Autumn 2024

Report

Water Services Strategic Plan 2050

Strategic Environmental Assessment (SEA): Environmental Report - Revised

Safeguarding our water for our future

If you have any questions or need more information please contact us:

Contact details

Web:
www.water.ie

Twitter:
@IWCare

Uisce Éireann
PO Box 860
South City Delivery Office
Cork City

Consultation inquiries or feedback

9am–5.30pm, Mon–Fri

Email:

wssp@water.ie

Post:

Water Services Strategic Plan, Uisce Éireann,

P.O. Box 13216, Glenageary, Co. Dublin

Freephone:

1800 46 36 76

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Table of Contents

Acronyms and Abbreviations

Term	Definition	Term	Definition
AA	Appropriate Assessment	NMPF	National Marine Planning Framework
AQGs	Air Quality guidelines	NPF	National Planning Framework
BAP	Biodiversity Action Plan	NPWS	National Parks and Wildlife Service
CFP	Common Fisheries Policy	NUTS	Nomenclature of territorial units for statistics
CFRAM	Catchment-based Flood Risk Assessment and Management	NWRP	National Water Resources Plan
CRU	Commission for Regulation of Utilities	NWSMP	National Wastewater Sludge Management Plan
CSO	Central Statistics Office	OPW	Office of Public Works
CSO	Combined Sewage Overflows	PAHs	Polycyclic Aromatic Hydrocarbons
DAERA	Northern Ireland's Department of Agriculture, Environment and Rural Affairs	PAPs	Pathway Action Plans
DAFM	Department of Agriculture, Food and the Marine	pNHA(s)	Proposed National Heritage Area(s)
DECC	Department of the Environment, Climate and Communications	RBMP	River Basin Management Plan
DHLGH	Department of Housing, Local Government and Heritage	RMP	Record of Monuments and Places
DHPLG	Department of Housing Planning and Local Government	RPS	Record of Protected Structures
DMA	District Meter Areas	RSESs	Regional Spatial and Economic Strategies
DWD	Drinking Water Directive	SAC	Special Area of Conservation
EAM	Environmental Assessment Methodology	SDB	Supply demand balance
EAP	Environmental Action Plan	SDG	Sustainable Development Goals
EEA	European Environment Agency	SEA	Strategic Environmental Assessment
EED	Energy Efficient Design	SEO	Strategic Environmental Objective
EPA	Environmental Protection Agency	SDB	Supply Demand Balance
EC	European Communities	SFP	Strategic Funding Plan
EIA	Environmental Impact Assessment	SMR	Sites and Monuments Record
ELC	European Landscape Convention	SPA	Special Protection Area

Term	Definition	Term	Definition
EU	European Union	THM	Trihalomethanes
GHG	Greenhouse Gas	UÉ	Uisce Éireann
GSI	Geological Survey Ireland	UN	United Nations
IAS	Invasive Alien Species	UNESCO	United Nations Educational, Scientific and Cultural Organisation
IGH	Irish Geological Heritage	UWWTD	Urban Wastewater Directive
LAWPRO	The Local Authority Waters Programme	WFD	Water Framework Directive
LCA	Landscape Character Area	WHO	World Health Organisation
LMA	Leakage Management System	WRZ	Water Resource Zone
MSFD	Marine Strategy Framework Directive	WSSP	Water Services Strategic Plan
NAF	National Adaptation Framework	WSSP 2015	Water Services Strategic Plan 2015
NBAP	National Biodiversity Action Plan	WSSP 2050	Water Services Strategic Plan 2050
NBS	Nature Based Solutions	WTP	Water Treatment Plant
NDP	National Development Plan	WWTP	Wastewater Treatment Plant
NHA	National Heritage Area		
NIS	Natura Impact Statement		
NIAH	National Inventory of Architectural Heritage		

Glossary

Glossary Term	Definition
AA Screening Report	The report which provides information on and assesses the potential for the proposed plan to impact on European sites within the Natura 2000 network.
Abstraction	"Abstraction" means the doing of anything whereby water is removed or diverted by mechanical means, pipe, or any engineering structure or works from any part of the water environment, including anything whereby the water is so removed or diverted for the purpose of being transferred to another part of the water environment; [European Union (Water Policy) (Abstractions Registration) Regulations 2018 S.I. No. 261 of 2018].
Amenity	The social value or benefits that people derive from interacting with or being near a place. Amenity can include aesthetic and visual enjoyment, recreational opportunities, tranquillity and escape from urban stress, and cultural and spiritual significance. Amenity is influenced by the quality, quantity, and location of water assets.
Appropriate Assessment	An appropriate assessment is an assessment of the potential adverse effects of a plan or project (in combination with other plans or projects) on Special Areas of Conservation and Special Protection Areas. These sites are protected by National and European Law.
Asset	Item, thing or entity that has potential or actual value to an organization
Baseline Environment	The state of the environment in the absence of the Plan.
Biodiversity Net Gain	Biodiversity refers to the variety of living organisms including animals, insects, and plants. Net gain is the process of enhancing the overall biodiversity value.
Bioresource	Material that can be recovered from the treatment process such as sludge, which is rich in organic matter and nutrients. The components of sludge can be repurposed and used in beneficial ways such as a soil conditioner and fertiliser is any organic material that can be used as a source of energy or nutrients in a wastewater treatment process. Bioresources include wastewater sludge, food waste, agricultural residues, and microalgae.
Catchment	The area of land where surface water from rainfall converges at a lower elevation, in a river, lake or an estuary. The catchment includes all drainage channels, tributaries (smaller streams) and floodplains.
Catchment management	A process that recognises a catchment as the appropriate unit for understanding and managing land, water and ecosystems.
Circular economy	In a circular economy, the value of products and materials is maintained for as long as possible. Waste and resource use are minimised, and when a product reaches the end of its life, it is used again to create further value.
Climate change	A change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods
Community	The people who live, work or visit Ireland.

Glossary Term	Definition
Cumulative effect	The combined effects from several plans, programmes or policies.
Customer	"Customer" means, in relation to the provision of water services, the occupier of the premises in respect of which the water services are provided. [Water Services (No.2) Act 2013].
Demand management	Measures taken by water companies and others to manage households and non-household demand for water. Measures include leak management, water efficiency and metering.
District Meter Area (DMA)	A defined area of the distribution network that can be isolated by valves and for which the quantities of water entering and leaving can be metered.
Domestic water use	The amount of water consumed by households for various purposes, such as drinking, cooking, washing, gardening, and sanitation.
Emerging contaminants	Substances that are not regulated or monitored in drinking water but may pose a risk to human health or the environment. They include pharmaceuticals, pesticides, industrial chemicals and microplastics.
Habitat	The natural home or environment of a plant or animal.
Integrated water management	Integrated water management is an approach that considers all aspects of the water cycle to achieve the best outcomes for society, environment and economy when planning and delivering services. It also looks at how the water cycle relates to urban development and other land and resource management processes. Integrated water management takes advantage of the connections between these different components and develops solutions that have wider and longer-term benefits.
ISO55000	ISO 55000:2014 provides an overview of asset management, its principles and terminology, and the expected benefits from adopting asset management.
ISO55001	ISO 55001:2014 specifies requirements for an asset management system within the context of the organisation.
Invasive species	Non-native species that out-compete native species to the detriment of an ecosystem.
Level of Service	Statement or description of the service output for a particular activity or service area against which performance may be measured.
Megalitre (ML)	1 million (1,000,000) litres.
Nature-Based Solutions	Working with nature rather than trying to control it with the potential for achieving multiple benefits for water quality, quantity, biodiversity and climate adaptation and resilience.
Natura Impact Statement	A document which summarises the findings of the AA and how they were factored into the plan, the reason for choosing the preferred plan in light of alternatives considered and to state the likely significant effects.
Non-domestic water use	The consumption of water for purposes other than household or personal use. It includes water used by industries, agriculture, commerce, public services, and environmental purposes.

Glossary Term	Definition
Protected site	An area that has been designated as having a special ecological of conservation value under EU legislation such as Special Protection Areas (SPAs), Special Areas of Conservation (SACs) and Natural Heritage Areas (NHA).
Ramsar site	An international designation for an important wetland site under the Ramsar Convention.
Reliable water supply	The ability to provide sufficient and safe water to meet the needs of a population or a system without interruption or failure.
Remedial Action List (RAL)	A register of public water supplies with the most serious deficiencies and known to be most at risk, where the EPA is requiring Uisce Éireann to take corrective action to ensure the safety and security of the supplies. [EPA].
Residuals	The by-products of the water treatment process that remove suspended solids from raw water or sewage. They can be liquid or solid depending on the source of water and type of treatment.
SEA Environmental Report	The SEA report that documents the effects of investment priorities outlined in a plan.
SEA Screening statement	A summary of the SEA screening determining whether the proposed plan requires SEA.
SEA Scoping Report	The SEA report sets out the scope and objectives of the SEA.
SEA Post Adoption Statement	The document which details how environmental considerations have been integrated into the plan, how the environmental report and consultation responses were taken into account, the reasons for choosing the plan as adopted in light of reasonable alternatives considered and the measures to be taken into account to monitor or mitigate the likely significant effects.
Sewerage	“Sewerage" is used to describe the pipes or network that convey sewage/ waste water. Uses of the term include "sewerage network", "Sewerage Scheme". While "Waste Water" and "Wastewater" are the preferred terms, "Sewerage" has been used historically in project names and continues to be used on this basis”.
Smart meter	A digital device that records and communicates the amount of water used by a consumer.
Smart network	A system that uses data driven technologies to enhance the efficiency and reliability of water distribution, wastewater collection and treatment processes. Some examples are sensors which collect and transmit data from different points in the network and data analytics which provide insights and solutions for water management challenges.
Special Area of Conservation	An international designation for habitats and/or species under the EC Habitats Directive.
Special Protection Area	A site of international importance for birds, designated as required by the EC Birds Directive.
Stakeholder	Person or organisation that can affect, be affected by, or perceive themselves to be affected by a decision or activity

Glossary Term	Definition
Storm Water	Water that runs off impervious surfaces like roads and footpaths when it rains, that would have seeped into the ground and been taken up by vegetation before urban development. "Storm water" means run-off rainwater that enters any pipe. [Water Services Act 2007].
Storm Water Overflow	"Storm water overflow" means a structure or device on a sewerage system designed and constructed for the purpose of relieving the system of excess flows that arise as a result of rain water or melting snow in the sewered catchment, the excess flow being discharged to receiving waters.
Strategic Environmental Assessment (SEA) Objectives	Aims to achieve environmental policy or quality standards against which the effects of the plan can be tested.
Trihalomethanes	Trihalomethanes are formed as a by-product predominantly when chlorine is used to disinfect drinking water
Urban	Densely populated areas that are built up with dwellings, buildings and infrastructure.
Wastewater sludge	Organic by-product of the biological treatment of wastewater comprising a mixture of organic solids and water. Also known as sewage sludge.
Water conservation	The practice of using water efficiently and reducing unnecessary water wastage. It can be achieved by improving water infrastructure (leakage reduction), adopting water-saving technologies, implementing water policies and regulations, and promoting water awareness and education.
Water sector	Any organisation that has a role in water management. For example, water companies, catchment management authorities, local authorities and regulators.

