play.

6.4.4.9 Community Safety

See Section 6.4.3.4 for information relating to the Sligo and Mayo local community safety partnership being established in the vicinity of the Study Area.

6.4.4.10 Community identity, culture, resilience and influence

As previously noted, the Proposed Development is within a largely rural area which is sparsely populated with a high proportion of older people but it is in close proximity to Ballina town. It also runs under the N59, R314, the R294 and numerous local roads.

6.4.4.11 Social participation, interaction and support

See Section 6.4.3.4 and Table 6-16 for a review of baseline conditions in respect of community land and assets, which includes identified community assets and meeting places, for voluntary, social, cultural or spiritual participation.

6.4.4.12 Education and training

Over a 31-year period from 1991 to 2022, the educational attainment of people aged 15 years and over improved steadily. There was a decrease in the number of people who were educated to primary level only and an increase in the number of those with higher levels of education. The greatest gains were in the number of people with a third level qualification, rising from 14% of the population aged 15 and over in 1991 to 48% in 2022 (CSO, 2022).

At a more local level, the 2022 Census data in relation to education for County Mayo, County Sligo and the intersected EDs within the Study Area are summarised in Table 6-14. These figures are in relation to the population aged 15 and over.

Table 6-14 — Education Figures (CSO, 2022)

	County Mayo	County Sligo	EDs
Population who ceased education at age 15	3,275	1,467	232
Highest Level of Education Completed			
No formal education	3,273	870	185
Primary education	9,011	3,612	580
Lower secondary	13,318	6,247	1009
Upper secondary	20,063	8,920	1662
Technical or vocational qualification	7,164	3,744	494
Advanced certificate/Completed apprenticeship	5,571	2,822	451
Higher certificate	5,101	2,802	447
Ordinary bachelor degree or national diploma	7,521	4,147	577
Honours bachelor degree, professional qualification or both	10,647	6,017	836
Postgraduate diploma or degree	7,604	4,661	578
Doctorate (Ph.D.) or higher	577	509	21

As noted in Section 6.4.3.5 Quay National School, Lynn Academy of Music, Behy National School and Bonniconlon National School are the closest schools, located adjacent to the Proposed Development Red Line Boundary. Culleens National School and The Mulberry Tree Learning Centre were also identified within 500 m of the Proposed Development. The former will be affected during construction of the scheme as it is directly accessed via the R314 and the latter likely disrupted.

6.4.4.13 Employment and income

The total labour force and proportions of which are employed within various business sectors in each county is highlighted in Table 6-15 against the state values.

Table 6-15 — Population aged 15 and over labour force

Broad Industrial Group	State	Mayo	Sligo
Total in labour force	2,531,099	64,017	33,155
Agriculture, forestry and fishing (A)	82,228	3,607	1,545
Mining and quarrying (B)	4,756	260	49
Manufacturing (C)	242,857	8,274	3,617
Electricity, gas, steam and air conditioning supply (D)	13,312	278	167
Water supply; sewerage, waste management and remediation activities (E)	12,177	343	108
Construction (F)	134,482	3,886	1,524
Wholesale and retail trade; repair of motor vehicles and motorcycles (G)	276,896	8,146	3,472
Transportation and storage (H)	86,912	1,584	781
Accommodation and food service activities (I)	122,613	3,606	1,757
Information and communication (J)	125,471	1,271	951
Financial and insurance activities (K)	105,238	1,129	628
Real estate activities (L)	12,362	183	117
Professional, scientific and technical activities (M)	158,146	2,470	1,276
Administrative and support service activities (N)	87,031	1,539	815
Public administration and defence; compulsory social security (O)	129,978	3,799	2,723
Education (P)	211,457	5,167	3,114
Human health and social work activities (Q)	269,617	7,393	4,592
Arts, entertainment and recreation (R)	38,169	809	480
Other service activities (S)	52,663	1,511	676
Activities of households as employers; producing activities of households for own use (T)	1,684	38	7
Activities of extraterritorial organisations and bodies (U)	1,661	6	7
Industry not stated	150,587	3,035	1,954

Broad Industrial Group	State	Mayo	Sligo
Unemployed Looking for first regular job	34,526	905	374
Unemployed, having lost or given up previous job	176,276	4,778	2,421

The most popular jobs of people in the study counties are manufacturing with a similar trend of careers in line with what is seen along with the state. As expected, due to the number of agricultural premises near the Proposed Development there is a larger proportion of the population of the two counties working in the agricultural sector than we see in the state as a whole. The increase in certain sectors such as manufacturing and pharmaceutical can increase the stress and demand on water provisioning services.

On a more local scale, the Ballina Local Area Plan (Mayo County Council, 2024) identified the Proposed Development as intersecting a key employment site area. The new pipeline route intersects road used to access Belleek Hotel and Ballina Beverages.

Please see Section 6.4.3.3 for further baseline relating to development land and businesses.

6.4.4.14 Climate Change Mitigation and Adaptation

Effects on climate arising from the Proposed Development will be considered in Chapter 12 – Climate of the EIAR and will be integrated into the Population and Human health assessment. See Section 12.5 of Chapter 12 for a review of baseline conditions in respect of climate.

6.4.4.15 Air Quality

Effects on air quality arising from the Proposed Development will be considered in Chapter 11 – Air Quality of the EIAR and will be integrated into the Population and Human health assessment. See Section 11.4 of Chapter 11 for a review of baseline conditions in respect of air quality.

6.4.4.16 Water Quality or Availability

Effects on water arising from the Proposed Development are considered in Chapter 10 – Water (Hydrology and Hydrogeology) of the EIAR and will be integrated into the Population and Human health assessment. Please see Section 10.4 of Chapter 10 for a review of baseline conditions in respect of water.

6.4.4.17 Land Quality

Effects on land quality arising from the Proposed Development are considered in Chapter 9 – Land, Soils & Geology and Chapter 8 – Agronomy of the EIAR and will be integrated into the Population and Human health assessment. Section 9.4 of Chapter 9 and Section 8.3 of Chapter 8 provide a review of baseline conditions in respect of land quality.

6.4.4.18 Noise and Vibration

Effects on noise and vibration arising from the Proposed Development are considered in Chapter 13 – Noise and Vibration of the EIAR and will be integrated into the Population and Human Health assessment. Section 13.4 of Chapter 13 provides a review of baseline conditions in respect of noise and vibration.

6.4.4.19 Health and Social Care Services

No health or social care services have been identified within the Study Area. The nearest Primary Care centre is located in Ballina approximately 2.1 km south of the Proposed Development.

6.4.4.20 Built Environment

The Proposed Development is in a relatively rural area with a limited range of built assets identified in close proximity. Those properties, businesses, roads, community assets or other aspects of the built environment that have been identified are recorded under Sections 6.4.3.2 to 6.4.3.5 of this report.

6.4.4.21 Wider Social Infrastructure and Resources

In addition to the residential, health, community and commercial receptors identified in the previous sections, infrastructure and resources in the wider area of note include:

- Ballina District Hospital (St Josephs) – 2.3 km south
- Mot View Family Practice - 1.7 km south
- Westdoc Ballina – 2.5 km south west
- Atlantic Medical Centre – 2.4 km south west
- Dr Brian Barrett – 2.4 km south
- Doctor Lisa Clinic - 2.2 km south
- Ballina Garda Station – 2.4 km south
- Ballina Fire Station – 2.0 km south
- Ballina Town FC Soccer Club - 0.9 km south
- Lough Talt Carpark – 0.2 km west

Receptors identified within the Study Area are in Table 6-16 and Figure 6-5.

Table 6-16 — Receptors within Study Area

Receptor	Within RLB (count)	Within 250 m of RLB (count)	250 m-500 m of RLB (count)	Closest identified (if none within 500 m of RLB)
Residential Properties (including farm dwellings)	0	588	194	N/A
Community Facility	0	▪ Heffernan Park ▪ Shamrock Metal Recycling ▪ Rathroeen Landfill ▪ Ballina Rugby Football Club ▪ Bonniconlon Garda Station ▪ Bonniconlon GAA Club ▪ Moy Boat Club	▪ Mullafarry Graveyard ▪ Rathroeen Landfill ▪ River Moy Search and Rescue ▪ Bonniconlon cemetery	N/A
Place of Worship	0	▪ Mullafarry Presbyterian Church ▪ Church of the Immaculate Heart of Mary ▪ The Lake Church Lough Talt	0	N/A
School	0	▪ Treblemakers Academy of Performing Arts ▪ Quay National School ▪ Lynn Academy of Music ▪ St Oliver Plunkett National School ▪ Behy National School	0	N/A

Receptor	Within RLB (count)	Within 250 m of RLB (count)	250 m-500 m of RLB (count)	Closest identified (if none within 500 m of RLB)
		▪ Bonniconlon National School ▪ Cearra National School ▪ Culleens National School		
Nursery/Creche	0	0	▪ Happy Days Preschool ▪ The Mulberry Tree Learning Centre	N/A
Health Care Facility	0	▪ 0	0	▪ Ballina Health Centre approx. 2.2 km south in Ballina Town
Walking/cycling route	▪ Belleek Woods Greenway and trails ▪ Drumsheen Loop – Bunnyconnellan (walking trail) ▪ Glen Loop - Bunnyconnellan (walking trail) ▪ EuroVelo 1 Ireland – Atlantic Coast Route (road cycling route) ▪ The Sligo Way Trail (Long Distance Waymarked Way	▪ Belleek Woods Greenway and trails ▪ Drumsheen Loop – Bunnyconnellan (walking trail) ▪ Glen Loop - Bunnyconnellan (walking trail) ▪ EuroVelo 1 Ireland – Atlantic Coast Route (road cycling route) ▪ The Sligo Way Trail (Long Distance Waymarked Way	▪ Belleek Woods Greenway and trails ▪ Drumsheen Loop – Bunnyconnellan (walking trail) ▪ Glen Loop - Bunnyconnellan (walking trail) ▪ EuroVelo 1 Ireland – Atlantic Coast Route (road cycling route) ▪ The Sligo Way Trail (Long Distance Waymarked Way	N/A
Bus/Railway Station	▪ Quignalegan Bus Stop	0	0	0
Local Business / Commercial	0	44	63	107

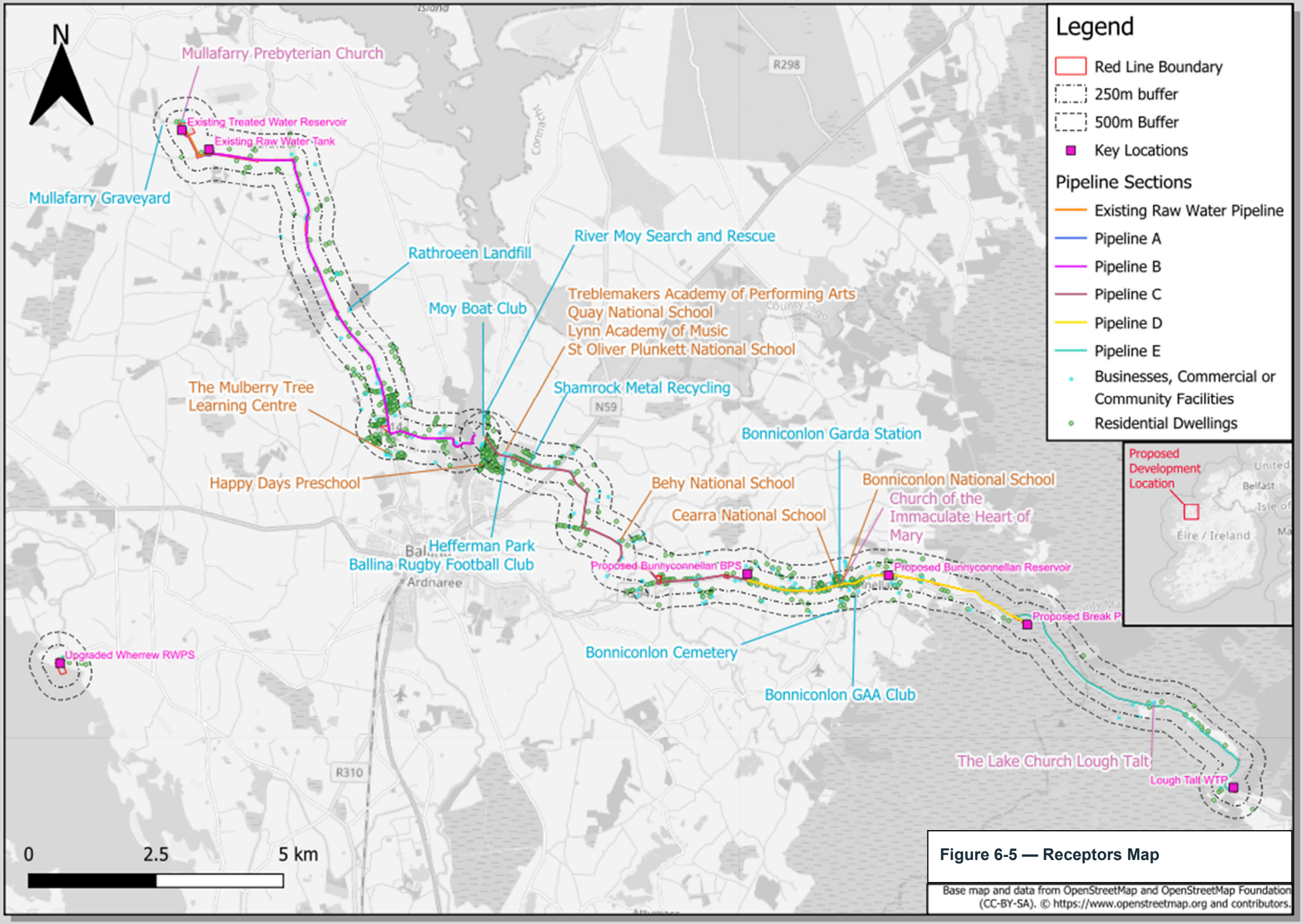


Figure 6-5 — Receptors Map

Base map and data from OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors.

Figure 6-5 highlights the receptors identified within Table 6-16, with blue text indicating community facilities, pink text places of worship and orange text educational facilities. Blue points and green points highlight the businesses, commercial facilities or community facility buildings and the residential properties, respectively, as indicated by postcode data.

6.4.4.22 Water provisioning

The sustainable socio-economic growth of both Mayo and Sligo is dependent on the provision and satisfactory management of essential infrastructure including water to ensure the delivery of a high-quality, reliable service provision. Infrastructural provision retains and attracts economic investment and employment, creates sustainable communities and supports the future development of the county. Furthermore, this infrastructure needs to be provided in a manner that protects public health and is environmentally appropriate and economically effective. Two relevant policies of the Mayo County Development plan are; INP 1 -'To liaise and work in conjunction with Irish Water in the delivery of an adequate level of water services infrastructure through the Capital Investment Plan 2017-2021 and Rural Water Programme 2019-2021 and any subsequent plans or programmes, to ensure that a sufficient water supply is available for the settlements set out in the County Settlement Hierarchy', and, INP 2 – 'To liaise and work in conjunction with Irish Water to promote the sustainable development of water supplies and drainage infrastructure in the county and the region, in accordance with the objectives and recommendations set out in the Irish Water's Water Services Strategic Plan'. The Lough Talt Regional Supply Scheme is listed within the Sligo County Development Plan as one of the water supply schemes subject to the necessary upgrades. It is envisaged that following these upgrades to this scheme along with others, there will be adequate capacity to meet the projected increase in the population of County Sligo up to 2030 and beyond. Ballymote and Tobbercurry are supplied from Lough Talt RWSS, where an "interim" Water Treatment Plant was commissioned in 2020 to meet short/medium-term needs with this project providing an alternative long-term supply for the area is required by 2029. Many private water users rely on groundwater sources that are prone to contamination from septic tanks or farmyard effluent. Therefore, the protection of underlying aquifers is important for the environmental quality of rural water supply. It is the policy of Sligo County Council to: P-WS-1 – 'Co-operate with Uisce Éireann to maximise the potential of existing capacity and to identify and facilitate the timely delivery of new water services infrastructure, required to realise the development objectives and support population and economic growth as set out in the Core Strategy of this Plan.'

6.4.4.23 Tourism and Amenities

Outdoor recreational spaces and facilities are essential for the health and wellbeing of people living in County Sligo and Mayo as well as encouraging tourists to visit the area. Both these counties coastlines are part of the famous Irish tourism route the Wild Atlantic Way. This is one of the Regional Tourism Strategies set up to unlock the commercial potential of the region bringing benefits to all stakeholders and industry. The natural amenities available in Sligo, such as the Atlantic beaches, lakes, rivers, mountains, forests and trails, make the county an ideal location for outdoor sport and recreation. Sligo's natural environment lends itself to a large variety of outdoor pursuits, including walking, hillwalking, mountaineering, rock-climbing, cycling, mountain biking, and all types of water sports including swimming, surfing, kite surfing, sailing, kayaking, rowing, and supping. These are all recognised as growing leisure activities that can largely be facilitated with a minimum of supporting infrastructure. A lot of these recreational and tourist amenities particularly any marine based activities are located along the coast. A number of long-distance walking routes exist throughout the county, e.g. Sligo Way (overlap with this project at Lough Talt).

The Mayo County Development Plan recognises the significant tourism potential of Ballina through investment in tourism related infrastructure, such as the Monasteries of the Moy Greenway from Ballina to Killala which the project crosses north of Ballina. Mayo has the most extensive network of recreational greenways and tracks and trails for cycling and walking in Ireland, including Deel Castle Red Walk. Mayo holds a wealth of natural resources, unspoilt environment, scenic and sensitive landscapes as well as internationally renowned destinations. Ballina in particular itself is a developing tourism hub with attractions such as the Mary Robinson Centre, The Jackie Clarke Collection, Connacht Whiskey Distillery and Belleek Castle. Ballina serves as a destination town which attracts people to the general nearby area and support local businesses and communities. Mayo lends itself well to adventure activities and

sports tourism due to its impressively wild landscape, rugged coastline and the wide availability of an adventure and activity product in the county.

Green open spaces can provide areas for sports playing fields, playgrounds, walking areas, visual amenity alongside protecting wildlife habitats, all of which play a role in benefitting human health and the population of an area. These areas therefore need to be safeguarded from being negatively impacted by new developments.

Mayo has considerable appeal as a spiritual tourism destination, with 1.6 million people travelling to Mayo annually to visit Knock Shrine. Added to this, Mayo has a rich sacred landscape with many religious heritage sites and pilgrimage walks, such as the Timber Trail which includes the Monasteries of the Moy.

Mayo's lakes are popular with leisure tourism and water sports enthusiasts, primarily for boating, kayaking, angling and swimming. Popular water tourism activities include fishing and angling due to the abundance of productive lakes like Lough Conn. The following is an objective of the Mayo County Development Plan; TRO 28 – 'To support the protection and enhancement of our counties lakes as visitor attractions, through the identification of infrastructure requirements and development of masterplans including: the exploration of the development of the Pontoon Lakes masterplan and construction of a boardwalk in conjunction with the Tourism Section of Mayo County Council, working with relevant landholders and recreational/tourism agencies to increase access to Mayo's lakes.' Mayo and Sligo both also have an abundance of rivers which are also used for fishing purposes. The River Deel (Crossmolina) in Mayo and the River Moy which stretches between both Mayo and Sligo are known salmonoid protected rivers, with the River Moy and its associated salmon fishery inspiring the annual Ballina Salmon Festival bringing many tourists to the town.

Lough Conn is the source of water for the existing Ballina water supply and will supply the extended network. It is a popular angling spot. Several trout fishing competitions are held on Loughs Conn and Cullin each year. The open season for salmon and trout begins in February and ends in September. A permit is not required to fish these lakes. However, a state salmon licence is required by law for salmon fishing. Lough Conn, with an area of 5665 hectares, is fed in the north by the River Deel and many other smaller tributaries. The lake joins Lough Cullin to the south through a short channel at Pontoon Bridge. Lough Cullin, area 1019 hectares, receives water from Conn, the Carra, Tobergal and Clydagh Rivers and drains into the River Moy from its south east corner through what is known, locally, as the 'Lake River'. The lakes support a large population of trout as well as migrating salmon, pike, roach and perch, with both accessible either from the shore or by boat. Lough Conn is part of the River Moy Special Area of Conservation, the Lough Conn and Lough Cullin Special Protection Area (SPA) and pNHA.

Lough Talt is at its deepest point approximately 20 m deep and its area is nearly 79 hectares. Recreational activities on the lake include fishing for brown trout and arctic char, rowing, kayaking, stand up paddleboarding and open water swimming. The open season for brown trout here begins in February and ends in October with no permit required to fish. Lough Talt is part of the Lough Hoe Bog SAC and proposed Natural Heritage Area (pNHA).

The Ballina Local Area Plan 2024-2030 identifies the Quay Quarter as a regeneration site and is within the Study Area. The guiding development principles for the project include water front activation and tourism, high-quality public realm and civic space, permeability and connectivity with the adjacent areas and context-sensitive development.

6.4.5 Wider or Vulnerable Groups

It is well established in Ireland and internationally that the factors that influence health and well-being within the affected population vary by age, gender, ethnicity, disability, income, and social support. The most sensitive or vulnerable members in society often stand to lose the most from both the construction and operational stages of a project and this can lead to health inequality and health and social equity issues that must be addressed. This also reflects IEMA guidance (2022) for assessing health impacts in EIA, which recommends that specific attention should be paid to impacts on vulnerable groups within the community. These groups are noted in the guidance as likely to be more susceptible to the changes to health determinants than other social groups and are typically differentiated by their age, health status and income.

Identification of vulnerable groups was done by examining relevant plans and policies in respect of the Study Area to identify key health and wellbeing issues, but also through examining the baseline data gathered for the Study Area and consideration of the nature and proposed construction activities and design of the Proposed Development. As such, wider and/or vulnerable groups identified in the Study Area are given in Table 6-17 below.

Table 6-17 — Wider and Vulnerable Groups

Wider group or vulnerable group	Location of individuals / groups	Are these groups identified in the Study Area?
Wider group – adults / working people (population as a whole)	People working in nearby local businesses / farms. Residents living in houses, users of local commercial premises. Users of local road network, travelling to / from employment, education and community facilities.	Yes, this group has been identified within the Study Area, with residents of properties, employees and business owners of the commercial and industrial businesses interspersed throughout the area and users of the nearby recreational/community facilities, are likely to be most exposed to health impacts. Table 6-6 and Table 6-7 give an overview of the population in the Study Area and the proportion of which are of working age (between 15-64). Table 6-16 also provides an approximate number of the commercial businesses within the Study Area.
Vulnerable Group - **Families with children and adolescents**, (pregnant women, babies, children and adolescents)	Residential houses.	Yes, families with children and adolescents are present throughout the Study Area as shown by the population in each ED (Table 6-7) and it is noted that there is a slightly higher proportion of the population in the EDs aged 0-14 than the Counties or State. Children and adolescents constitute a sensitive population group due partly to their need to be able to move around freely to and from school, open space, greenspace and recreational activities, whilst they lack the experience and judgement displayed by adults when moving around or being aware of construction traffic or machinery in local public spaces.
Vulnerable Group – **People who are physically or mentally disadvantaged** (elderly people, people with physical disabilities, people with other health problems or impairments)	Residential houses, care homes, hospitals.	Yes, this group is identified within the Study Area as the counties and EDs intersected have a higher proportion of those aged 65 and over compared to the state (see Table 6-7). Elderly people constitute a sensitive group as they are more sensitive than young and middle-aged adults, as generally with age, movement and reactions become slower and hearing becomes poorer (Transport for London, 2013). They can be more at risk from injury and may fear falls, steps or lack of suitable footpaths, lack of safe crossing points and short crossing times at safe crossing points and other aspects

Wider group or vulnerable group	Location of individuals / groups	Are these groups identified in the Study Area?
		of the surrounding built environment (Asher et al, 2012). As such, they are more vulnerable to disruption caused by construction activities. This can deter them from outdoor activity, especially walking, whereas walking is critical for muscle strength and reduces the risk of falls amongst other benefits. Elderly people can also feel more sensitive when using public transport (Shrestha et al, 2017) They also often need to seek health services which as stated in Section 6.4.4.21 are present within the wider study area. Their continuing independence at home is often dependent on having available a range of transport modes and route options. They can be more vulnerable to disruption to travel caused by construction. Table 6-10 also shows there are also people with a disability within both counties. People who are disabled and/or with physical and/or mental illnesses or impairments constitute a sensitive group as they may not be able to access many forms of transport or need special arrangements and/or support to access these (House of Commons, 2018). They are more likely to find it difficult to walk or travel independently and can also be disadvantaged by the cost of transport, or disruption to transport options. Any changes in access, such as greater travel distances, diversions or replacement services during construction would have particular impacts on this group. Chronically ill persons, for example, people with impaired lung function, can be more adversely affected by air pollution (DEFRA, 2026). The same is true of hypersensitive individuals such as asthmatics (Asthama, 2026). Noise can cause hypertension and cardio-vascular problems (Munzel et al, 2018). Those who already have these conditions can be more troubled by noise than others. People with existing physical and mental illnesses, including sleep disturbance, anxiety and depression, are likely to be more sensitive to changes to their local environment.