1 Introduction and Background

1.1 Background to Uisce Éireann

On the 1st of January 2014, through the Water Services Act (No.1) 2013, Uisce Éireann (known as Irish Water at that time) assumed statutory responsibility for the provision of public water services and management of water and wastewater investment. Uisce Éireann's responsibility is to ensure that all its customers (households and businesses) receive a safe and reliable water supply and have their wastewater collected, appropriately treated and returned safely to the environment. Figure 1-1 shows some key facts about Uisce Éireann's services and infrastructure.

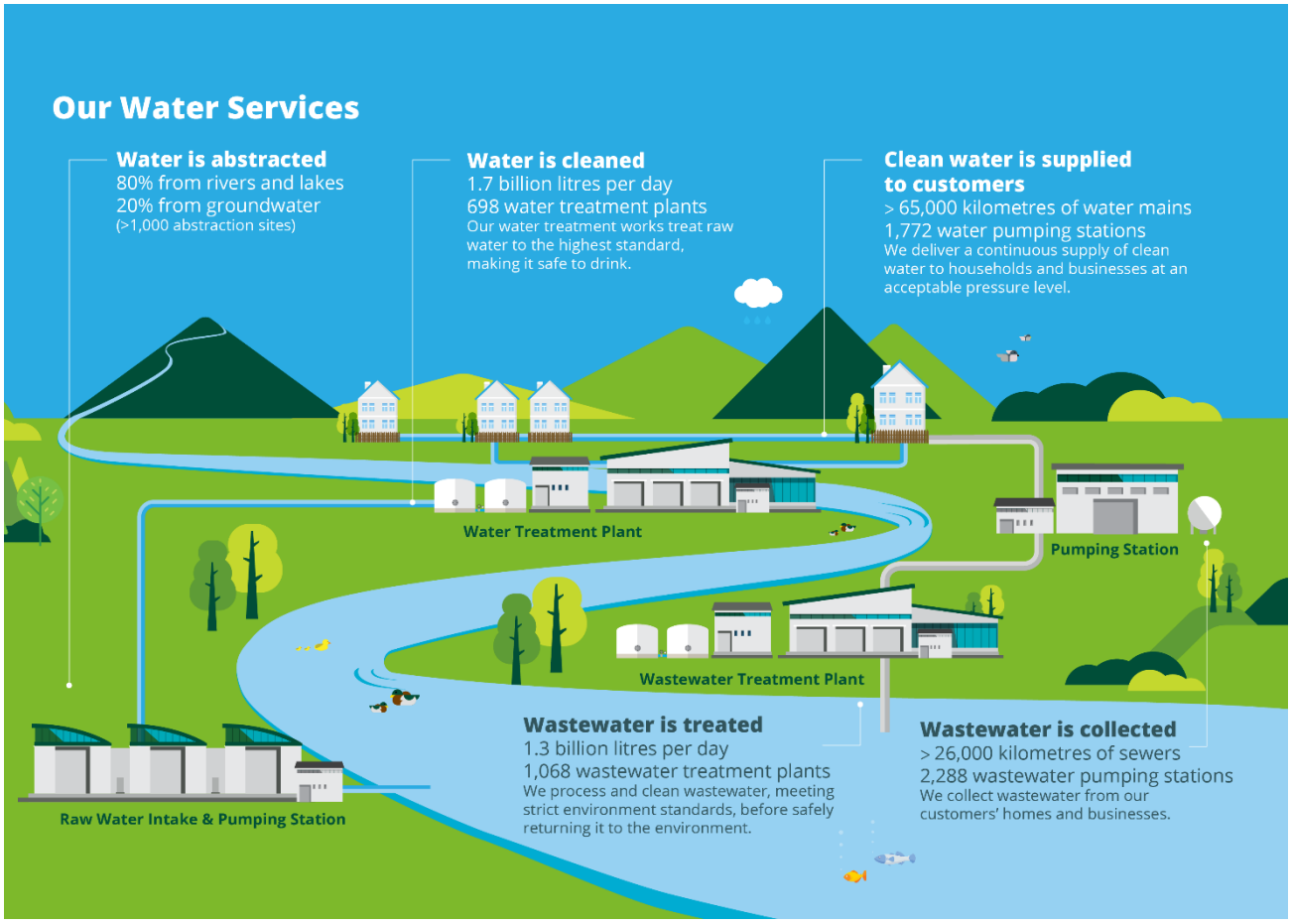

Figure 1-1 Uisce Éireann service and infrastructure

Uisce Éireann's vision is for "*A sustainable Ireland where water is respected and protected, for the planet and all the lives it supports.*"

Uisce Éireann's service and infrastructure improvements since 2014 are outlined in Figure 1-2 (as reported in the Water Services Strategic Plan (WSSP)

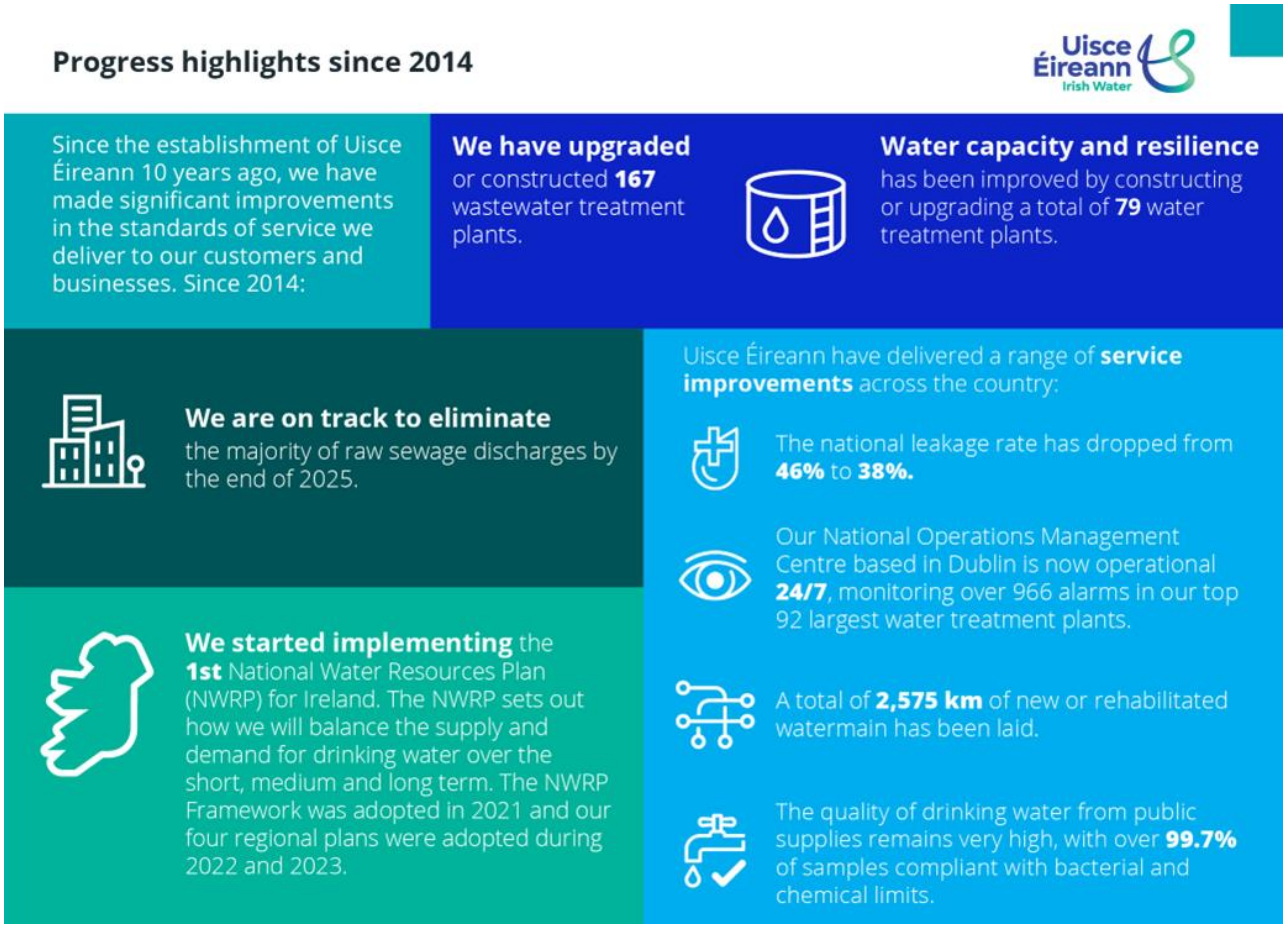

Figure 1-2 Uisce Éireann's service improvements since 2014

1.2 Purpose of the WSSP 2050

A WSSP presents Uisce Éireann's objectives for the next 25 years and the means by which they will be achieved. It is required to be prepared under the Water Services (No. 2) Act 2013 (as amended) ("the Water Services Act").

The Water Services Strategic Plan 2050 (WSSP 2050) is a long-term strategic plan which is required to be prepared under the Water Services No. 2 Act 2013. It sets out objectives and the means by which Uisce Éireann aim to achieve them in the context of the significant challenges likely faced over the next 25 years. The plan outlines Uisce Éireann's strategic direction and the actions that will be implemented to ensure sustainable public water services for Ireland. Once approved, it replaces the existing WSSP from 2015, which covered the period from 2015 to 2040.

The WSSP 2050 is subject to the Strategic Environmental Assessment (SEA) Directive (Council Directive 2001/42/EC), the Birds Directive (Council Directive 2009/147/EC) and the Habitats Directive (Council Directive 92/43/EEC). This document is part of meeting requirements under the SEA Directive and explains how they link to the requirements of the Birds and Habitats Directives in the Sections below.

1.3 Strategic Environmental Assessment

The SEA Directive (2001/42/EC) set out a process for the environmental assessment of plans and programmes and aims to provide for a high level of protection of the environment, to promote sustainable development and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes. It also sets out specific requirements with respect to the Habitats Directive (92/43/EEC) and Birds Directive (2009/147/EC).

The SEA Directive is implemented in Ireland via the European Communities (EC) (Environmental Assessment of Certain Plans and Programmes) Regulations 2004, as amended by the EC (Environmental Assessment of Certain Plans and Programmes) (Amendments) Regulations 2011 (known as the 'SEA Regulations'). Under the SEA Regulations, qualifying plans such as the WSSP 2050 are required to be subject to SEA screening as a first step to determine if SEA is required. A screening review has been undertaken in accordance with the Environmental Protection Agency (EPA) (2021a)[1] screening guidance and this confirmed that the WSSP 2050 requires a mandatory SEA (the Screening Statement is provided in Appendix A of the Scoping Report). The subsequent stages include scoping, assessment, public consultation and monitoring. The current stage is assessment.

The aim is that the SEA process should influence and improve the plan. The process involves assessing the likely significant effects on the environment of implementing the plan and considering reasonable alternatives for achieving plan objectives. Combined and cumulative effects of the plan as a whole and with other plans and programmes are also included as part of the assessment. The SEA Regulations set out specific requirements for consultation with Environmental Authorities and transboundary environmental authorities (listed in Section 3.1) at the scoping stage and for public consultation on the Draft plan and SEA Environmental Report (see Table 1.1 for the phases for developing the WSSP 2050 alongside the assessments). The SEA Environmental Report and consultation responses are also required to be taken into account in finalisation of the plan and for implementation monitoring.