Wider group or vulnerable group	Location of individuals / groups	Are these groups identified in the Study Area?
Sensitive Group - **People who are materially disadvantaged**	Residential houses.	Yes, this group are considered to be present within as people who are deprived are present throughout the Study Area as shown by Table 6-11 and the levels of deprivation. Deprivation levels fluctuate across the EDs and it is recognised that rural areas often mask deprivation. There are also likely to be individuals who are materially disadvantaged on a personal basis and as such this group are considered in order to ensure a precautionary approach to the assessment. People on low incomes (living in deprived areas is a proxy measure for low income) and people without access to a car constitute a sensitive group as they are likely to walk further because they cannot afford public transport or to own a car, and their lack of transport options may limit life and work opportunities. Those on low incomes may be less able to adapt to changes in access, such as greater travel distance or alternative transport provision. This group is generally more likely to already have reduced access to health and social care as well as reduced access to other services and amenities. This group may have increased stress levels due to the factors above. In addition, this group is more sensitive to food insecurity, which has an access dimension.

6.5 Potential Impact of the Proposed Development

It is important to recognise that the nature of this project (i.e. the development of a pipeline and water supply infrastructure at seven key locations) means that work activities will take place on a 'rolling basis' in many areas. In short, for large parts of the pipeline route, the laying of a pipeline will not require construction activities to take place in any one particular area over the full length of the construction period and will likely be of very limited duration.

Scoping decisions in respect of the wider determinants of health, associated with the WHO definition of health and set out in the IEMA Guidance (2022), have been reported below.

In light of the baseline review presented in Section 6.4, during construction and operation, the following scoping decisions have been recorded in Table 6-18 with regard to the wider determinants of health.

The following chapter assessments and reports have informed the population and human health scoping decisions taken: Chapter 8 – Agronomy; Chapter 9 – Land, Soils and Geology; Chapter 10 – Water (Hydrology and Hydrogeology); Chapter 11 – Air Quality; Chapter 12 – Climate; Chapter 13 – Noise and Vibration; Chapter 15 –

Roads Traffic & Transportation; Appendix 15-1 – Construction Works Preliminary Traffic Management Plan (CWPTMP); Chapter 16 – Material Assets and Chapter 19 – Risk of Major Accidents and Disasters.

Table 6-18 — Scoping Decision

Categories	Wider determinant of health	Scoped in/out?	Rationale
Health behaviours	Physical activity	In	*Construction* A number of active travel routes have been identified in proximity to or intersected by the Proposed Development predominately within Belleek Wood and near Lough Talt therefore, there may be disruption or changes to routes during construction. Any disruption to access would be very short term, temporary and minimised through best practice construction techniques including effective communication and signage. There are also a number of recreational facilities in proximity to the site boundary therefore access could be affected to these during construction, although this specific impact will be considered within transport modes, access and connections.
		Out	*Operation* No significant effects towards active travel sites or other recreational facilities are anticipated through the operation of new pumping stations or treatment sites in the Proposed Development. Anglers using Lough Conn and / or Lough Talt are not anticipated to be impacted during operation, as modelling undertaken in Chapter 10 concluded that the increased abstraction will not significantly affect water quantity or quality or the WFD status of the lakes. See Chapter 10 for further information. Land disturbed during construction of the pipeline is anticipated to be reinstated.
	Risk taking behaviour	Out	*Construction* The Proposed Development is within a largely rural area which is likely more sparsely populated. It is anticipated that construction sites will have good levels of security in accordance with Uisce Éireann's standard TEC-600-01, including security fencing.
		Out	*Operation* The permanent infrastructure being developed includes treated water storage and reservoir facilities. These facilities will be secure with no access permitted, and covered / not open air, therefore there is very limited potential for misadventure or trespassing by unauthorised personnel into the bodies of water.

Categories	Wider determinant of health	Scoped in/out?	Rationale
	Diet and nutrition	Out	*Construction* The Proposed Development includes the construction of a new pipeline and associated infrastructure within agricultural land. Although these fields may be used for light grazing and silage cutting it's considered that this would not be of significance to wider diet and nutrition. Land disturbed from the construction of the pipeline will likely be reinstated and therefore effects likely temporary. No other implications for diet or nutrition have been identified.
		Out	*Operation* The total area of greenfield land required to construct new infrastructure is not anticipated to be significant and any land temporarily disturbed during construction of the pipeline will be reinstated and reverted back for agricultural use during operation therefore, effects to wider diet and nutrition are not anticipated.
Social environment	Housing	Out	*Construction* The Proposed Development does not involve the development of residential properties. The Proposed Development is also not within the Local Development Plan or the Ballina Local Area Plan planned developments. Issues relating to access of housing are considered under Transport modes, access and connections. Issues relating to noise and vibration towards residential properties in proximity to the Proposed Development are addressed in Chapter 13 of the EIAR.
		Out	*Operation* Operation of treatment plants may increase traffic surrounding new infrastructure sites however, given their more rural locations and the nature of the works e.g. maintenance and security, this is not anticipated to be significant. Issues relating to noise and vibration towards residential properties in proximity to the Proposed Development are addressed in Chapter 13 of the EIAR.
	Relocation	Out	*Construction* The Proposed Development includes construction works in proximity to residential properties and in two cases, around the curtilage of them. There is no requirement to relocate any residents or businesses at any stage of construction. Indirect impacts associated with the construction of the

Categories	Wider determinant of health	Scoped in/out?	Rationale
			pipeline in close proximity to these and other dwellings in the wider area are captured under respective technical chapters: Air Quality – Chapter 11, Noise and Vibration – Chapter 13, Water and Hydrology – Chapter 10, Land, Soils and Geology – Chapter 9, and Risk of Major Accidents and Disasters – Chapter 19.
		Out	*Operation* There is no requirement for relocation of any residents during the operational phase. As such this is scoped out of the assessment.
	Open space, leisure and play	Out	*Construction* The new pipeline proposed and some infrastructure upgrades are within existing road and existing water treatment sites, outside of any areas of open space, leisure or play, therefore no loss is anticipated to these areas. The Proposed Development includes the construction of a new pipeline and new pumping stations or treated water reservoirs which will be located within greenfield sites however, land take is not anticipated to be significant and these areas are outside of any open space, leisure and play areas. A number of community land and assets such as Hefferman Park, Ballina Rugby Football Club, Bonniconlon GAA Club and Moy Boat Club could have access disrupted during construction, however these impacts are considered under Transport modes, access and connections. As with affected walking trails, any disruption to access would be very short term, temporary and minimised through best practice construction techniques including effective communication and signage.
		Out	*Operation* Land disturbed during construction is anticipated to be reinstated back to its former quality. There are also no open greenspaces in proximity to the permanent structures within the Proposed Development therefore no significant effects are anticipated.
	Transport modes, access and connections	In	*Construction* During the construction period, the R314, N59, R294 (east) and local access roads including L11109, , Creggs Road (L1101), Quay Road, L10112, L5132 Behy Road, L5133 Behy More, L5135 Carrownlabaun, L51172

Categories	Wider determinant of health	Scoped in/out?	Rationale
			Bunnyconnellan West. L51357, L53135, Mullafarry Road (L1111), L1120 Belleek Road, Knockfree Road and Wherrew Road (L5111) were identified as having 'Short-term Significant Negative' impacts, largely driven by very low baseline traffic levels. The R314, R294 (west) and N59 were identified as having 'Short-term Imperceptible Negative' and 'Short-term Not Significant Negative' effects in relation to construction traffic. Overall, the effect is 'Short-term Imperceptible Negative' and depending on actual impact may vary within the range of 'Short-term Not Significant Negative' and 'Short-term Significant Negative'. Given the proximity of some sensitive receptors to some of these roads identified, further assessment is required of potential health outcomes from construction related traffic and traffic disruptions. A combination of stop/go systems and road closures and diversions will be utilised as agreed with the council. A temporary works compound will be established within Lisglennon WTP.
		Out	*Operation* During the operational phase, traffic generation associated with the Proposed Development is expected to be minimal (approximately 32 vehicle trips per day). Traffic activity will primarily comprise security staff movements (shift changes), scheduled deliveries, and occasional HGV trips. No physical impacts on public transport, pedestrian facilities, or cyclist infrastructure is anticipated, with effects identified as 'Short-term Imperceptible Negative'.
	Community safety	Out	*Construction* Construction activities could give rise to activities which could present a danger, or perceived danger, to the local community. This could include 'stranger danger' which could be generated by a perceived threat from unknown persons in the local area. However, effects will be temporary and normal construction processes e.g. staff carrying ID cards, and restricted site access will be practiced. It is noted that local community safety partnerships are being established across Ireland, including one for Sligo and Mayo.
		Out	*Operation* The Proposed Development includes the development of treated water storage and reservoirs which could pose a

Categories	Wider determinant of health	Scoped in/out?	Rationale
			risk to community safety. However, these will be covered and not 'open air' removing any opportunities for misadventure or entering the waterbodies, and with appropriate security in place, removing significant risk to the community.
	Community identity, culture, resilience and influence	Out	*Construction* No communities would be displaced to construct or accommodate the Proposed Development and impacts/ effects on local communities, including from the influx of a construction or demolition workforce is not expected to be significant. Chapter 18 – Landscape and Visual also determined no long-term significant visual effects to the landscape during this phase.
		Out	*Operation* No communities would be displaced to operate the Proposed Development and impacts / effects on local communities is not expected to be significant. No long-term significant adverse landscape or visual impacts were concluded in Chapter 18 following embedded mitigation such as landscape planting.
	Social participation, interaction and support	Out	*Construction* No impacts on social participation, interaction and support are anticipated as a result of construction of the Proposed Development. Any impacts in relation to access to community and recreational facilities which enable social opportunities are considered under Transport modes, access and connections.
		Out	*Operation* No impacts on social participation, interaction and support are anticipated as a result of operation of the Proposed Development.
Economic environment	Education and training	Out	*Construction* The Proposed Development will not directly impact on education and training however it is recognised that disruption on the local road network means there is a potential for access issues for local residents to education and training facilities including schools such as Quay National School, Bonniconlon National School and Behy National School. It is considered that this is most

Categories	Wider determinant of health	Scoped in/out?	Rationale
			appropriately addressed under the Transport modes, access and connections wider determinant of health.
		Out	*Operation* No impacts on education and training are anticipated as a result of operation of the Proposed Development.
	Employment and income	In	*Construction* The Proposed Development may provide opportunity for employment during construction. It is anticipated that there will be approximately 126 total on-site construction workers at peak periods (See Chapter 2 for further detail). There is a potential loss of agricultural output and impact on access and / or trading conditions to local businesses, though there could also be opportunities for the supply of goods and services. Key employment sites have been identified in close proximity to the Proposed Development and may be impacted by disruption during construction. In respect of tourism, it is noted that given the location of the infrastructure to the Moy Estuary, Moy Boat Club, Belleek Woods, greenway, and in the wider study area a golf club, disruption to tourism is anticipated during construction. This includes impacts arising from health impacts of air pollution arising from any increase in traffic.
		Out	*Operation* Although staff are required for plant functions. maintenance and security, any employment opportunities are anticipated to not be significant and resourced within Uisce Éireann.
Bio-physical environment	Climate change mitigation and adaptation	Out	*Construction* Chapter 12 – Climate addresses potential impacts on climate change mitigation and adaptation from the Proposed Development. The greatest risk with respect to construction phase activities on climate will be due to embodied energy in the construction materials required for the Proposed Development. Transport of materials and construction activities make up a further 3% and 4% of construction GHG emissions respectively. However, effects were determined to be minor adverse and not significant.
		Out	*Operation*

Categories	Wider determinant of health	Scoped in/out?	Rationale
			Once operational, most of the sources of emissions that would arise during construction will cease. However, operational power requirements will increase up to the design year. 79% is from incremental water treatment chemical use and incremental energy consumption. However, effects were determined to be minor adverse and not significant. In relation to climate change vulnerability, effects were also identified as not significant.
	Air quality	Out	*Construction* There is a potential impact on air quality from the Proposed Development during construction and operation. This is addressed in Chapter 11 – Air Quality of the EIAR. The greatest potential impact on air quality during the construction phase is from construction dust and particulate emissions and the potential for nuisance dust. The assessment takes into account human health and overall determines that predicted residual dust-related human health impacts during construction are likely to be temporary, negative, imperceptible and therefore not significant.
		Out	*Operation* Impacts during operation include potential increased traffic emissions however, a detailed air quality assessment was scoped out for the operational stage of the Proposed Development as per the TII screening criteria. No significant operational effects of traffic on air quality are anticipated.
	Water quality or availability	Out	*Construction and Operation* There is a potential impact on the water environment from the Proposed Development during construction and operation. Changes to water flow paths could make it possible for contaminants to reach and contaminate water sources, during construction or operation. Reduced quality of water sources may negatively affect the health of biodiversity and humans. The potential impacts are considered within Chapter 10 Water and Hydrology. The impact assessment concluded that overall, potential effects are anticipated to be slight, imperceptible and temporary once proposed mitigation

Categories	Wider determinant of health	Scoped in/out?	Rationale
			measures are implemented, with no residual effects anticipated.
	Land quality	Out	*Construction* The Proposed Development includes construction on greenfield agricultural land and as such there is a potential impact on land quality. This is addressed in Chapter 9 – Land, soils and geology of the EIAR. Potential impacts that were considered include the direct loss / damage of underlying soils, geology and risk of leaks or spills to land and soils. Overall, no significant residual effects were identified.
		Out	*Operation* During operation and maintenance of the Proposed Development, potential impacts were considered regarding the risk of leaks or spills to underlying soils. The assessment concluded there would be no significant residual effects likely.
	Noise and vibration	Out	*Construction* Construction phase effects have been identified within Chapter 13 – Noise and Vibration of the EIAR, including from site clearance and enabling works, trenching and excavation, pipe laying and specialised crossings, piling and compactions, and construction traffic. It is anticipated that operational noise levels will comply with recognised best practice standards typically adopted for such projects in Ireland.
		Out	*Operation* The chapter includes an assessment of the operational noise impacts for noise from the plant and equipment associated with the Proposed Development. It is anticipated that operational noise levels will comply with the project criteria and not produce a negative noise effect.
	Radiation	Out	*Construction and Operation* The Proposed Development is not expected to affect actual or perceived exposure to electromagnetic and ionising radiation risks during construction or operation.

Categories	Wider determinant of health	Scoped in/out?	Rationale
Institutional and built environment	Health and social care services	Out	*Construction* There will be no direct impact on local health and social care facilities. Disruption on the local road network means there is a potential for temporary access issues for local residents to such facilities in the wider area. This could include increased journey times that may present anxiety and potential for missed appointments. Increased journey times, route closure etc. could impact emergency service response times. Such issues are then considered under Transport modes, access and connections.
		Out	*Operation* No significant impacts are anticipated during operation of the Proposed Development regarding health and social care services.
	Built environment	Out	*Construction* The Proposed Development site is partially greenfield and within the existing road network. The closest settlement to the Proposed Development is Bonniconlon and Ballina. However, no significant effects are anticipated towards these built environments and other settlements in nearby during construction. Issues relating to access to facilities and change of landscape character of the local area are considered under respective Transport and Land quality wider determinants of health and will be addressed in Chapter 18 – Landscape & Visual.
		Out	*Operation* The Proposed Development site is partially greenfield however no loss of any aspect of the built environment is anticipated. Potential issues relating to impacts to towards the landscape will be addressed in Chapter 18 – Landscape & Visual.
	Wider social infrastructure and resources	Out	*Construction* No significant effects towards wider social infrastructure and resources are anticipated during construction.
		In	*Operation* It is considered that the Proposed Development is a critical piece of infrastructure to support future water supply in the

Categories	Wider determinant of health	Scoped in/out?	Rationale
			region and as such will have beneficial effects on wider society and resources.

Note that despite climate change mitigation and adaptation, air quality, water quality or availability, land quality and noise and vibration being scoped out, Sections 6.5.2.1 to 6.5.2.5, and Sections 6.5.3.1 to 6.5.3.5 are included for completeness.

For wider determinants of health which have been screened in, a sensitivity has been identified in line with IEMA guidance (2022) for each of the wider and vulnerable groups identified in Table 6-17. The sensitivity of a community / population shall be reported as:

- Very low
- Low
- Medium
- High

The sensitivity of a population sub-group encompasses their ability to withstand exposures and the range of associated impacts or effects, and the physiological (e.g. co-morbidities or disabilities) and socio-economic factors that increase their susceptibility to the exposure. Table 6-19 notes the wider and vulnerable groups sensitivity to health determinants (see Table 6-17 for further rationale behind the determination of sensitivity in respect of this Proposed Development).

Table 6-19 — Health receptor sensitivity to health determinants

Community / Population within Study Area	Determinant and sensitivity	Rationale
Wider groups – adults / working people (population as a whole)	Physical Activity – ***Medium*** Transport modes, access and connections – ***Medium*** Employment and Income – ***Medium*** Wider social infrastructure and resources – ***Medium***	The sensitivity for adults / working people and the population as a whole in relation to all determinants is generally considered to be Medium. Note that, as per IEMA guidance, with likely moderate pockets of deprivation, few alternatives to shared resources in this rural area, concerns in the community / uncertain outlook and the likely presence of people with a poor health status and / or people with a limited capacity to adapt, a medium sensitivity is likely. A general sensitivity of medium is considered precautionary for this area.
Vulnerable Group - **Families with children and adolescents**, (pregnant women, babies, children and adolescents)	Physical Activity – ***Medium*** Transport modes, access and connections – ***High*** Employment and Income – ***Low***	This group will likely be more sensitive to transport modes, access and connections due partly to their need to be able to move around freely to and from school, open space, greenspace and recreational activities. Families with children and adolescents are considered to have a low sensitivity to employment

Community / Population within Study Area	Determinant and sensitivity	Rationale
	Wider social infrastructure and resources – ***Medium***	and income as this will not be a consideration for the majority of people in this group due to their age.
Vulnerable Group – **People who are physically or mentally disadvantaged** (elderly people, people with physical disabilities, people with other health problems or impairments)	Physical Activity – ***Medium*** Transport modes, access and connections – ***High*** Employment and Income – ***Medium*** Wider social infrastructure and resources – ***Medium***	High sensitivity is considered in relation to transport modes, access and connections as their continuing independence at home is often dependent on having available a range of transport mode and route options and any changes in access, such as greater travel distances, diversions or replacement services during construction would have particular impacts on this group. This group may also be impacted by construction activities which may deter them from outdoor activity, especially walking, whereas walking is critical for muscle strength and reduces the risk of falls amongst other benefits.
Vulnerable Group - **People who are materially disadvantaged**	Physical Activity – ***Medium*** Transport modes, access and connections – ***High*** Employment and Income – ***High*** Wider social infrastructure and resources – ***Medium***	For this group, high sensitivities have been given to a number of determinants as these are sensitive to the amount of disposable income people have which in this case, is likely to be lower. Transport modes, access and connections as public, active travel modes are likely utilised more depending on their affordability. People in this group may also be eligible for concessions to public transport, causing its increased utilisation. High sensitivity is also anticipated in relation to employment and income as these aspects are important for gaining employment and generating income.

6.5.1 Do Nothing Scenario

The Proposed Development is required to allow the provision of a safe, robust and reliable potable water supply to meet the needs of current and future population in Sligo and North Co Mayo. If the Proposed Development is not realised, the Lough Talt Water supply area will continue to require an alternate water source. The Proposed Development is supported by the local plans / policies reviewed under Section 6.2. In terms of population and human health impacts, this could prove to be detrimental if people are not provided with the basic human right of having access to clean and safe drinking water. If the population of Sligo and Mayo continue to grow as currently projected this demand will only continue and put stress on the water supply system so this scenario would likely result in adverse impacts on health and wellbeing, particularly for those more vulnerable groups in society who are more sensitive to impacts resulting from reduced water supply.

6.5.2 Construction Phase

On any major infrastructure project there is a potential relationship between construction related exposures (such as traffic, noise, dust, exposure to contaminants, exposure to vermin and other pests from disturbance to sewers and other utilities, pollutants, increased risk of injury or death, increased demand for local services and housing

accommodation etc.) and health outcomes. Furthermore, any change to the baseline position can potentially result in the widening of inequalities and impact on health priorities.

The population and human health assessment is by nature an in-combination assessment of the potential impacts on population and human health (both beneficial and adverse) arising from the environmental effects of the Proposed Development. The construction phase impact assessment for the Proposed Development is set out in Table 6-20 below, and captures potential impacts, mitigation and the residual effect post mitigation.

Although the bio-physical wider health determinants have been scoped out, the decision for this was informed by the relevant sections as referenced in other chapters of the EIAR, and are summarised in Sections 6.5.2.1 to 6.5.2.8.

6.5.2.1 Climate Change Mitigation and Adaptation

A Greenhouse Gas (GHG) Assessment and Climate Change Risk Assessment (CCRA) were undertaken for the Proposed Development. The GHG assessment identified embodied carbon in materials, such as concrete and ductile iron used in reservoirs and watermains respectively, as the primary source of carbon during the construction phase. 57% of the GHG emissions are associated with the construction phase.

Whilst a detailed CCRA of the construction phase has been scoped out, consideration was given to the Proposed Development's vulnerability to the following climate change hazards with best practice mitigation measures proposed:

- Fluvial and coastal flooding at relevant sections of the Proposed Development
- Increased temperatures, potentially causing drought and wildfires
- Major storm damage, including wind damage, fallen objects landslides

The climate change risk assessment assessed the Proposed Development against extreme heat, flooding (pluvial, fluvial, coastal), drought, wildfire, storms and landslides, concluding that all vulnerabilities were low risk.

Full details are included in Chapter 12 – Climate of this EIAR.

6.5.2.2 Air Quality

The greatest potential impact on air quality during the construction phase of the Proposed Development is from construction dust emissions and the potential for nuisance dust to human health. A construction phase dust assessment and traffic assessment were undertaken. The dust assessment assessed demolition, earthworks construction and track out to reflect their different potential impacts, following IAQM guidance. Each activity was assessed against potential impacts, including human health. The assessment concluded that provided the dust minimisation measures are adhered to, the predicted residual air quality impacts during the construction phase are short-term, direct, negative, localised and not significant with respect to population and human health.

A traffic assessment was conducted and is included in Chapter 15 – Roads, Traffic and Transportation of this EIAR. It determined that construction stage traffic will not increase by 1,000 Average Annual Daily Traffic (AADT), or 200 Heavy Duty Vehicle (HDV) AADT, therefore the traffic does not meet the TII guidance Air Quality Assessment of Specified Infrastructure Projects scoping criteria. A detailed air quality assessment of construction stage traffic emissions has therefore been scoped out from any further assessment as there is no potential for significant impacts to air quality with respect with human or ecological receptors.