Table 1.1 Work phases and consultations during the development of the WSSP 2050

Phase	Plans/Reports	Consultation
1	Issues Paper, SEA Scoping Report, Appropriate Assessment (AA) Screening Report	Key stakeholder consultation including environmental authorities and transboundary environmental authorities
2	Draft WSSP 2050, SEA Environmental Report, Natura Impact Statement (NIS)	Public consultation including the key stakeholder and environmental authorities mentioned above
3	Final WSSP 2050, SEA Statement, Addendum to NIS (if required) and AA Determination	Plans/Reports updated to address consultation feedback

Under the European Communities (Birds and Natural Habitats) Regulations 2011 as amended (the 'Habitats Regulations') there is a requirement, under Regulation 42, for all public authorities to conduct a screening for Appropriate Assessment (AA). AA screening is the preliminary assessment of whether a plan or project, alone and in combination with other plans or projects, could have significant effects on a European site in view of a site's conservation objectives. If the screening determines that likely significant effects cannot be excluded, then Uisce Éireann must determine that an AA is required. If an AA is required, Uisce Éireann must prepare a NIS, which is a report consisting of the scientific examination of a plan or project individually, or in combination with other plans or projects, in view of the conservation objectives of the site or sites, and any further information required to carry out the AA. The WSSP 2050, SEA and AA/NIS were developed in parallel through an iterative process.

The SEA is undertaken as a four-stage process (detailed in Table 1.2).

[1] EPA. 2021a. *SEA Screening Good Practice 2021*. Accessed: 23.07.2023. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/sea-screening-good-practice-2021.php

Table 1.2 Stages of the SEA

Stage	Purpose and Requirements	Output
Stage 1: Screening	Prior to starting the SEA process, a plan or programme undergoes 'screening' to determine whether it requires SEA (also if SEA is to be undertaken on a voluntary basis).	SEA Screening Statement – Uisce Éireann (as the responsible authority) determined that SEA would be undertaken for the WSSP 2050 (see Appendix A of the Scoping Report)
Stage 2: Scoping	Consideration of the context and objectives of the SEA, provides information on baseline data, identifies relevant environmental issues and trends, and defines the parameters of the scope of the SEA for the purpose of consultation.	SEA Scoping Report
Stage 3: Identification, Prediction, Evaluation and Mitigation of Potential Effects	Within the context and parameters identified at the Scoping Stage, identification and evaluation of likely significant effects of the WSSP 2050 is carried out, including consideration of alternatives and determination of measures to mitigate and monitor residual effects.	SEA Environmental Report– this report.
Stage 4: Consultation, Revision and Post-Adoption	Consultation with statutory consultees and the public. This may require changes to the WSSP 2050 in light of responses. Statement on how the SEA and consultation process has influenced the final WSSP 2050. The statement is required to include an environmental monitoring plan – this is intended to provide feedback on significant environmental effects. This will also aid any future review/revision of the WSSP 2050 and the SEA.	SEA Statement Implementation of the monitoring programme. **Current Stage in the SEA Process**

1.4 SEA Screening

Stage 1 of the SEA process is SEA screening. This is based on the SEA regulations (S.I.435 of 2004) requirements Section 9 (1) (a), which states that environmental assessment shall be carried out for all plans and programmes:

"*which are prepared for agriculture, forestry, fisheries, energy, industry, transport, waste management, water management, telecommunications, tourism, and which set the framework for the future development consent of projects listed in Annexes I and II to the Environmental Impact Assessment Directive*."

The WSSP 2050 has been screened following the EPA's Good Practice Guidance on SEA Screening published December 2021. The screening concluded that the WSSP 2050 is a type of water management plan which sets a general framework influencing other plans in the hierarchy and the future development consent of relevant projects identified from these plans that may require EIA. Uisce Éireann as the competent authority, has determined that SEA is required based on the EPA (2021) screening guidance applicability tests. Therefore, the WSSP 2050 is to be subject to SEA in accordance with the regulations. The SEA Screening Statement is provided in Appendix A of the Scoping Report.

1.5 SEA Scoping

The SEA Scoping Report is the output of Stage 2 of the four-stage SEA process. The SEA scoping process aims to:

- Outline what the plan is expected to cover, how the Draft plan will be developed and how the scoping plan takes account of the WSSP 2050 Issues Paper.
- Outline the existing environmental baseline – describe the environmental characteristics of the study area and to present the initial understanding of the key environmental issues relating to the WSSP 2050.
- Undertake a review of legislation, policies and plans – outline the potential external influences on the WSSP 2050 and the environment in which it is proposed through a review of legislation, policies and plans.
- Propose a framework of Strategic Environmental Objectives and set out a Draft SEA methodology, including outlining how alternative approaches for the WSSP 2050 that will be considered, identify potential interrelated plans and programmes, and outline how cumulative effects will be addressed.
- Provide the Scoping Report for consultation and seek feedback from stakeholders (statutory and transboundary) on the proposed approach to the SEA of the WSSP 2050.

The SEA scoping process informed the SEA assessment and development of the WSSP 2050 (Stage 3 of the SEA process).

Scoping was informed by the baseline information and policy and plans review as described within the Scoping Report. Stakeholders were invited to comment on any further information which may have been relevant for Stage 3 of the SEA process.

1.6 This Report

The SEA Environmental Report is the main documented output of Stage 3 of the SEA process and was prepared to document the environmental assessment of the Draft WSSP 2050 for the public consultation and updates following the consultation supporting the SEA Environmental Statement. This SEA Environmental Report has been prepared to support Stage 4 of the process following the consultation and finalisation of the WSSP 2050'.

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This report has been prepared having regard to the SEA Directive (2001/42/EC) and its provisions that are transposed into Irish law by European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No. 435 of 2004 as amended in 2011). This SEA Environmental Report, together with its Appendices, will be published alongside the SEA Environmental Statement and WSSP 2050.

1.6.1 Structure of the SEA Environmental Report

This SEA Environmental Report is organised as follows:

- Chapter 1: Introduction/Background – Covering the need for the plan and SEA.
- Chapter 2: WSSP 2050 – Outline of how the plan was developed, objectives and summary of proposals.
- Chapter 3: Consultation – Outline of consultation informing the development of the plan and the SEA scoping process comments and responses (summary with table of comments in (summary with table of comments in Appendix A).
- Chapter 4: Review of Policies, Plans and Programmes – Summary of the key policies, plans and programmes with a comprehensive list provided in Appendix B.
- Chapter 5: Baseline Environment – Summary of baseline, trends, pressures and future evolution without the plan (full details included in Appendix C).
- Chapter 6: Assessment Methodology – Outline of approach to the SEA Assessment applied.
- Chapter 7: Assessment of the WSSP 2050 and Alternatives.
- Chapter 8: Cumulative Effects Assessment – Including intra-plan effects and inter-plan effects with other plans.
- Chapter 9: Mitigation and Monitoring Plans – Covering proposed actions to be undertaken for the plan implementation and providing recommendations for Tier 2 plans and downstream project level mitigation and monitoring.
- Appendices: Supporting information including the scoping report comments and responses, baseline information, and the policy and plan review.

1.7 Appropriate Assessment

In addition to compliance with the SEA Directive, the preparation and implementation of the WSSP 2050 must comply with the requirements of the Birds Directive and European Union (EU) Habitats Directive.

The Habitats Directive requires that if a plan, policy or programme is likely to have a significant effect on one or more European sites (that is, a Special Area of Conservation (SAC) or Special Protection Area (SPA), also referred to as "Natura 2000" Network), either alone or in combination with other schemes, plans or projects, then it must be subject to AA.

Uisce Éireann is a relevant 'public authority' as identified in the transposing Habitat Regulations. An AA screening was undertaken for the Draft WSSP 2050 to determine if it is likely to have a significant adverse effect on a Natura 2000 site, either individually or in combination with other plans or projects.

The AA screening concluded that as the WSSP 2050 is a national scale plan covering all regions in the country with potential transboundary implications and falls under the remit of the Habitats Regulations. It is therefore subject to the requirements of the Habitats Regulations to assess the implications of the plan on European sites in view of the sites' conservation objectives.

At the screening stage of the AA process all European sites across Ireland and Northern Ireland were screened in. Given the strategic nature of the WSSP 2050, the screening for AA (Stage 1) concluded that there was potential for significant effects on one or more European sites in view of the sites' conservation objectives. Therefore, it has been determined that, in accordance with Article 6(3) of the Habitats Directive, Stage 2 AA of the WSSP 2050 is required.

There is a degree of overlap between the requirements of the SEA and AA and in accordance with best practice, an integrated approach has been applied between the development of the WSSP 2050, the SEA and the AA, such as sharing of baseline data, cohesive assessment of the potential ecological effects of the WSSP 2050 on European sites and clarification on more technical aspects of the WSSP 2050. These processes together shape the development of the WSSP 2050. This SEA report will take account of the findings of the AA in relation to the SEA, including the SEA cumulative effects assessment, the potential effects and mitigation relevant for Natural 2000 sites and will also cover aspects of biodiversity, habitats and species that are not required to be covered in the AA.

The Natura Impact Statement (NIS), which fully informs the AA undertaken by Uisce Éireann, is published with the AA Determination alongside the WSSP 2050, the SEA Environmental Statement and this SEA Environmental Report.

2 Development of the WSSP 2050

2.1 Water Services Strategic Plan Requirements

Article 33 (4) of the Water Services (No. 2) Act 2013 requires that the WSSP will state the objectives of Uisce Éireann in relation to the provision by Uisce Éireann of water services and the means by which Uisce Éireann proposes to achieve those objectives. The Water Services Act also specifies the aspects of water services which Uisce Éireann must address in the WSSP and are as follows:

- Drinking water quality;
- The prevention or abatement of risks to human health or the environment relating to the provision of water services;
- The existing and projected demand for water services;
- Existing and planned arrangements for the provision of water services by Uisce Éireann;
- Existing and reasonably foreseeable deficiencies in the provision of water services by Uisce Éireann;
- Existing and planned water conservation measures; and
- The management of the property of Uisce Éireann.

The WSSP sets the overarching framework for subsequent more detailed implementation plans including, for example, the National Water Resource Plan (NWRP) and National Wastewater Sludge Management Plan..

2.2 WSSP 2050 and the Policy and Regulatory Framework

2.2.1 Hierarchy of Plans

Uisce Éireann is a publicly owned, regulated, commercial State body with responsibility for the provision of public water and wastewater services.

- The **Water Framework Directive (WFD)** is the overarching Directive relating to water policy in the European Union (EU). It aims to protect and restore the water environment so that all water bodies are at 'Good Ecological Status' or better.
- The **Drinking Water Directive (DWD)** is the EU's main law on drinking water. It concerns the access to, and the quality of water intended for human consumption to protect human health.
- The **Urban Wastewater Treatment Directive (UWWTD)** aims to protect human health and the environment through obligations for collection and treatment of urban wastewater.
- The **Water Services Policy Statement (WSPS)** sets out the priorities of Government regarding the provision of water services during the period specified in the statement[2].
- **Economic regulation** of public water services is by the Commission for Regulation of Utilities (CRU) who set Uisce Éireann's allowed revenue for each revenue control period, typically 5 years in duration.
- **Environmental regulation** of public water services is by the EPA who provide Uisce Éireann's wastewater discharge authorisations and who will provide water abstraction authorisations once this regulatory framework is established.