Full details are included in Chapter 11 – Air Quality of this EIAR.

6.5.2.3 Water Quality or Availability

Potential effects associated with the Proposed Development during the construction phase include chemical pollution of surface water and groundwater, erosion and sedimentation, and alterations to groundwater flows and the creation of preferential pathways.

The impact assessment considered each of these potential effects during the development of the following elements of the Proposed Development:

- Upgrade of intake at Wherrew RWI&PS.
- Upgrade of Lisglennon RWS&PS and WTP.
- Upgrade/construction of treated water rising mains from Lisglennon WTP to Lough Talt WTP.
- Construction of a new treated water BPS site at Bonniconlon Booster Pumping Station site.
- Construction of a new reservoir at Bonniconlon Reservoir site.
- Construction of a break pressure tank at Windy Gap BPT site.
- Repurpose of Lough Talt WTP.

It concluded that following the implementation of appropriate mitigation, any residual effects will be temporary and not significant during the construction phase.

Full details are included in Chapter 10 – Water (Hydrology and Hydrogeology) of this EIAR.

6.5.2.4 Land Quality

Potential impacts assessed in relation to land quality include:

- Land and soil resources and fertile land suitable for agriculture (including land take);
- Contamination; and,
- Geological heritage sites and mineral occurrences.

Potential effects of the Proposed Development during construction (pre-mitigation), with respect to soils and geology, are expected to include:

- Disturbance of the soil resource and loss of fertile land;
- Impacts to geology including karst bedrock and superficial geology potentially present beneath the site, and,
- Effects associated with the potential for new land contamination arising from construction activities.

During the construction phase the impact to land contamination, and overall soils and geology is likely to have a negative slight impact resulting in no significant effects.

The assessment identified that the impact on land take is unlikely to have any significant impact as the majority of the site will occupy currently developed land used for the same purpose. Where the Proposed Development does overlie land used for agricultural purposes, the site footprint is considered small and is unlikely to significantly alter the use of the land.

Overall, no significant impact on population is anticipated.

Full details are included in Chapter 9 – Land, Soils and Geology of this EIAR.

6.5.2.5 Noise and Vibration

Within the construction phase, the following potential noise and vibration impacts associated with the Proposed Development have been considered within this assessment:

- Construction Noise: from the installation of the water trunk mains, upgrades to water infrastructure facilities, and construction traffic noise.
- Construction Vibration: specifically during the construction of the water trunk mains.
- Construction Traffic.

The study identified potential effects on "human receptors", including homes, schools, hospitals, and churches, as well as vibration-sensitive commercial sites.

The assessment concluded that construction noise and vibration from the Proposed Development will comply with the recognised best practice standards typically adopted for such projects in Ireland following proposed mitigation measures.

Full details are included in Chapter 13 – Noise and Vibration of this EIAR.

6.5.2.6 Major Accidents and Disasters

Assessments associated with identifying likely significant effects on the environment arising from the vulnerability of the Proposed Development to risks of major accidents and / or disasters was carried out in accordance with the EPA Guidelines 2022.

Based on the requirements of the EIA Directive, the assessment determined:

- The relevant major accidents and/or natural disasters, if any, that the Potential Development could be vulnerable to;
- The potential for these major accidents and / or natural disasters to result in likely significant adverse environmental effect(s); and,
- The measures that are in place, or need to be in place, to prevent or mitigate the likely significant adverse effects of such events on the environment.

The assessment concluded that the risk of a major accident and/or disaster during all phases of the Proposed Development is considered ‘low or medium’ in accordance with the risk evaluation methodology. Following the mitigation measures outlined in a CEMP, there will be no significant residual effects associated with construction of the Proposed Development.

Full details are included in Chapter 19 – Risk of Major Accidents and Disasters of this EIAR.

6.5.2.7 Traffic

Traffic is assessed within Chapter 15 of the EIAR and assess likely significant effects on roads, traffic and transportation during construction of the Proposed Development, taking into consideration findings from the CWPTMP. Impacts from the number of construction trips and heavy vehicle trips were considered compared to existing baseline traffic levels. It was concluded that following the implementation of a CWTMP that effects would be negative, short term and not significant.

It was noted in Chapter 15 that abnormal loads will be required to the site potentially accumulating to 14 vehicles/day. No routes for these loads have been proposed as of yet within the CWPTMP. Reference should be made to Chapter 15 for full details, and it is a requirement for the contractor to develop a CWTMP and propose mitigation for any adverse impacts.

Full details are included in Chapter 15 – Roads, Traffic and Transportation of this EIAR.

6.5.2.8 Agronomy

Chapter 8 – Agronomy focuses on likely significant effects from the Proposed Development to the agricultural environment.

The assessment considered factors relevant to agricultural operations, including the extent of temporary and permanent land take; the proportion of each affected parcel impacted; the type and sensitivity of the farm enterprise; potential severance or subdivision of parcels; disruption to access points, internal farm roadways and rights-of-way; potential disturbance to farm infrastructure (including fencing, livestock drinkers, electricity supply and handling facilities); and physical disturbance to soils and field drainage systems within the construction corridor.

Of the agricultural parcels intersected by the Proposed Development, all are not anticipated to have any residual significant effects from the Proposed Development.

Full details are included in Chapter 8 – Agronomy of this EIAR.

Human Health and Safety

Construction of the Proposed Development could increase the risk of injury or death for workers / contractors. However, adherence to standard working practices and legislation will significantly reduce risks. The potential effects for on-site risks to workers / contractors are adequately covered and assessed by other Chapters of the EIAR and other regulatory regimes (principally Health and Safety Authority (HSA) for Control of Major Accident Hazard (COMAH) site) and / or the fact that existing design measures, management systems, legal requirements, codes and standards such as Personal Protective Equipment provide adequate control.

Uisce Éireann's sustainability framework includes initiatives that are linked to the social pillar ambitions, including maintaining focus on health safety and wellbeing, and adhering to Uisce Éireann's Human Rights policy that requires staff, employees, contractors, and supplier to protect, respect and remedy actual and potential human rights issues. It states that in general, Uisce Éireann will take the lead on social initiatives with potential support from the Contractor on a project specific basis.

While outside the scope of the EIAR Population and Human Health Chapter, adherence to guidance and health and safety standards should be followed by all personnel.

Table 6-20 — Construction Impact Assessment

Baseline		Impact Assessment				
Receptor	**Sensitivity**	**Impact**	**Mitigation**	**Magnitude**	**Residual effect**	**Significance**
Physical Activity						
Walkers, cyclists and horse riders (using the following intersected local, regional and national active travel routes: ▪ Belleek Woods Greenway and trails ▪ Drumsheen Loop – Bunnyconnellan (walking trail) ▪ Glen Loop - Bunnyconnellan (walking trail) ▪ The Sligo Way Trail (Long Distance Waymarked Way) ▪ EuroVelo 1 Ireland – Atlantic Coast Route (road cycling route))	Medium *(All groups)*	Sections of active travel route identified within the study area are intersected by the Proposed Development within Belleek Wood and along the R294 near Lough Talt. There is potential for these to be disrupted temporarily by construction activities for the installation of the new treated water pipeline.	The Proposed Development should minimise possible disruption to users of active travel routes during the construction phase for the installation of the new treated water pipeline. The CWPTMP sets out measures such as temporary footpath / cycle surfaces and signage. Where works are to occupy footpaths then dedicated protected routes must be provided that do not require crossing of the carriageway.	Low	Minor Adverse *Temporary, direct, reversible and limited to the construction phase*	Not Significant
Transport modes, access and connections						

Baseline		Impact Assessment				
Receptor	**Sensitivity**	**Impact**	**Mitigation**	**Magnitude**	**Residual effect**	**Significance**
Residents (adjacent to the Proposed Development)	Medium (*Wider groups*)	The majority of the new treated water pipeline is located along existing road therefore, these sections will require traffic management during the construction phase at different times as construction will likely be staggered e.g. potential road or lane closures, diversions etc. This will impact approximately 330 houses located in close proximity to these sections of road, including Mullafarry Road, R314, L5140, L1120, L5132, R294, L51341, L1102 and L51172. Local residents will utilise surrounding minor roads for vehicle access to their properties and therefore there may be health and wellbeing impacts as a result of disruption to access	The Proposed Development should minimise where possible disruption to local residents. The PCWTMP sets out recommended traffic management e.g. diversions, full road closures, land closure and stop / go systems, at seven sections of road intersected by the Red Line Boundary. The plan takes account of any businesses or residents requiring roads for access. Where works are to occupy footpaths then dedicated protected routes must be provided that do not require crossing of the carriageway. It is noted that safety on the road network will be maintained and all work carried out in accordance with appropriate safety	Low	Minor Adverse *Temporary, direct, reversible and limited to the construction phase*	Not Significant
	High (*Families with children and adolescents, people who are physically or mentally disadvantaged and people who are materially disadvantaged*)			Low	Minor Adverse *Temporary, direct, reversible and limited to the construction phase*	Not Significant

Baseline		Impact Assessment				
Receptor	**Sensitivity**	**Impact**	**Mitigation**	**Magnitude**	**Residual effect**	**Significance**
		through lengthened journey times and potential increased traffic on smaller roads not built to deal with larger capacities. The new water supply infrastructure is located on the outside of the Bonniconlon settlement away from densely populated land and the other in the Windy Gap area, sparsely populated and are therefore unlikely to disturb residents significantly during construction.	guidance and legislative requirements.			
Residents (within the Study Area)	Medium (*Wider groups*)	Introduction of construction traffic, increased traffic levels in surrounding areas, altered traffic movements (including materials being moved), user conflict, restrictions, diversions and/or closures.	As set out in the CWPTMP, diversionary routes, full road closures, lane closure and stop / go systems will be implemented along all directly affected sections of road. It is noted that safety on the strategic road network will be	Low	Minor Adverse *Temporary, direct, reversible and limited to the construction phase*	Not Significant
	High (*Families with children and*			Low	Minor Adverse	Not Significant

Baseline		Impact Assessment				
Receptor	**Sensitivity**	**Impact**	**Mitigation**	**Magnitude**	**Residual effect**	**Significance**
	adolescents, people who are physically or mentally disadvantaged and people who are materially disadvantaged)	Injuries or loss of life from construction traffic, increased traffic levels and an unawareness of altered traffic movements, particularly for sensitive road users (e.g. motorcyclists, elderly drivers, children, pedestrians, new drivers and cyclists).	maintained and all work carried out in accordance with appropriate safety guidance and legislative requirements. Speed limits will also be in place at affected roads. Signage and a liaison officer will help to increase awareness of any temporary road alterations during construction.		*Temporary, direct, reversible and limited to the construction phase*	
Business owners and employees (Study Area)	Medium (*Wider groups*)	Sections of the R314, L1120, Creggs Road and the R294 which are subject to traffic management measures during installation of the new treated water pipeline, are used to directly access businesses. Other businesses in the local area may also have disruption to access and trading conditions as a result of diversions and other restrictions.	The Proposed Development should minimise where possible disruption to local businesses, particularly those reliant on the transport network such as farms. As set out in in the CWPTMP, diversionary routes, full road closures, land closure and stop / go systems will be implemented along all directly affected sections of road. The	Low	Minor Adverse *Temporary, direct, reversible and limited to the construction phase*	Not Significant
	High (*Families with children and adolescents, people who are physically or mentally disadvantaged*			Low	Minor Adverse *Temporary, direct, reversible and*	Not Significant

Baseline		Impact Assessment				
Receptor	**Sensitivity**	**Impact**	**Mitigation**	**Magnitude**	**Residual effect**	**Significance**
	and people wo are materially disadvantaged)	Construction of this pipeline is likely to be staggered along different sections and therefore disruption likely short term and temporary.	plan takes account of any businesses requiring roads for access. Where works are to occupy footpaths then dedicated protected routes must be provided that do not require crossing of the carriageway. It is noted that safety on the strategic road network will be maintained and all work carried out in accordance with appropriate safety guidance and legislative requirements.		*limited to the construction phase*	
Users of community assets (including schools, nurseries, churches, open space, Lough Conn, Lough Talt and recreational facilities)	Medium (*Wider groups*)	Sections of the R314, Creggs Road, L5132 and the R294 which are subject to traffic management measures during installation of the new treated water pipeline, are used to directly access schools, churches, open space and recreational facilities. Other schools	The Proposed Development should minimise where possible disruption to schools if works are undertaken during term time. As set out in in the CWPTMP, diversionary routes, full road closures, land closure and stop / go systems will be implemented along all	Medium	Moderate Adverse *Temporary, direct, reversible and limited to the construction phase*	Significant
	High (*Families with children and adolescents,*			Medium	Moderate Adverse	Significant