[2] The Water Services Policy Statement 2024 – 2030 was published in February 2024.

- Water Services Acts 2007 to 2022 which, *inter alia*, set out Uisce Éireann's functions and powers in relation to the delivery of water services.
- A variety of strategic Tier 2 strategic plans and supporting strategies guide how Uisce Éireann deliver their work, beneath which sit Tier 3 specific programmes, plans and projects which Uisce Éireann implement across the country.

This framework of strategies and plans creates a clear line of sight through Uisce Éireann, demonstrating how the WSSP 2050 Tier 1 plan can influence all tiers of the organisation.

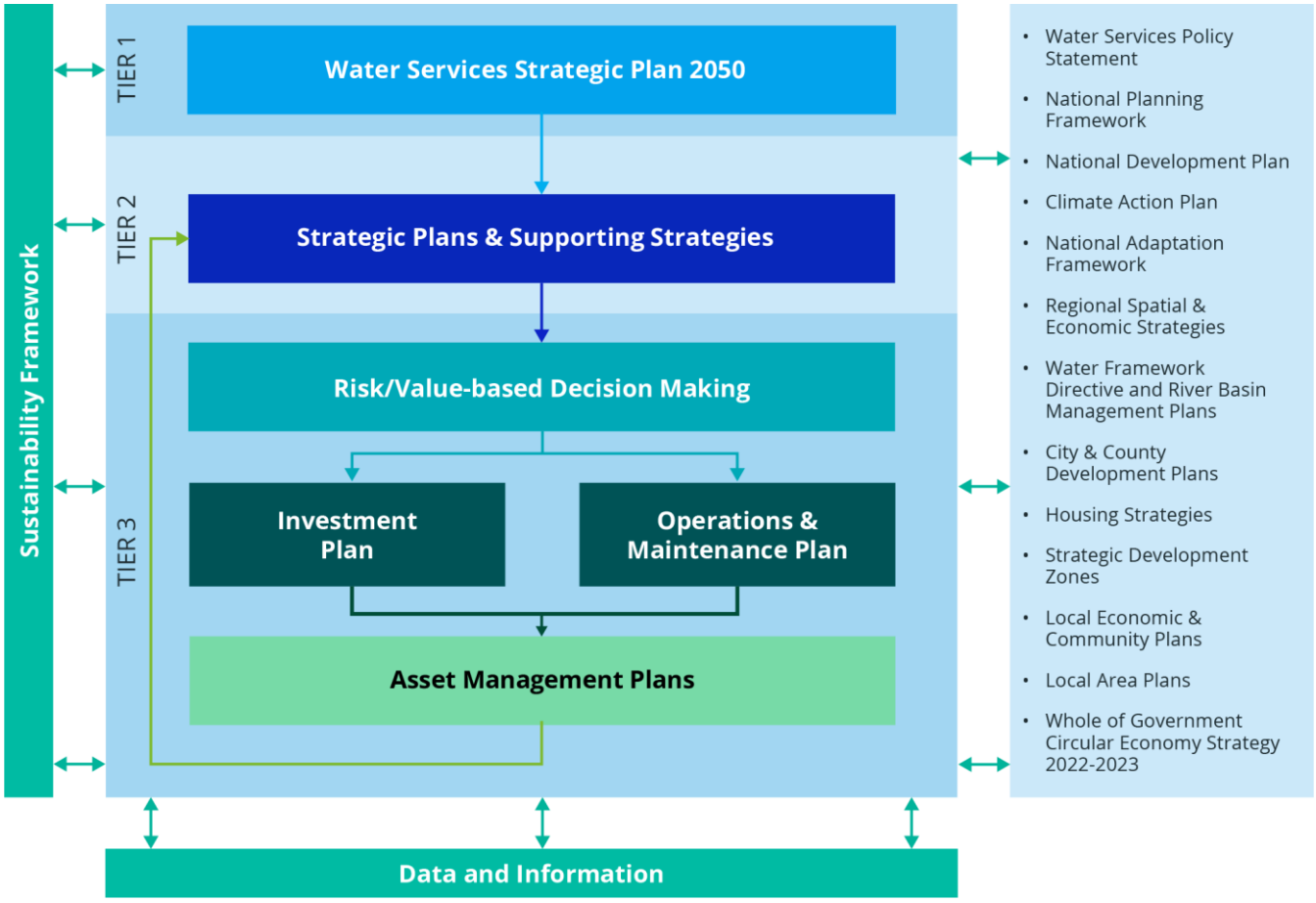


Figure 2-1 Hierarchy and interaction of plans and projects

2.3 WSSP 2050

Uisce Éireann's existing Water Services Strategic Plan was published in 2015 and covers the 25-year period 2015-2040. Much has changed since the 2015 WSSP was first published, including both the establishment of Uisce Éireann and the appreciation of the significant challenges that Uisce Éireann will face in the years ahead.

The adopted WSSP 2050 supersedes the previous WSSP to enable Uisce Éireann to better address future challenges, as identified through Uisce Éireann's Vision 2050 study. The future challenges and opportunities identified include:

- Climate Change;
- Growing population and economy;
- Environmental and biodiversity crises;
- Ageing infrastructure; Legislation, regulation and policy; and

- Economic conditions.

These challenges were used as a starting point in Uisce Éireann's WSSP 2050 Issues Paper to help define the key challenges that Uisce Éireann should consider in developing WSSP 2050. The WSSP 2050 issues Paper was subject to an initial consultation with the statutory authorities alongside the SEA Scoping report and AA Screening report. Comments received through this process have informed the development of the WSSP 2050 and the environmental assessments.

Uisce Éireann has developed Strategic Objectives and supporting aims and actions for the WSSP 2050 that will help them address their most critical needs and ensure that they continue to deliver sustainable water and wastewater services for the long-term. These challenges are complex and cross-cutting, therefore, the key actions in the WSSP 2050 often support the delivery of multiple Strategic Objectives. Figure 2-2 presents an overview of the WSSP 2050 strategic aims and objectives and further details are provided in the WSSP document and in Section 7 of this SEA Environmental Report.

The WSSP 2050 includes four Strategic Objectives, strategic aims and key actions to address the identified challenges from now to 2050. In accordance with Section 33(4) of the Water Services (No. 2) Act, 2013, Uisce Éireann have set out the means by which they propose to achieve these Strategic Objectives. These are presented as 35 key actions which outline the direction of travel and steps that Uisce Éireann will take over the next 5-10 years to deliver on the long-term objectives.

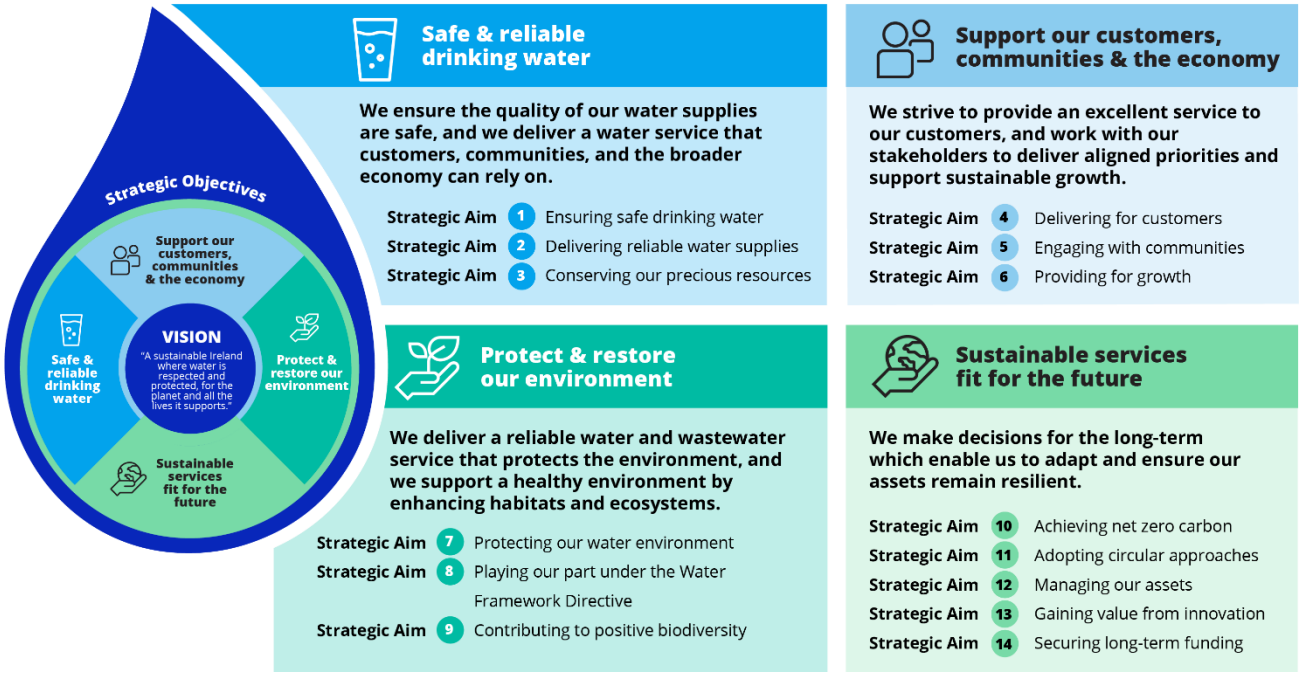


Figure 2-2 WSSP 2050 strategic objectives and strategic aims

It is recognised that since the existing WSSP was published in 2015, approaches have evolved due to new legislation, policy shifts and emerging challenges. Initiatives that began after 2015, such as the National Water Resources Plan and other new plans and programmes, have laid the groundwork for the proposed actions in our WSSP 2050.

In many cases, the range of alternative actions forms a continuum, extending from minimal intervention to the business-as-usual scenario, which incorporates current practices and could be further enhanced to align with the objectives and aims of the WSSP 2050.

Through the delivery of the WSSP 2050, Uisce Éireann will build on the legacy of their local authority water service heritage, collaborating with their customers, communities, and stakeholders to enhance the

shared environment and support social and economic development. Once adopted, the WSSP 2050 will undergo regular reviews, every five years, to ensure it remains relevant. The reviews will allow Uisce Éireann to adapt to changing circumstances and evolving needs.

2.3.1 Development of the WSSP alongside the SEA and the AA

The first stage of the WSSP 2050 involved developing an Issues Paper which took account of aspects considered important for the SEA and AA identified through the respective SEA and AA screening stages. These were issued for consultation and the feedback has been used to inform further development of the WSSP2050 and the environmental assessments. Iteration between the environmental assessments and the WSSP2050 continued through the development of the WSSP 2050 and will continue to the plan finalisation (see Figure 2.3).