Baseline		Impact Assessment				
Receptor	**Sensitivity**	**Impact**	**Mitigation**	**Magnitude**	**Residual effect**	**Significance**
	people who are physically or mentally disadvantaged and people wo are materially disadvantaged)	and nurseries in the local area may also have disruption to access and trading conditions as a result of diversions and other restrictions. This has the potential to impact a number of children and families utilising these facilities if construction takes place during term time. Injuries or loss of life from construction traffic, increased traffic levels and an unawareness of altered traffic movements, particularly for sensitive road users.	directly affected sections of road. Where schools will be directly impacted, works will not be permitted during drop-off and pick-up times, and will be confined to outside of school hours. Where works are to occupy footpaths then dedicated protected routes must be provided that do not require crossing of the carriageway. It is noted that safety on the strategic road network will be maintained and all work carried out in accordance with appropriate safety guidance and legislative requirements. All such issues will be fully explored as part of the detailed design and set out within the CEMP.		*Temporary, direct, reversible and limited to the construction phase*	

Baseline		Impact Assessment				
Receptor	**Sensitivity**	**Impact**	**Mitigation**	**Magnitude**	**Residual effect**	**Significance**
Users of public transport	Medium (*Wider groups*)	Multiple bus routes along the R314 (along 6.8km of its length) and stops on the N59 junction with the Creggs Road may be disrupted by traffic management measures along these sections directly intersected by the Red Line Boundary along, such as diversions and other restrictions, causing disruptions to normal activities / journeys.	The Proposed Development should minimise where possible disruption to public transport services. As set out in in the CWPTMP, diversionary routes, full road closures, land closure and stop / go systems will be implemented along all these affected sections of road. It is noted that safety on the strategic road network will be maintained and all work carried out in accordance with appropriate safety guidance and legislative requirements.	Medium	Moderate Adverse *Temporary, direct, reversible and limited to the construction phase*	Significant
	High (*Families with children and adolescents, people who are physically or mentally disadvantaged and people wo are materially disadvantaged*)			Medium	Moderate Adverse *Temporary, direct, reversible and limited to the construction phase*	Significant
Employment and Income						
Business owners and employees (study area)	Medium (*People who are physically or mentally disadvantaged*)	The Proposed Development may provide opportunity for employment, particularly during construction.	None identified	Low	Minor Beneficial *Temporary, direct, reversible and*	Not Significant

Baseline		Impact Assessment				
Receptor	**Sensitivity**	**Impact**	**Mitigation**	**Magnitude**	**Residual effect**	**Significance**
					limited to the construction phase	
	High (*People who are materially disadvantaged*)			Low	Minor Beneficial *Temporary, direct, reversible and limited to the construction phase*	Not Significant
Business owners and employees (Belleek Castle Hotel)	Medium (*People who are physically or mentally disadvantaged*)	This specific business property is intersected by the new treated water pipeline, which is planned to be installed surrounding the western border of the property, around the southern perimeter, connecting to the eastern walking trail leading down to the River Moy. This will likely disturb operation of the hotel and amenity for the property during construction, potentially impacting business.	The CWPTMP specifically considers Belleek Castle Hotel in the traffic management measures. Where works are to occupy footpaths then dedicated protected routes must be provided that do not require crossing of the carriageway. Communication with business owners prior to and throughout construction works affecting property and setting should be undertaken. It is noted that all work carried out	Medium	Moderate Adverse *Temporary, direct, reversible and limited to the construction phase*	Significant
	High (*People who are materially disadvantaged*)			Medium	Moderate Adverse *Temporary, direct, reversible and limited to the construction phase*	Significant

Baseline		Impact Assessment				
Receptor	**Sensitivity**	**Impact**	**Mitigation**	**Magnitude**	**Residual effect**	**Significance**
			in accordance with appropriate safety guidance and legislative requirements.			
Local Communities	Medium (*People who are physically or mentally disadvantaged*)	Health and wellbeing outcomes from economic benefits of construction stimulating the local economy and local job market (including the multiplier effect) noting an anticipated workforce of approximately 126 people daily during peak periods.	None identified	Low	Minor Beneficial *Temporary, direct, reversible and limited to the construction phase*	Not Significant
	High (*People who are materially disadvantaged*)			Low	Minor Beneficial *Temporary, direct, reversible and limited to the construction phase*	Not Significant

6.5.3 Operation Phase

The operational phase impact assessment is set out in Table 6-21.

Although the bio-physical wider health determinants have been scoped out, the decision for this was informed by the relevant sections as referenced in other chapters of the EIAR and are summarised in Sections 6.5.3.1 to 6.5.3.8.

See Chapter 3 for detail on the operation and maintenance of each component of the Proposed Development.

6.5.3.1 Climate Change Mitigation and Adaptation

It is estimated that 43% of greenhouse gas emissions will come from the operational phase of the Proposed Development over 48 years of operational life. 21% of this can be considered embodied carbon as it is associated with repair, maintenance and capital replacement of assets. The further 79% is from incremental chemical use and incremental energy consumption. Once operational, most of the sources of emissions that would arise during construction will cease.

In the CCRA, the following scoped in climate hazards were assessed against the Proposed Development regarding vulnerability to climate change:

- Extreme hot temperatures
- High precipitation and pluvial flooding
- Fluvial flooding
- Drought
- Wildfire
- High winds and storms
- Landslides and Subsidence
- Sea level rise and coastal flooding

Flood risk was assessed in Chapter 12. Other than wildfires being identified also as a risk, all other hazards were deemed as low risk to the Proposed Development.

Full details are included in Chapter 12 – Climate of this EIAR.

6.5.3.2 Air Quality

The operational phase air quality traffic assessment determined no potential for significant impact to local air quality as traffic is not anticipated to increase more than 1,000 AADT or 200 HDV AADT on impacted roads, therefore not satisfying the TII screening criteria.

Full details are included in Chapter 11 – Air Quality of this EIAR.

6.5.3.3 Water Quality or Availability

Throughout the operation phase, the Proposed Development activities are anticipated to be of a lesser magnitude to the construction phase activities. The following potential effects were identified:

- Continued erosion and sedimentation of receptors as a result of ongoing ground disturbance associated with runoff from areas of made ground;
- Alteration of natural flow pathways as a result of below ground structures and areas of hardstanding;

- Chemical pollution as a result of scour management, or accidental spills of treatment chemicals, fuels and oils associated with maintenance activities;
- Increased abstraction in the case of Lough Conn but within existing licencing thresholds and ceased abstraction in the case of Lough Talt; and
- The intake screen will be inspected and cleaned as required, with routine cleaning anticipated to be undertaken approximately annually, subject to operational experience, monitoring results and raw water conditions.

It concluded that following the implementation of appropriate mitigation, any residual effects will be temporary and not significant during the operational phase.

Full details are included in Chapter 10 – Water (Hydrology and Hydrogeology) of this EIAR.

6.5.3.4 Land Quality

There is potential for fuel and chemical spills/leaks during operation of the Ballina Lough Talt Water Supply which may migrate in soils and via preferential pathways, such as below ground service ducts and channels. However, the proposed design has been developed to ensure that any potential risk of contamination to the receiving environment is negligible, concluding that the impact to land contamination is likely to have a negative imperceptible impact, resulting in no significant effects during the operational phase.

Following mitigation measures in design, there will also be no potential significant environmental impacts to the receiving land, soils and geology environment, during the operational phase via karst geology beneath the Proposed Development site.

Full details are included in Chapter 9 – Land, Soils and Geology of this EIAR.

6.5.3.5 Noise and Vibration

Potential impacts of the Proposed Development during the operation phase, such as facilities featuring noise-emitting components, operational plant and equipment noise and vibration, were assessed. Operational and maintenance traffic and works were scoped out due to infrequency and negligible potential for noise impact. A detailed operational vibration assessment was also scoped out due to the nature of the operational activities distances from the nearest receptors.

Overall, it was concluded that the operational noise levels will comply with the project criteria and not produce a negative noise effect.

Full details are included in Chapter 13 – Noise and Vibration of this EIAR.

6.5.3.6 Major Accidents and Disasters

The risk of a major accident and/or disaster during all phases of the Proposed Development is considered ‘low or medium’ in accordance with the risk evaluation methodology. The generated operation and maintenance file, incorporating standard operating procedures for the development will be used during the operation and maintenance of the Proposed Development. It is considered that when these standard Operating Procedures are implemented and adhered to there will not be significant residual effect(s) associated with the operation of the Proposed Development.

Full details are included in Chapter 19 – Risk of Major Accidents and Disasters of this EIAR.

6.5.3.7 Traffic

Traffic is assessed within Chapter 15 – Roads, Traffic and Transportation of the EIAR and assess likely significant effects on roads, traffic and transportation during operation of the Proposed Development. Trip generation was

determined to be minimal during this phase, with traffic associated with site security, deliveries, HGV movements and maintenance activities anticipated to be low in volume, dispersed throughout the day and will not require network interventions to the infrastructure. It was concluded that traffic-related residual impacts of the Proposed Development are anticipated to be negative, short-term and imperceptible.

Full details are included in Chapter 15 – Roads, Traffic and Transportation of this EIAR.

6.5.3.8 Agronomy

The operational phase assessment highlighted that the majority of the Proposed Development will comprise buried pipeline infrastructure located beneath existing public roads and agricultural land. Agricultural activities will generally be able to resume across the affected holdings, with the principal Operational Phase effects relating to permanent wayleave restrictions, permanent infrastructure sites and periodic inspection and maintenance activities.

The principal Operational Phase effects identified are:

- Permanent land acquisition associated with the Booster Pumping Station (BPS) at Bonniconlon and Break Pressure Tank (BPT) at Windy Gap;
- Permanent above-ground infrastructure associated with the Booster Pumping Station;
- Permanent pipeline easement restrictions over buried pipeline infrastructure;
- Permanent fencing, gates and associated access arrangements at infrastructure sites;
- Periodic inspection, maintenance and emergency repair activities requiring temporary access to agricultural lands;
- Localised operational noise and external lighting associated with the Booster Pumping Station;
- Restrictions on deep excavation, construction of permanent structures and tree planting within the permanent wayleave.

Overall, following implementation of the embedded and additional mitigation measures, the Proposed Development is not predicted to result in residual significant effects on agricultural receptors. Residual effects are principally associated with permanent wayleave restrictions over the buried pipeline infrastructure and permanent land acquisition at the BPS and BPT.

Full details are included in Chapter 8 – Agronomy of this EIAR.

Table 6-21 — Operation Impact Assessment

Baseline		Impact Assessment				
Receptor	**Sensitivity**	**Impact**	**Mitigation**	**Magnitude**	**Residual effect**	**Significance**
Wider social infrastructure and resources						
Residents and users of services in the wider area	Medium *(All groups)*	An increased, resilient, safe and secure potable water supply will be provided by the Proposed Development due to the additional treatment capacity provided, the replacement of the Lough Talt abstraction and the integration of future growth objectives. This will benefit the local population and visitors to the area.	None identified	High	Major beneficial *Permanent*	Significant

6.6 Mitigation Measures

It is recognised that a CEMP will be enacted during the construction phase, as is standard for projects of this scale. The CEMP will include mitigation measures to minimise impacts on land use, nuisances associated with the attraction of vermin or other pests and agricultural holdings during construction.

As noted in the CWPTMP, a Construction Works Traffic Management Plan (CWTMP) will be developed from this document prior to construction. It will include the following:

- The location and details of all proposed temporary traffic management measures including any lane closures and construction vehicle accesses;
- Separate detailed plans showing all significant construction stages and phases;
- The location and details of all temporary signage in full compliance with Chapter 8 of the Traffic Signs Manual (Department of Transport, Tourism and Sport, 2019) including mobile Variable Message Sign's and road markings;
- Bespoke designs for each phase or stage must be included, standard traffic management layouts from Chapter 8 of the Traffic Signs Manual (Department of Transport, Tourism and Sport, 2019) are not acceptable;
- The location and details of all temporary safety barriers;
- Details of any temporary traffic diversions including location and details of all diversion signage;
- Details of any temporary pavement surfaces required to facilitate the works should be described;
- Details of anticipated works deliveries and storage of materials; and,
- Risk Assessments for design and construction of temporary traffic management where relevant

In addition to the mitigation included in Table 6-20 and Table 6-21, where required, mitigation measures set out in other technical chapters of the EIAR which are linked to population and human health would also apply. Relevant Sections are noted as follows:

- Chapter 8 – Agronomy, Section 8.5;
- Chapter 9 – Land, Soils and Geology, Section 9.7;
- Chapter 10 – Water (Hydrology and Hydrogeology), Section 10.6;
- Chapter 11 – Air Quality, Section 11.7;
- Chapter 12 – Climate, Section 12.7;
- Chapter 13 – Noise and Vibration, Section 13.7;
- Chapter 15 – Roads, Traffic & Transportation, Section 15.7;
- Chapter 16 – Material Assets, Section 16.6; and
- Chapter 19 – Risk of Major Accidents and Disasters, Section 19.7.

6.7 Cumulative and Interactive Impacts

6.7.1 Cumulative Impact Assessment

The most likely cumulative effect of the Proposed Development, with regard to population and human health, is the demand it will place on local infrastructure, services and other planned and future developments during the construction phase. Using professional judgement, a search area of 1 km was applied to the cumulative impact assessment to consider the potential significant population and human health effects of the wider study area from the Proposed Development.

Following a review of Planning Applications in the local area, the Population and Human health assessment considers that most cumulative effects are as identified in respective technical chapters: Chapter 8 – Agronomy; Chapter 9 – Land, Soils and Geology; Chapter 10 – Water and Hydrology; Chapter 11 – Air Quality; Chapter 12 – Climate;; Chapter 13 – Noise and Vibration; Chapter 15 – Roads, Traffic & Transportation; Chapter 16 – Material Assets; and Chapter 19 – Risk of Major Accidents and Disasters

There are a number of developments planned within Study Area over the next few years that have the potential to generate an influx of non-local workforces and associated pressures on local housing, facilities and amenities. While this assessment does not identify significant effects due to the relatively small and transient nature of much of the construction works in isolation, there is a potential to increase pressure on local housing, healthcare facilities and other amenities when considered in combination with the construction of other nearby development. It is noted in Chapter 3 that there will be approximately 126 total on-site construction workers at peak periods.

Consultation or close communication with local councils throughout the construction phase should take place to ensure that works do not exacerbate housing demand, or pressures on local facilities and amenities.

Table 6-22 details the number of construction and operation personnel estimated for developments with available information from environmental reports.

Table 6-22 — Estimated work force numbers for cumulative projects

Planning Reference	Development	Estimated Workforce
319173 / 2360182	Construction of Inert Waste Recovery Facility	*Construction:* No information available. *Operation:* Two direct employees and a number of sub-contractors.
322575	Construction of a data centre and all associated site works.	*Construction:* No information available. *Operation:* 32 employees on site per shift with 3 shifts over 24 hours.
2460708	The construction of a single data centre building	*Construction:* 40 staff initially on site per day, during peak construction could rise to 126 staff per day. *Operation:* 32 employees on site per shift with 3 shifts over 24 hours.
313975	An anaerobic digestion (ad) biogas facility and associated gas pipeline.	No information available.
17619	5 turbine wind farms	*Construction:* 50 staff during the construction period. *Operation:* No information available.
211284	1.0 hectare extension to an existing authorised quarry	No information available.

Planning Reference	Development	Estimated Workforce
2560108	Battery Energy Storage System facility and associated infrastructure	No information available.
2360266	The Proposed Development will consist of a Hydrogen Plant and an Energy Centre.	*Construction:* 40 staff during the construction period, rising to 63 during peak periods. *Operation:* No information available.
2460699	Development at the existing Killala Business park	No information available.
2460295	Development at the existing Killala Business park	No information available.
22562	Development at the existing Killala Business park	No information available.
2460701	Construction of a storage shed & new slatted shed and underground slurry storage tank along with all associated site works.	No information available.
22757	Filling of approximately 15,000 square metres of existing land with associated works	No information available.
2560595	Raising an area of land approximately 19300 sqm with inert material and all associated works	No information available.
22652	Relocation of existing access 380 m to the north onto r314 Ballina/Killala Road and all associated works	No information available.
2560027	Full planning permission for a proposed steel framed commercial unit and associated infrastructure	No information available.
2560391	construction of a new two storey detached dwelling house and associated infrastructure	No information available.
211376	Construction of a new access junction onto the N59	No information available.
20646	Filling of land with inert soil and subsoil, approximate area of 12000 sqm to an average depth of 1.2 m, and associated works	No information available.

Planning Reference	Development	Estimated Workforce
2460315	filling of land with inert soil & stones and mixtures of inert concrete, bricks, tiles & ceramics, to an approximate area of 12,000 m^2, with an average depth of 1.5 m, and associated works	No information available.
2360261	The proposed development will consist of: (i) The replacement ("restringing") of the existing overhead line circuit conductor wires with a new higher capacity conductor including installation of a new fibre communication connection and associated works	No information available.
2460330	Erect an extension to the existing school building (335.27 sq. m)	No information available.
2460631	To construct an Astro Turf Pitch and walking track.	No information available.
21881	Construction of a wind turbine with an operation lifespan of 30 years,	*Construction:* No information available. *Operation:* 15 on site staff during maximum activity.
22364	Development consisting of decommissioning of existing wastewater percolation area and install a new tertiary polishing filter and attenuation area.	No information available.
2460015	Decommission existing percolation area serving existing dwelling house and associated works	No information available.

6.7.2 Interactions

The Population and Human Health assessment has strong interrelationships with a number of environmental topics. Noise and vibration, air quality and traffic and transport have the greatest potential for direct effects on human receptors during construction due to their influence on amenity, accessibility and wellbeing. Interactions are also anticipated with the water environment, material assets and climate change topics, reflecting the role of the project in maintaining and improving reliable water supply infrastructure. These interactions have been considered throughout the assessment to avoid double counting and to ensure potential cumulative effects on population and human health are appropriately identified and evaluated.

Table 6-23 — Interactions between Environmental Aspects of the Proposed Development

Interactions	Description
Population and Human Health and Air Quality	Construction activities associated with the pipeline and infrastructure such as excavation, vehicle movements, material handling and reinstatement works may generate dust and emissions. Operational impacts from the Proposed Development include potential increased traffic emissions. The air quality assessment (See Chapter 11) takes into account human health interactions and overall determines that predicted residual dust-related human health impacts during construction will not be significant. Operational residual impacts were also not determined to be significant. This interaction was therefore scoped out of the population and human health impact assessment.
Population and Human Health and Noise and Vibration	Construction activities including trenching, horizontal directional drilling, installation of water trunk mains and upgrades to water infrastructure facilities, and traffic movements may generate noise and vibration. Permanent operational noise sources from plant and equipment associated with the Proposed Development were also considered in the noise assessment (See Chapter 13). These effects can influence human health through annoyance, disruption to learning environments and impacts on quality of life for nearby receptors. However at both phases of the Proposed Development, no significant impacts are anticipated and the interaction was therefore scoped out of the population and human health impact assessment.
Population and Human Health and Traffic	Construction traffic, temporary road closures, traffic management measures and reduced access may affect journey times, road safety, access to properties (especially those with direct access intersected by the pipeline installation e.g. along Pipeline B, C and D), community facilities (e.g. Bonniconlon National School), and local businesses (See Chapter 15). These changes can influence community wellbeing and accessibility. Interactions with population and human health are considered within Chapter 15, and mitigation measures implemented as part of the CWTMP are anticipated to reduce any identified residual impacts to 'not significant' during this phase. As operational traffic is expected to be minimal, no significant impacts are anticipated during this phase and was therefore scoped out of the population and human health impact assessment.
Population and Human Health and Landscape and Visual	Landscape and visual impacts to the local population were considered in Chapter 18 of the EIAR. The assessment considered visual impacts to residents, road users and recreational users, community facility users, workers and visitors. Visual effects would be most noticeable during construction for nearby residents, road users, recreational users and visitors close to the pipeline corridor and above-ground sites, with some significant effects noted. However, as mitigation planting and reinstatement matures, no long-term landscape or visual effects are anticipated. No long-term significant adverse operational landscape or visual impacts are anticipated following embedded mitigation such as reinstatement and landscape planting. Changes to the local environment can affect people's perception of place, community satisfaction and overall wellbeing, particularly for sensitive residential receptors. However as no significant effects are anticipated, this interaction was scoped out of the population and human health assessment.

Interactions	Description
Population and Human Health and Biodiversity	The Proposed Development may have impacts on habitats, green spaces (such as Belleek Woods), trees or ecological features which may alter access to natural environments which contribute to recreation, physical activity and mental wellbeing. No significant interaction has been identified with respect to biodiversity in the context of the Proposed development and population and human health.
Population and Human Health and Water	Potential effects associated with the Proposed Development during the construction phase as assessed in Chapter 10 – Water (Hydrology and Hydrogeology) include chemical pollution of surface water and groundwater and alterations to groundwater flows and the creation of preferential pathways, specifically at Wherrew RWI&PS and Lisglennon RWS&PS and WTP. Reduced quality of water sources may negatively affect the health of biodiversity and humans. However, the Water chapter assessment concluded that no significant residual effects are anticipated from the Proposed Development therefore it was scoped out of the population and human health impact assessment. During operation, the provision of a safe, robust and reliable potable water supply to residents will provide long-term benefits for human health through increased resilience of water supply services.
Population and Human Health and Land, Soils and Geology	Potential effects of the Proposed Development during construction include effects associated with the potential for new land contamination arising from construction activities, and also during operation e.g. fuel spills and potential minor leaks. Excavation works may disturb contaminated land, creating pathways for human exposure through dust generation, direct contact or pollution of water resources. However, this risk is anticipated to be appropriately controlled by implementation of the mitigation measures outlined in Chapter 9 – Land, Soils and Geology.
Population and Human Health and Climate Change	Potential increases in embodied carbon from the Proposed Development may contribute to greenhouse gas emissions, indirectly affecting population and human health e.g. contributing to climate change, which is associated with potential extreme weather events. However, during the construction and operational phases, these impacts are not anticipated to be significant, as discussed in Chapter 12 – Climate hence this interaction as scoped out of the population and human health assessment. Improved water network resilience can contribute positively to long-term population health outcomes.
Population and Human Health and Material Assets	Construction works may affect existing utilities, telecommunications, public services, and local infrastructure as discussed in Chapter 16 – Material Assets. Short-term disruptions may affect local communities, while enhanced water infrastructure may improve service reliability and support future population needs. By implementing the proposed mitigation measures set out in Chapter 16, there are not anticipated to be any significant short or long term effects during both the construction and operational phases.
Population and Human Health and Cultural Heritage	Temporary restrictions around heritage assets or changes to the setting of cultural features in proximity to the Proposed Development may affect community value and sense of place. Preservation of cultural heritage contributes to social wellbeing and community identity. By implementing mitigation measures, it was determined in Chapter 17 – Cultural Heritage that there would be no significant effects during the construction and operational phases.

Interactions	Description
	It is therefore anticipated that any potential adverse impacts relating to this interaction will be minor.
Population and Human Health and Major Accidents and Disasters	Potential incidents such as natural disasters, contamination events to drinking water, traffic accidents, failure of water supply assets or construction-related emergencies may present direct risks to public health and safety. Embedded mitigation measures within the Proposed Development are closely linked to protection of population and human health e.g. Construction activities will be undertaken in accordance with site-specific health and safety procedures, detailed risk assessments, method statements, a Site Emergency Response Plan, and traffic-related risks will be managed through implementation of a Traffic Management Plan, temporary traffic controls and agreed site access arrangements.