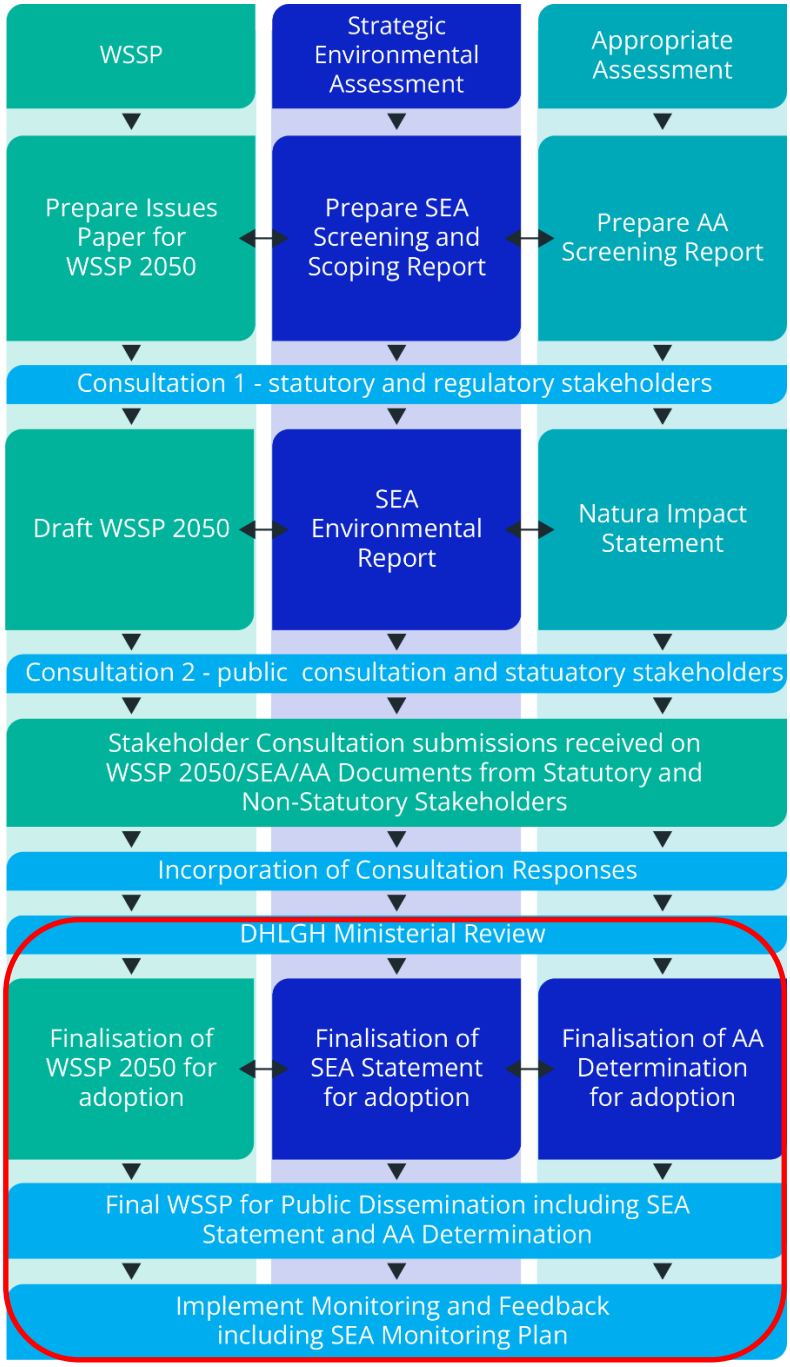


Figure 2-3 Process for the development of WSSP 2050 with the environmental assessments (current stage in red box)

3 Consultation

The WSSP 2050 will be developed following two phases of consultation.

3.1 Consultation 1: Scoping Stage

An initial statutory consultation on the Issues Paper, SEA Scoping Report and the AA Screening Report took place between 19 September to 19 November 2023 For this period of consultation, Uisce Éireann engaged directly with key statutory and regulatory stakeholders.

In line with Article 9(5) of the SEA Regulations (S.I. No. 435 of 2004), the SEA Scoping Report was issued to the following statutory Environmental Authorities for their review and comment:

- The Environmental Protection Agency (EPA);
- The Department of Agriculture, Food and the Marine (DAFM);
- The Department of Housing, Local Government and Heritage, including the Development Applications Unit; and
- The Department of the Environment, Climate and Communications (DECC).

As there is the potential to interface with Northern Ireland and the possibility of transboundary impacts, the SEA Scoping Report was also issued to Northern Ireland's Department of Agriculture, Environment and Rural Affairs (DAERA) for consultation on transboundary environmental effects.

A copy of the SEA Scoping Report is available here: https://www.water.ie/projects/strategic-plans/water-services-strategic/.

The following key questions were prepared to guide consultees and stakeholders in making a submission on the SEA Scoping Report. However, responses and comments were not limited to responding to these questions.

1. Do you have any suggestions that you would like Uisce Éireann to consider in the preparation of the WSSP 2050?
2. Do you have any comments on the approach to the Strategic Environmental Assessment of the WSSP 2050?
3. Section 3 [of the Scoping Report] sets out the current baseline environment conditions and future trends. The key considerations for the environmental assessment of the WSSP 2050 and the proposed scope of the assessment is summarised in Section 3.20 [of the Scoping Report]. Do you have any comments on these?
4. Are there any further plans, policies and programmes not identified in Section 4 or in Appendix B [of the Scoping Report] that should be considered?
5. Do you have any comments on the SEA approach to considering plan alternatives at this stage? If so, please discuss these and provide specific recommendations for changes if possible.
6. Are there any additional or specific plans or programmes that you feel should be considered within the cumulative impact assessment?
7. How would you like Uisce Éireann to communicate with you as the development of the WSSP 2050 progresses?

Feedback received on the Issues Paper and the SEA Scoping Report and the AA Screening Report, has been reviewed and taken into account in the preparation of the WSSP 2050, this SEA Environmental Report and the NIS.

Overall, stakeholders agreed with the seven key issues and the four themes presented in the Issues Paper. In summary there was support for:

- The adaptive planning approach to ensure responses to the challenge of climate change;
- commitment to a collaborative approach to work with our customers and communities, across sectors and with multiple stakeholders to instil the appreciation for the value of water, encourage behaviour change and deliver wider benefits to society;
- the focus on embedding circular economy principles in the delivery of water services;
- increased investment in smart water solutions and technology;
- commitment to protect and enhance the environment to support ecosystems and communities and emphasis on wastewater and stormwater management as part of an Integrated Urban Water Management approach to address the impact of pollution.

The stakeholders highlighted that the following matters were not sufficiently addressed in the Issues Paper:

- the discussion on the climate change key issue does not include sufficient detail on the impact of rising temperatures, reduced precipitation, and sea level rise on water services;
- food security should be considered in the context of climate change, population growth, soil health and water quality;
- drought resilience is an important consideration for current and future water supply development and Uisce Éireann should provide guidance to local authorities on sustainable water use and water conservation

These have been addressed in the WSSP 2050 as reported in the WSSP Appendix C.

Overall, the stakeholders supported the general methodology outlined in the scoping report. Key comments identified for amendment or clarification included:

- Need for the SEA, AA and plan processes to be fully integrated and include a commitment to implementing recommendations and monitoring in the plan
- Strengthening and simplification of the SEA objectives
- Use of the EPA guidance on SEA methodology
- Addition of Policy and plans identified for the policy review
- Additional baseline information sources
- Inclusion of Diagram of interaction with other plans and programmes

The full list of comments and responses for the WSSP 2050 and SEA are provided in Appendix A.

3.2 Consultation 2: WSSP 2050 and Environmental Reports

As part of the second phase of consultation, Uisce Éireann has carried out a public consultation on the Draft WSSP 2050 together with the SEA Environmental Report and NIS.

This SEA Environmental Report was published on the Uisce Éireann website (https://www.water.ie/projects/strategic-plans/water-services-strategic/) alongside the Draft WSSP 2050 and the NIS. The SEA Environmental Report outlines the assessment of the Draft WSSP 2050, including effects on the environment and proposed mitigation. and. In accordance with Article 11 of the SEA

Regulations, the SEA environmental authorities, and DAERA (as the relevant transboundary authority) were notified so could make a submission or observation in relation to the SEA Environmental Report or the Draft WSSP 2050 to Uisce Éireann.

Uisce Éireann referred to the SEA Environmental Report and the NIS when preparing the Draft WSSP 2050. The reports were published for statutory public consultation.

The authorities/consultees listed in Section 3.1 and the public were consulted for the Stage 3 – SEA Environmental Report as required under the SEA Regulations.

This SEA Environment Report reflects the updates and amendments undertaken in response to the consultation comments and the responses required for finalising the WSSP 2050.

4 Review of Policies, Plans and Programmes

The SEA Directive states in Article 5(1) of Annex 1 that the environmental assessment must identify:

"*…the environmental protection objectives, established at International, European Union or national level, which are relevant to the plan or programme, or modification to the plan or programme, and the way those objectives and any environmental considerations have been taken into account during its preparation*".

In accordance with this, the relevant policies, plans, programmes and legislative frameworks have been considered as an important part of setting the context for the SEA and the WSSP 2050. The review also identifies wider environmental protection objectives. These may be plans and programmes at an international (European), national (including cross-boundary), regional or sub-regional level, commensurate with the scope of the WSSP 2050. The review aims to identify the relationships between the WSSP 2050 and these other documents i.e. how the WSSP 2050 could be affected by the other plans and programmes' aims, objectives and/or targets, or how it could contribute to the achievement of their environmental and sustainability objectives.

The review has been undertaken in two parts. Firstly, as a comprehensive review of plans, policies and programmes to identify those directly relevant for the WSSP 2050 and SEA (Appendix B). Secondly, as a further review focusing on how those plans, policies and programmes identified can inform the scope of the baseline and the assessment, including the SEA Objectives.

The EPA's (2022a)[3] good practice guidance for SEA in the water sector recommends that there is a focus on a few key policies and plans. Therefore, those plans, policies and programmes that are considered most influential are outlined in further detail in Section 4.1. Figure 4-1 identifies how the WSSP relates to the key national, regional, and local level plans, policies and strategies.