6.8 Residual Effects

As identified in Table 6-20, significant adverse residual effects are anticipated during the construction phase as follows:

Transport modes, access and connections

- Users of community assets
  - *Impact:* there are community assets directly accessed along the proposed new pipeline route that intersects existing road which will disrupt access, trading conditions and increase the risk of injuries or loss of life from construction traffic levels and altered traffic movements particularly for sensitive road users.
  - *Significance of effect:* Significant adverse for all groups.
- Users of public transport
  - *Impact:* bus routes located along a 6.8 km stretch of the R314 road and at the N59 – L1101 junction will be disrupted by traffic management, disrupting and restricting normal journeys / activities.
  - *Significance of effect:* Significant adverse for all groups.

Employment and Income

- Business owners and employees (Belleek Castle Hotel)
  - *Impact:* The property is intersected by the pipeline where it connects to walking trails to the River Moy, disturbing operation of the hotel through amenity disruptions and may deter business.
  - *Significance of effect:* Significant adverse for all groups.

As identified in Table 6-21, significant beneficial residual effects are anticipated during the operation phase as follows:

Wider social infrastructure and resources

- Residents and users of services in the wider area
  - *Impact:* Beneficial effects due to an increased, resilient, safe and secure potable water supply will be provided by the Proposed Development due to the additional treatment capacity provided, the replacement of the Lough Talt abstraction and the integration of future growth objectives. This will benefit the local population and visitors to the area and is supported by local and regional policy (reviewed in Section 6.2) and considered necessary to enable future growth.
  - *Significance of effect:* Significant beneficial for all groups.

Due to the nature of the pipeline works, likely to be staggered along the pipeline in sections, these impacts are anticipated to be temporary.

See Roads, Traffic & Transportation Chapter and CWPTMP for details as to how this will be managed. Liaison through an officer with residents and landowners is taking place, but note that matters such as compensation are outside the scope of this assessment.

During the operational phase significant residual beneficial effects are likely towards residents from the increased water supply and security of supply from the Proposed Development.

6.9 Monitoring Requirements

Measures to avoid negative impacts on population and human health are largely integrated into the design and layout of the Proposed Development. Compliance with the design and layout will be a condition of any permitted development. Monitoring of compliance with Health & Safety requirements will be undertaken by the Project Supervisor for the Construction Process. The monitoring of the effects of this development on Population and Human Health will primarily take place in line with the recommendations set out within the specific chapters of the EIAR including Chapter 11 – Air quality and Chapter 13 – Noise and Vibration.

Owing to potential pressures on local housing, facilities and amenities arising as a result of an non-local construction workers associated with multiple projects (identified in Table 6-22) it is recommended that, in liaison with local authority officers, appropriate monitoring and engagement with affected stakeholders is undertaken to ensure construction works associated with the Proposed Development do not exacerbate pressures on these receptors.

6.10 References

Age Friendly Ireland (2026) *Mayo Age Friendly Strategy – 2022 – 2026.* Available: https://agefriendlyireland.ie/resources/mayo-age-friendly-strategy-2022-2026/

Age Friendly Ireland (2026) *Sligo Age Friendly Strategy – 2023 – 2026.* Available: https://agefriendlyireland.ie/wp-content/uploads/2024/05/Sligo-2023-2026.pdf

Asthma+Lung UK (2026) *Air Pollution.* Available: https://www.asthmaandlung.org.uk/living-with/air-pollution

Asher. L, Aresu. M, Falaschetti. E, Minell. J (2012*) Most older pedestrians are unable to cross the road in time: a cross-sectional study* Available: https://academic.oup.com/ageing/article-abstract/41/5/690/47318

Central Statistics Office (2022) *Census Interactive Map*. Available: https://visual.cso.ie/?body=entity/ima/cop/2022

CSO (2022) *AgriMap.* Available: https://visual.cso.ie/?body=entity/ima/coa&boundary=C03904V04656&guid=2AE196291CE813A3E055000000000001

CSO (2022) *Census of Population 2022 Profile 8 – The Irish Language and Education.* Available: https://www.cso.ie/en/releasesandpublications/ep/p-cpp8/censusofpopulation2022profile8-theirishlanguageandeducation/

CSO (2023) *Measuring Ireland's Progress 2023*. Available: https://www.cso.ie/en/releasesandpublications/ep/p-mip/measuringirelandsprogress2023/society/

CSO (2023) *Census of Population 2022 Profile 2 – Housing in Ireland.* Available: https://www.cso.ie/en/releasesandpublications/ep/p-cpp2/censusofpopulation2022profile2-housinginireland/housingstock/

CSO (2025) *Regional Population Projections 2023-2042.* Available: https://www.cso.ie/en/releasesandpublications/ep/p-rpp/regionalpopulationprojections2023-2042/regionalpopulationprojectionsresults/

CSO (2026) *Central Statistics Office*. Available: https://www.cso.ie/en/census/censusinteractivemaps/

Department of Health (2013) *Healthy Ireland.* Available: https://www.gov.ie/en/healthy-ireland/policy-information/healthy-ireland-policies/

Department of Housing, Local Government and Heritage (DHLGH) (2000) *Planning and Development Act (as amended).* Available: https://assets.gov.ie/static/documents/planning-and-development-act-2000.pdf

DHLGH (2018) *Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment.* Available: Guidelines for Planning Authorities and An Bord Pleanála on carrying out Environmental Impact Assessment (August 2018)

DHLGH (2024) *Planning and Development Act (as amended).* Available: https://www.irishstatutebook.ie/eli/2024/act/34/enacted/en/html

DHLGH (2025) *National Planning Framework.* Available: https://www.npf.ie/wp-content/uploads/National-Planning-Framework-First-Revision-April-2025-1.pdf

DEFRA UK AIR, Air Information Resource (2026) *Effects of air pollution* Available: https://uk-air.defra.gov.uk/air-pollution/effects

Department of the Environment and Local Government (2001*) S.I. No. 600/2001 Planning and Development Regulations, 2001.* Available: https://www.irishstatutebook.ie/eli/2001/si/600/made/en/print

Department for Transport, Tourism and Sport (2019). *Traffic Signs Manual Chapter 8: Temporary Traffic Measures and Signs for Roadworks.* Available: https://www.roadguidelines.ie/wp-content/uploads/2025/10/TSM-2019-Ch-8-Approved-Version-August-19-Online.pdf

Department of Transport (2024) *National Cycle Network.* Available: https://www.gov.ie/en/department-of-transport/publications/national-cycle-network/

Environmental Protection Agency (EPA) (2022) *Guidelines on the information to be contained in Environmental Impact Assessment Reports.* Available: https://www.epa.ie/publications/monitoring--assessment/assessment/guidelines-on-the-information-to-be-contained-in-environmental-impact-assessment-reports-eiar.php

Economic & Social Research Institute (2026) *Publications.* Available: https://www.esri.ie/

Eircode (2026) Available: https://www.eircode.ie/

European Commission (EC) (2017*) Environmental Impact Assessment of Projects: Guidance on the preparation of the Environmental Impact Assessment Report.* Available: https://circabc.europa.eu/ui/group/3b48eff1-b955-423f-9086-0d85ad1c5879/library/b7451988-d869-4fee-80de-0935695f67f2/details?download=true

European Union (EU) (2011) *Environmental Impact Assessment Directive 2011/92/EU as amended.* Available: https://eur-lex.europa.eu/eli/dir/2011/92/oj/eng

EU (2014) *Environmental Impact Assessment Directive 2014/52/EU.* Available: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32014L0052

EU (2018) *S.I. No. 296/2018 - European Union (Planning and Development) (Environmental Impact Assessment) Regulations 2018*. Available: https://www.irishstatutebook.ie/eli/2018/si/296/made/en/print

Government of Ireland (2018) *Project Ireland 2040: The National Development Plan 2021-2030.* Available: https://assets.gov.ie/static/documents/national-development-plan-2021-2030.pdf

Government of Ireland (2019) *Healthy Ireland Framework 2013-2025*. Available: https://www.gov.ie/en/healthy-ireland/publications/healthy-ireland-framework-2019-2025/

Government of Ireland (2024) *Water Action Plan 2024: A River Basin Management Plan for Ireland.* Available: https://riverbasin.ie/app/uploads/2024/09/Water-Action-Plan-2024_ENG_v5.pdf

Government Ireland (2026) *Search for services of information.* Available: https://www.gov.ie/en/

Health Service Executive (2026) *Your Health Service.* Available: https://www.hse.ie/

House of Commons (2018) *Access to transport for disabled people, Number CBP 601* Available: https://researchbriefings.files.parliament.uk/documents/SN00601/SN00601.pdf

IEMA (2022) *Determining Significance for Human Health in Environmental Impact Assessment.* Available: https://www.isepglobal.org/resources/blogs/2022/11/17/isep-launch-of-the-eia-guidance-for-considering-impacts-on-human-health/

IEMA (2022) *Effective Scoping of Human Health.* Available: https://www.iema.net/media/s35fughe/iema-eia-guide-to-effective-scoping-of-human-health-nov-2022.pdf

Institute of Public Health (2021) *Health Impact Assessment Guidance: A Manual.* Available: https://instituteofpublichealth.org/hia

Levallois P, Villanueva CM. (2019) *Drinking Water Quality and Human Health: An Editorial. Int J Environ Res Public Health.* Available: Drinking Water Quality and Human Health: An Editorial - PMC

Mayo County Council (2022) *Mayo County Development Plan 2022-2028.* Available: https://www.mayo.ie/en-ie/your-council/services/planning/development-plans-and-strategies/county-development-plans/proposed-mayo-county-development-plan-2022-2028

Mayo County Council (2022) *Planning.* Available: https://www.mayo.ie/planning/search

Mayo County Council (2024) *Ballina Local Area Plan 2024-2030.* Available: https://www.mayo.ie/en-ie/your-council/services/planning/development-plans-and-strategies/local-area-plan/ballina-local-area-plan-2024-2030

Munzel T, Schmidt FP, Steven S, Herzog J, Daiber A, Sorensen M. (2018) *Environmental Noise and the Cardiovascular System.* Available: https://intuition-physician.com/wp-content/uploads/2018/05/Evironmental-Noise-and-Cardiovascular-Health.pdf

Northern and Western Regional Assembly (2020) *Northern & Western Regional Assembly Regional Spatial and Economic Strategy 2020 – 2032.* Available: https://www.nwra.ie/RSES/

Pobal (2022) *Pobal HP Deprivation Indices.* Available: https://data.pobal.ie/portal/apps/sites/#/pobal-maps

Shrestha.B.P, Millonig.A, Hounsell.N.B, McDonald.M (2017) *Review of Public Transport Needs of Older People in European Context* Available: https://pmc.ncbi.nlm.nih.gov/articles/PMC5656732/

Sligo County Council (2023) *Sligo County Development Plan 2024-2030.* Available:

Sligo County Development Plan 2024-2030

Sligo County Council (2023) *Search Planning Applications*. Available: https://www.sligococo.ie/planning/SearchPlanningApplications/

Sport Ireland (2026) *Find your trails.* Available: https://www.sportireland.ie/outdoors/find-your-trails

Transport for Ireland (2026) *Home.* Available: https://www.tii.ie/en/

Transport for London (2013) *Older Pedestrians and Road Safety, Research Debrief.* Available: content.tfl.gov.uk/older-pedestrians-research-report.pdf

World Health Organisation (WHO) (1948) *Constitution of the world health organisation.* Available: https://www.who.int/about/governance/constitution

WHO (2023) *Policy briefs on health impact assessments and incorporating health into environmental assessments.* Available: https://www.who.int/europe/publications/i/item/WHO-EURO-2023-8253-48025-71135

WHO (2026) *Health Impact Assessment (HIA) Methods.* Available: https://www.who.int/tools/health-impact-assessments

WHO (2026) *Health Impact Assessment (HIA) Methods.* Available: https://www.who.int/tools/health-impact-assessments

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