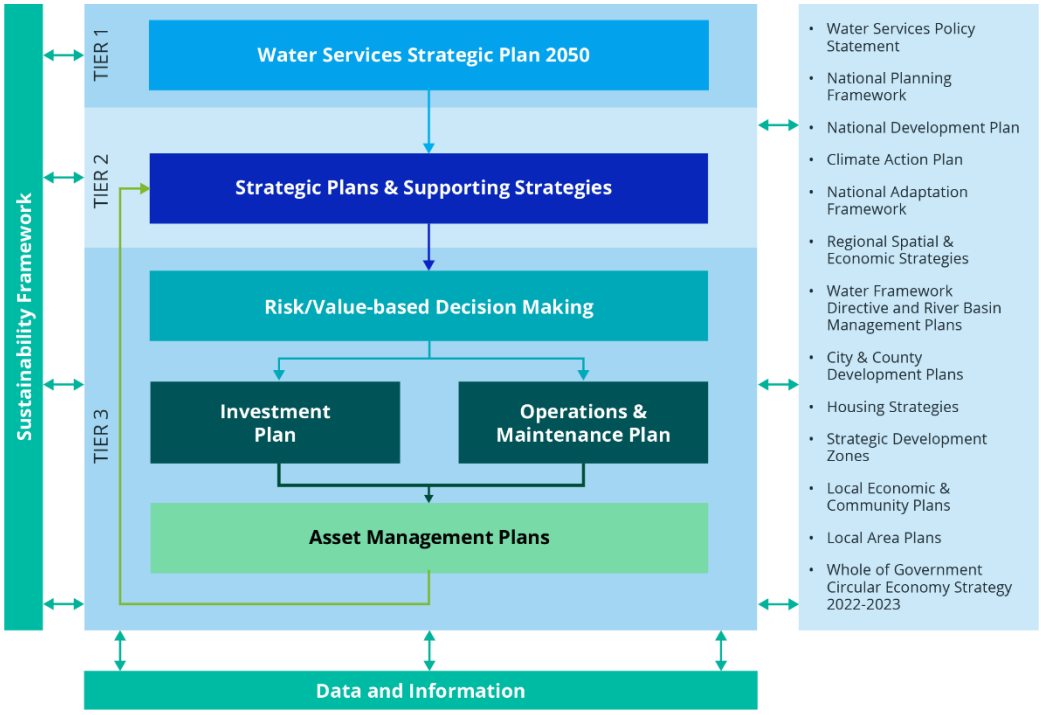


Figure 4-1 Interaction between the WSSP and other plans and programmes

[3] EPA. 2022a. *Good Practice Guidance Note on SEA in Water Sector*. Accessed: 26.09.2023. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/good-practice-guidance-note-on-sea-in-water-sector.php

4.1 Key Policies, Plans and Programmes

A review of a comprehensive list of relevant policies, plans and programmes in terms of relevance for the development and assessment of the WSSP 2050 against SEA topics is provided in Appendix B. The key legislation, policies and plans that are considered most relevant are outlined below and grouped under the following headings:

- Water resources and water quality;
- Climate change;
- Biodiversity;
- Circular Economy; and
- Land use and planning.

Policies., plans and programmes for Northern Ireland relevant for the development of the WSSP consideration of transboundary effects are included in the review provided in Appendix B.

4.1.1 Water Resources and Water Quality

Water Framework Directive and River Basin Management Plan

The EU WFD (Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for Community action in the field of water policy) and the River Basin Management Plan (RBMP) (required under WFD) (DHLGH, 2018a[4] and 2024[5]) are of relevance to the development of the WSSP as they set the framework for managing Uisce Éireann activities relating to water abstraction and pollution from wastewater discharges. They strongly influence where and how much can be abstracted when creating new supplies and enhancing existing sustainable abstractions and investments in wastewater treatment.

The WFD establishes a standard European wide strategic approach to managing surface water, groundwater, transitional and coastal waterbodies, wetlands and to meeting common environmental objectives.

The WFD is linked to, and reinforces, other EU environmental directives including directives relating to the protection of biodiversity (Birds and Habitats Directives), directives related to specific uses of waters (drinking water, bathing waters and urban wastewater directives) and to directives concerned with the regulation of activities undertaken in the environment (Industrial Emissions and Environmental Impact Assessment directives). The Nitrates Directive also forms an integral part of the Directive and is one of the key instruments in the protection of waters against agricultural pressures.

EU Member States implement the WFD through RBMPs in six-year cycles. This process allows for assessment, planning, implementation, and review at regular intervals. Ireland's approach to water quality management has developed over the first and second RBMPs and will continue to evolve into the third cycle RBMP 2022 – 2027 (which is not yet in place) to protect and improve water quality nationally and locally.

[4] DHLGH. 2018a. *River Basin Management Plan 2018 - 2021*. Accessed 20.08.2023. Available from: https://www.gov.ie/en/publication/429a79-river-basin-management-plan-2018-2021/

[5] DHLGH. 2024. DHLGH. 2024. *Water Action Plan 2024: River Basin Management Plan for Ireland 2022-2027.* Accessed: 22.10.2024. Available from: https://www.gov.ie/en/

Under Article 4(1)(a) of the WFD, Ireland must adopt the necessary measures to achieve the objectives of non-deterioration, preservation and enhancement of the status of bodies of water by making the programmes specified in the RBMP operational for the achievement of the WFD environmental objectives. Both the obligations to enhance, and to prevent deterioration of the status of bodies of water, are designed to attain the qualitative objectives pursued by the EU legislature, namely the preservation or restoration of good status, good ecological potential and good chemical status of surface waters.

The WFD establishes a standard European wide strategic approach to managing surface water, groundwater, transitional and coastal waterbodies, wetlands and to meeting common environmental objectives.

The WFD environmental objectives for surface waters include the following:

- Prevent deterioration;
- Aim to achieve good ecological status (or for Artificial or Heavily Modified waterbodies, good ecological potential);
- Aim to achieve good chemical status;
- Aim to reduce/cease emissions, discharges and losses from priority substances and priority hazardous substances; and
- Meet protected area objectives where relevant.

Under Article 4(1)(a) of the WFD, Ireland must adopt the necessary measures to achieve the objectives of non-deterioration, preservation and enhancement of the status of bodies of water by making the programmes specified in the RBMP operational for the achievement of the WFD environmental objectives. Both the obligations to enhance, and to prevent deterioration of the status of bodies of water, are designed to attain the qualitative objectives pursued by the EU legislature, namely the preservation or restoration of good status, good ecological potential and good chemical status of surface waters.

The RBMP for Ireland sets out how organisations, stakeholders and communities will work together to improve the water environment and fulfil the requirements of the WFD. The RBMP is updated every six-years as part of the river basin planning cycle.

The third cycle Water Action Plan 2024: A River Basin Management Plan for Ireland was published in September 2024 and sets out the measures needed to protect and restore water quality including measures to be undertaken by Uisce Éireann. The overall aim of the plan is to ensure that the natural waters are sustainably managed and that freshwater resources are protected to maintain and improve Ireland's water environment (DHLGH, 2024).

The Water Action Plan 2024 (RBMP) sets out how Ireland will manage its water resources and catchments between 2022 and 2027. After many years of steady improvement, Ireland is now experiencing a sustained decline in water quality. Stronger measures are now required in response. In addition to improving overall water quality, sustainable water management is important to address and adapt to the impacts of climate change, with many of the required measures having co-benefits for climate mitigation and biodiversity. Protecting and restoring water quality in Ireland will most of all need measures to address the loss of agricultural nutrients to water, continue to improve wastewater treatment and to re-establish natural free-flowing conditions in more rivers. Ireland's water resources and services face challenges on several fronts including a continued need for investment in infrastructure and an ever-increasing demand for water services due to urbanisation, population and economic growth all set against a backdrop of widespread, rapid, and intensifying climate change.

Wastewater Treatment Plants (WWTPs) identified in the RBMP 2022-2027 as causing water quality impacts in the rivers they discharge, are included in Uisce Éireann River Basin Management Plan Enhanced Ambition Programme funded by the European Union under Ireland's National Recovery and Resilience Plan. This will support the objectives of Ireland's River Basin Management Plans and improve water quality in rivers. The programme is aimed at ensuring that Uisce Éireann assets are not impacting on the ability of receiving waters to achieve their water quality objectives.

The WSSP 2050 and the SEA need to take account of the objectives and targets of the River Basin Management Plans, for the environment and the specific actions identified for Uisce Éireann including for the development of Sectoral Action Work Plans supporting the proposed 46 Catchment Management Work Plans.

More details on the WFD and the current baseline and key trends for the water environment are presented in Section 5 and Appendix C.

Abstraction Licensing

At the end of 2022, the government passed the Water Environment (Abstractions and Associated Impoundments) Act, 2022 (the Abstractions Act), which will ensure that national abstractions align with the requirements of the Water Framework Directive. The Abstractions Act has not yet commenced and the associated regulations and guidelines which will further detail the types of assessment and national methodology to be used are not yet published or in place.

From 2021 to 2023, Uisce Éireann delivered Irelands first National Water Resources Plan (the NWRP). The NWRP was prepared as a Framework Plan and Four Regional Plans all subject to their own SEA and AA processes. The NWRP takes a holistic look at Irelands supplies and identified supply solutions for the country. As the regulations and guidelines for the new abstraction regime are still being developed, for the purposes of the NWRP, Uisce Éireann took a precautionary approach as to what abstractions (both existing and new) are sustainable. In the coming years Uisce Éireann will submit licence applications for existing and new supplies and these will ultimately be determined by the EPA based on the project level information before them.

The objective is to achieve, safe, secure, reliable and sustainable supplies and all new abstractions developed by Uisce Éireann are to be based on conservative assessments of sustainable abstraction. This will ensure that water supplies continually improve in terms of environmental sustainability over time.

Drinking Water Directive 'Recast'

The Drinking Water Directive (DWD), which concerns the quality of water intended for human consumption, has been revised with the adoption by the European Parliament in December 2020 of the 'recast' DWD with two years for Member States to implement. The new Directive aims to improve safe access to water and the highest standards in the world for drinking water. This is in line with the zero-pollution ambition for a toxic-free environment announced in the European Green Deal. The new rules update quality standards and introduce a catchment level and risk-based approach. The Directive introduces the obligation for Member States to improve or maintain access to safe drinking water for all, with focus on vulnerable and marginalised groups. It also foresees better access to information for citizens regarding water suppliers e.g., concerning the quality and supply of drinking water in their living area.

The EU (Drinking Water) Regulations, 2023 transposed EU Directive 2020/2184 into Irish Legislation with effect from March 2023. The regulations aim to protect human health by enhancing drinking water standards from source to tap and ensuring it is wholesome and clean.

The 'recast' DWD updates quality standards for water intended for human consumption, in line with latest recommendations of the World Health Organisation and establishes a watch-list mechanism to allow for

the monitoring of substances or compounds of public or scientific concern to health, such as endocrine disruptors, pharmaceuticals and microplastics. Uisce Éireann sit on the DHLGH DWD expert group, whose role is (along with others) to assist in the various implementation steps of the new Drinking Water Regulations. The requirements of the recast DWD need to be taken forward in the WSSP 2050 and taken into account in the SEA objectives.

Urban Wastewater Directive

The Urban Wastewater Directive (UWWTD) (Council Directive 91/271/EEC of 21 May 1991) is an EU directive regarding urban wastewater collection, wastewater treatment and its discharge. It sets standards for both treatment and disposal of sewage for communities of more than 2,000 person equivalents as well as monitoring requirements for wastewater discharges from urban areas.

Wastewater discharges are regulated by the EPA under the European Union (Waste Water Discharge) Regulations 2007 to 2020. The EPA can also issue notices to review Wastewater Discharge Authorisation.

In 2022, the European Commission published its proposal for a revised UWWTD. The revised UWWTD is currently scheduled for agreement in 2024 with implementation in Ireland likely sometime in 2026. These upcoming revisions will have implications for investment that will need to be considered in implementation of the WSSP 2050. According to the European Commission (EC), by 2040 the revised UWWTDs rules will:

- Reduce greenhouse gas emissions by over 60% compared to 1990;
- Decrease water pollution by more than 365 thousand tonnes; and
- Cut microplastics emissions by 9% (EC, 2023)[6].

Ireland has still not met all of its obligations under the UWWTD (EPA, 2023j)[7] and, in 2022, wastewater treatment at 15 of Ireland's 173 large urban areas did not meet the required treatment and effluent quality standards of the Directive. In addition, sewage was a contributing factor to the Bathing Waters at three beaches being classified as 'Poor' because the water quality did not meet the minimum required standard.

Shellfish Waters are protected, designated areas to support the life and growth of shellfish such as oysters and mussels. If sewage pollutes these waters, then shellfish in the affected areas can be contaminated and put public health at risk via contaminated shellfish consumption. There were 23 Shellfish Waters that were overdue required assessments in 2022. Of the assessments already completed, it was found that improved treatment is needed to protect four Shellfish Waters (EPA, 2023j).

Uisce Éireann can deliver significant benefits for the environment by targeting funding and resources to improve treatment at the priority areas highlighted by the EPA. Addressing the problems in these priority areas will address discharges of raw sewage, prevent wastewater from harming water bodies most at risk of pollution, bring Ireland into compliance with EU wastewater treatment obligations and protect endangered freshwater pearl mussels in Ireland's rivers (EPA, 2023j).

Floods Directive

The EU Floods Directive (2007/60/EC) required member states to develop Flood Risk Management Plans for areas of existing and future potentially significant flood risk. The Floods Directive was transposed into Irish law by the EU (Assessment and Management of Flood Risks) Regulations 2010 and sets out the

[6] EC. 2023. *Urban wastewater*. Accessed: 04.12.2023. Available from: https://environment.ec.europa.eu/topics/water/urban-wastewater_en#revision

[7] EPA. 2023j. *Urban Waste Water Treatment in 2022*. Accessed: 21.02.2024. Available from: https://www.epa.ie/publications/monitoring--assessment/waste-water/uww-report-2022.php

responsibilities of Office of Public Works (OPW). The OPW has been implementing the Directive mainly through the Catchment-based Flood Risk Assessment and Management (CFRAM) Programme, identifying areas where risks associated with flooding might be significant (known as Areas of Further Assessment) and developing measures to address these risks.

Floods and weather patterns are closely connected to challenges for urban drainage and contribute to issues related to storm water discharges and vulnerability to flooding is also a risk for treatment and supply infrastructure including impacts on associated services such as electricity supply and transport access. These aspects are relevant for Uisce Éireann in the planning of new investment and for developing resilience for water and wastewater services and in relation to addressing pollution from stormwater drainage.

Marine Planning

The Marine Strategy Framework Directive (MSFD) requires European Member States, including Ireland, to reach good environmental status in the marine environment.

As part of implementing the Marine Spatial Planning Directive, Ireland's National Marine Planning Framework (NMPF) (2023)[8] has been produced to provide guidance for activities and developments affecting the marine environment up to 2040 and is a key enabler of Ireland's ability to meet the requirements of the MSFD. The Maritime Area Planning Act was enacted in 2021 and the Maritime Area Regulatory Authority was established in July 2023. Together these introduce a new legislative regime around consent for development and activities in the marine area. The NMPF provides policies for sustainable planning and management of marine resources, balancing ecological, economic and social objectives in relation to aspects such as the environment, biodiversity, commercial fisheries and renewable energy. As part of this, the NMPF includes specific objectives and planning policies related to water quality and to wastewater treatment and disposal.

Transboundary waters are relevant to the WSSP 2050 and in this context the UK's Marine Strategy provides the framework for delivering marine policy at the UK level to achieve good environmental status (GES) in UK seas. The Marine and Coastal Access Act 2009 provides a framework for managing demands on the marine environment seas balancing energy, conservation, and resource needs. UK Marine Policy Statement was adopted in 2011 under the Marine and Coastal Access Act 2009 and provides the policy framework for the marine planning system and decision making affecting the marine environment.

The Marine and Coastal Access Act 2009 and the Marine Act (Northern Ireland) 2013, which established a network of Marine Protected Areas (MPAs) in the Northern Ireland inshore region, require the Department of Agriculture, Environment and Rural Affairs (DAERA) as the Marine Plan Authority, to prepare marine plans. The Draft Northern Ireland Marine Plan (2018) has been developed within the framework of the UK Marine Policy Statement (UK MPS) and will facilitate the sustainable development of the marine area.

Uisce Éireann need to take account of the effect of new investments and operation of water and wastewater services on coastal and marine environment around Ireland and Northern Ireland and objectives for protecting and improving the quality of these areas need to be considered for the WSSP 2050 and the SEA assessment.

[8] DHLGH. 2023. *National Marine Planning Framework*. Accessed 20.08.2023. Available from: https://www.gov.ie/en/publication/a4a9a-national-marine-planning-framework/

4.1.2 Climate Change

Climate Action and Low Carbon Development (Amendment) Act 2021

In July 2021 the Climate Action and Low Carbon Development (Amendment) Act 2021 was signed into law. This Act establishes the following national climate objective:

"*The State shall, so as to reduce the extent of further global warming, pursue and achieve, by no later than the end of the year 2050, the transition to a climate resilient, biodiversity rich, environmentally sustainable and climate neutral economy*."

To achieve that objective the Act sets out several actions. These include:

The preparation of an annual update to the Climate Action Plan 2019 (currently Climate Action Plan 2023 is the latest annual Plan with the Draft Climate Action Plan 2024 out for consultation.

- The preparation, not less frequently than once every 5 years, of a national long-term climate action strategy (referred to as a "*national long term climate action strategy*").
- The establishment of carbon budgets, aligned with the achievement of the national climate objective, for consecutive 5-year periods.
- The preparation of "*sectoral emissions ceilings*" which establish the maximum amount of greenhouse gas emissions that are permitted in different sectors of the economy during the 5-year period of a carbon budget.
- The preparation of "*local authority climate action plans*" covering periods of five years, which are required to specify the mitigation measures and the adaption measures to be adopted by the relevant local authority in relation to climate matters.
- An obligation that public bodies must take account of Climate Action Plans in the performance of their functions.

The Act provides that the first two 5-year carbon budgets should equate to a total reduction of 51% over the period to 2030, relative to a baseline of 2018.

The Act is relevant to the WSSP 2050 in terms of the state and sectoral targets set and the need to consider the annual Climate Action Plans going forward.

Climate Action Plan 2024 (Consultation draft)

The Climate Action Plan 2024 (CAP24) consultation draft is the third annual update to Ireland's Climate Action Plan 2019. The Draft CAP24 was approved for publication by Government on 20 December 2023, and is subject to SEA and AA. Consultation on the Draft CAP24 has been completed and the final adopted plan is awaited. The Draft CAP24 has been updated to include an additional Sustainable Development Goals (SDG) chapter which provides an assessment of each chapter of the Draft CAP24 for SDG impact at SDG target level.

The plan implements the carbon budgets and sectoral emissions ceilings and sets out a roadmap for taking decisive action to half Ireland's emissions by 2030 and reach net zero no later than 2050, as committed to in the Programme for Government. The Draft CAP24 sets out how Ireland can accelerate the actions that are required to respond to the climate crisis, putting climate solutions at the centre of Ireland's social and economic development (DECC, 2024)[9].

[9] DECC. 2024. *Climate Action Plan 2024*. Accessed: 22.03.24. Available from: https://www.gov.ie/en/publication/79659-climate-action-plan-2024/#:~:text=The%20Plan%20provides%20a%20roadmap,Development%20(Amendment)%20Act%202021

Progress Reports on the Climate Action Plans are published each quarter. For Draft CAP24, the progress reports will highlight 'high impact' measures, Key Performance Indicators, state of play on emissions targets, recent emissions trends, action case studies and foresight on key actions due later in 2024.

The WSSP 2050 will set the context for subsequent implementation plans that will detail the programmes of works to be completed in specific water service areas, including climate change adaptation and mitigation and wastewater compliance in accordance with the Draft CAP24 and subsequent annual plans.

National Adaptation Framework and Sectoral Adaptation Planning

Building on the work completed under the National Climate Change Adaptation Framework (2013)[10], the Department of Communications, Climate Action and Environment published Ireland's first statutory National Adaptation Framework (NAF) in January 2018. The NAF sets out the national approach to adaptation in Ireland in order to reduce the negative impacts of climate change (DECC, 2018)[11]. The framework requires each government department to develop a sectoral adaptation plan for their area of responsibility.

As part of this framework, the DHLGH (2019)[12] produced the Adaptation Plan for Water Quality and Water Services Infrastructure.

The 2015 Climate and Low Carbon Development Act (the Climate Act) requires that the National Adaptation Framework (NAF) be reviewed at least every five years. The NAF review process took place in 2022. The Review also takes account of key developments at International and EU level, notably the publication of the IPCC Working Group I and II reports, the agreement and publication of the new 2021 EU Adaptation Strategy, and feedback on current Adaptation policy in Ireland. A Report on the NAF Review was approved in October 2022, and recommended the development of a new NAF in 2023. The main recommendations were for a new framework to take account of the changes in context and challenges and in particular the need for national climate change adaptation indicators and a national climate adaptation risk assessment. It was also considered that provision for the making of joint Sectoral Adaptation Plans would be best accommodated in a new framework. Revision of sectoral adaptation plans is also highlighted as a requirement. The new draft NAF: Planning for a Climate Resilient Ireland 2024 was published for consultation closing on 19th February 2024 and a revised NAF is expected to be approved later in 2024 The draft 2024 NAF includes a score card from the Climate Change Advisory Council in 2023 which assesses sectoral progress against different aspects of climate change resilience and identified this to be limited to moderate for Water Quality and Water Services Infrastructure.

The WSSP 2050 will be relevant to the implementation of measures identified in the National Adaptation Plan for Water Quality and Water Services Infrastructure.

4.1.3 Biodiversity

4th National Biodiversity Action Plan 2023-2030

The National Biodiversity Action Plan (Department of Culture, Heritage and the Gaeltacht, 2024)[13] sets out actions through which a range of government, civil and private sectors will undertake to achieve Ireland's

[10] DECC. 2013. *National Climate Change Adaptation Framework*. Accessed: 23.09.2023. Available from: https://www.gov.ie/en/publication/df8e2-national-climate-change-adaptation-framework/

[11] DECC. 2018. *National Adaptation Framework*. Accessed: 23.09.2023. Available from: https://www.gov.ie/en/publication/fbe331-national-adaptation-framework/

[12] DHLGH. 2019. *Water Quality and Water Services Infrastructure - Climate Change Sectoral Adaptation Plan*. Accessed 23.08.2023. Available from: https://www.gov.ie/en/publication/f5710-water-quality-and-water-services-infrastructure-climate-change-sectoral-adaptation-plan/

[13] Department of Culture, Heritage and the Gaeltacht. 2024. Ireland's 4th National Biodiversity Action Plan 2023–2030. Accessed: 20.03.2024. Available from: https://www.gov.ie/en/publication/93973-irelands-4th-national-biodiversity-action-plan-20232030/

'Vision for Biodiversity' and follows on from the work of the first, second and third National Biodiversity Action Plans. It has been developed in line with the EU and International Biodiversity strategies and policies.

The 4th NBAP aims to take account of the Global Biodiversity Framework. This recognises that despite three decades of co-ordinated global action for conservation, the loss of biodiversity continues, posing significant threats to human well-being. This Framework is intended to guide actions worldwide for the decade to 2030 to preserve and protect nature and its essential services to people. It includes a vision for biodiversity governance further into the future, aiming for a global effort towards living in harmony with nature by the year 2050. The 4th NBAP set out a Vision for Biodiversity in 2050 where '*Biodiversity in Ireland is valued, conserved, restored and sustainably used, maintaining ecosystem services, sustaining a healthy planet and delivering benefits essential for all people*'.

194 targeted actions are contained in the Plan, underpinned by five strategic objectives. The objectives contain series of outcomes and lay out a clear framework for Ireland's national approach to biodiversity, ensuring that efforts and achievements of the past are built upon, while looking ahead to what can be achieved over the next five years and beyond. They include:

- Adopt a Whole-of-Government, Whole-of-Society Approach to Biodiversity;
- Meet Urgent Conservation and Restoration Needs;
- Secure Nature's Contribution to People;
- Enhance the Evidence Base for Action on Biodiversity;
- Strengthen Ireland's Contribution to International Biodiversity Initiatives.

The WSSP 2050 will need to take account of the objectives and actions under the 4th NBAP, particularly those aimed at improving biodiversity and water quality including meeting urgent protection and restoration needs (Objective 2) and linkage to meeting the third cycle RBMP objectives.

EU's Nature Restoration Law

The European Commission's Nature Restoration Law came into effect in the EU through The Regulation on Nature Restoration (Nature Restoration Law) August 2024. This is the first continent-wide, comprehensive law of its kind and is a key element of the EU Biodiversity Strategy and a step towards implementing the EU Green Deal. The aim is to restore ecosystems, habitats and species across the EU's land and sea areas to:

- Enable the long-term and sustained recovery of biodiverse and resilient nature;
- Contribute to achieving the EU's climate mitigation and climate adaptation objectives; and
- Meet international commitments.

The new EU law combines an overarching restoration objective for the long-term recovery of nature in the EU's land and sea areas with binding restoration targets for specific habitats and species. These measures should cover at least 20% of the EU's land and sea areas by 2030, and ultimately all ecosystems in need of restoration by 2050. This has significant implications for national strategies and targets. The WSSP 2050 will need to address the requirements of the Nature Restoration Law as these are brought into national policy and regulations, and including through future updates to Uisce Éireann's own Biodiversity Action Plan.

4.1.4 Circular Economy

EU Soil Strategy for 2030

The EU soil strategy for 2030[14] sets out a framework and concrete measures to protect and restore soils and ensure that they are used sustainably. It sets a vision and objectives to achieve healthy soils by 2050, with specific actions by 2030. The strategy also proposed a new Soil Health Law to ensure a level playing field and a high level of environmental and health protection.

The new EU soil strategy for 2030 is a key deliverable of the EU biodiversity strategy for 2030. It will contribute to the objectives of the European Green Deal. Healthy soils are essential for achieving climate neutrality, a clean and circular economy and halting desertification and land degradation. They are also essential to reverse biodiversity loss provide healthy food and safeguard human health.

The EU soil strategy aims to ensure that, by 2050:

- All EU soil ecosystems are healthy and more resilient and can therefore continue to provide their crucial services;
- There is no net land take and soil pollution is reduced to levels that are no longer harmful to people's health or ecosystems; and
- Protecting soils, managing them sustainably and restoring degraded soils is a common standard.

A proposal for an EC Directive on soil monitoring was published July 2023. This will set out a framework for soil monitoring and aim to support sustainable soil management and require contaminated land to be identified and addressed.

The WSSP 2050 and lower tier plans will need to consider how their actions can support this strategy especially through sludge waste disposal and circular economy approaches but also in relation to source protection and wider catchment management measures.

Circular Economy and Miscellaneous Provisions Act 2022

The Circular Economy and Miscellaneous Provisions Act 2022 builds on the Ireland's commitment to achieving a circular economy, as set out in the 2020 Waste Action Plan for a Circular Economy (DECC, 2020)[15] and the 2021 Whole-of-Government Circular Economy Strategy (DECC, 2021)[16]. The Act demonstrates commitment to a more sustainable pattern of production and consumption, that retains the value of resources in the economy for as long as possible which will also significantly reduce greenhouse gas emissions.

In a circular economy, waste and resource use are minimised. The use and value of products and materials is maintained for as long as possible. When a product has reached the end of its life its parts are used again and again – to create further useful products, instead of being discarded which is an all too familiar pattern now. The Act includes:

- Incentives for the use of reusable and recyclable alternatives to a range of wasteful single-use disposable packaging and other items.

[14] Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions *Eu Soil Strategy For 2030 Reaping The Benefits Of Healthy Soils For People, Food, Nature And Climate, Com (2021) 699, final*. Accessed 26.07.2023. Available from: Http://Eur-Lex.Europa.Eu/

[15] DECC. 2020. *Waste Action Plan for a Circular Economy*. Accessed: 23.09.2023. Available from: https://www.gov.ie/en/publication/4221c-waste-action-plan-for-a-circular-economy/

[16] DECC. 2021. *Whole of Government Circular Economy Strategy 2022 – 2023 'Living More, Using Less'*. Accessed: 23.09.2023. Available from: https://www.gov.ie/en/publication/b542d-whole-of-government-circular-economy-strategy-2022-2023-living-more-using-less/

- Re-designates the existing Environment Fund as a Circular Economy Fund, which will remain ring-fenced to provide support for environmental and circular economy projects.
- Introduces a mandatory segregation and incentivised charging regime for commercial waste, similar to the household market. This will increase waste separation and support increased re-cycling rates.
- Places the Circular Economy Strategy and National Food Loss Prevention Roadmap on a statutory footing, establishing a legal requirement for governments to develop and periodically update these 2 policies.
- Streamlines the national processes for End-of-Waste and By-Products decisions, tackling the delays which can be encountered by industry, and supporting the availability of recycled secondary raw materials in the Irish market.
- Consolidates the government's policy of keeping fossil fuels in the ground – by introducing prohibitions on exploration for and extraction of coal, lignite and oil shale.

For WSSP 2050, the Circular Economy and Miscellaneous Provisions Act 2022 Act and the EU Soil Strategy will be particularly relevant for developing WSSP 2050 objectives addressing wastewater and water treatment wastes.

4.1.5 Land Use and Planning

The Planning and Development Act 2024

The Planning and Development Act 2024 represents a major overhaul of the planning system in Ireland. It, *inter alia,* proposes to strengthen the legal status of ministerial guidelines and policy directives. These will require Government approval and alignment with the policies and measure will be mandatory. Other plans will be required to be materially consistent with them. There will be changes to Local Development Plans and to the structure of the Local Area Plan system. Statutory timelines for all consent processes will be introduced and changes proposed to Judicial Reviews.

National Development Plan 2021-2030

As part of Project Ireland 2040 the National Development Plan (NDP) (Department of Public Expenditure and Reform (DPER), 2021)[17] sets out the Government's over-arching investment strategy and budget for the period 2021-2030. It is an ambitious plan that balances the significant demand for public investment across all sectors and regions of Ireland with a major focus on improving the delivery of infrastructure projects to ensure speed of delivery and value for money.

This NDP is identified as being 'the largest and greenest ever delivered in Ireland', with a particular focus on supporting the largest public housing programme in the history of the state. While many of the investments in this NDP are already well known and have been progressing through planning for some time, there are a range of investments which are new or enhanced in this NDP. One of these investments is NSO 9 – Sustainable Management of Water and other Environmental Resources – Eastern and Midlands Water Supply Project and Greater Dublin Drainage Project.

[17] DPER. 2021. *National Development Plan 2021-2030*. Accessed: 23.06.2023. Available from: https://www.gov.ie/en/publication/774e2-national-development-plan-2021-2030/

National Planning Framework – Project Ireland 2040

The National Planning Framework (NPF) (DHLGH, 2018b)[18] is a national document published on 16th February 2018. The commencement of the first revision to the NPF has been approved by Government and a Road Map for the revision was Published in June 2023. This sets out the commitment to update the NPF in 2024.

The National Planning Framework 2040 is a strategic development framework setting out the long-term context for Ireland's physical development and associated progress in economic, social, and environmental terms. Under the framework three regional assemblies have been identified, Eastern and Midland, Northern and Western, and Southern. The NPF is being followed and underpinned by supporting policies and actions at sectoral, regional and local level. The NPF is accompanied by the ten-year National Development Plan, together forming one plan to guide strategic development and infrastructure investment at a national level.

In the period to 2040, the NPF recognises Dublin as Ireland's key international and global city of scale and principal economic driver, accounting for 25% of growth. A further 25% of growth is estimated to occur across the other four cities combined (Cork, Limerick, Galway, and Waterford), enabling all four to become cities of greater scale by growing their population and jobs by 50-60%. The remaining 50% of growth relates to key regional centres, towns, villages, and rural areas, to be determined in the forthcoming Regional Spatial and Economic Strategies (RSESs).

The first revision to the NPF was published as a draft for consultation in July 2024 and is made in the context of a number of changes in policy and legislation since 2018 when the NPF was originally published and will include taking account of the Climate Action Plan 2023 (or any future iteration), the National Marine Planning Framework from 2021 and the prospective changes expected once the Draft Planning and Development Bill is enacted.

The NPF and regional and local plans are key for the WSSP 2050 in terms of the population and economic growth and housing development that needs to be supported by water and wastewater services and also the potential to inform and influence these plans to support more sustainable development.

4.2 Relevant Uisce Éireann Plans

The hierarchy of plans related to the WSSP is illustrated in the Figure 4-1 above. These include under the Tier 1 WSSP 2050:

- Tier 2 Strategic implementing plans and supporting strategies including
  - Supporting strategies such as on climate change or biodiversity
  - Strategic plans such as plans for water and wastewater services or waste management - identifying targets and investment needs.
- Tier 3 including – risk and value based decision-making, Investment plans, operation and maintenance plans, and asset management plans.
- Delivery through programmes and projects.

Uisce Éireann's plans that are already in place will be subject to regular reviews and updating and this process will be influenced by the WSSP 2050. New plans including those in development will come under

[18] DHLGH. 2018b. *National Planning Framework.* Accessed 26.09.2023. Available from: https://www.npf.ie/project-ireland-2040-national-planning-framework/

the WSSP 2050. Key Uisce Éireann plans and programmes most relevant to the WSSP 2050 are discussed below.

4.2.1 Supporting Strategies

Sustainable Energy – Climate Change Mitigation and Adaptation

Improving energy efficiency is one of Uisce Éireann's key sustainability measures for improving their carbon footprint and reducing greenhouse gas emissions. Uisce Éireann is in the process of preparing a sustainable energy strategy to become a low carbon, energy efficient, sustainable water utility and improve energy efficiency. This strategy will take account of mandatory targets.

Energy efficiency improvement is a key mitigation measure of Uisce Éireann's climate change policy to help ensure water and wastewater services are resilient to climate change, developing a low greenhouse gas emitting water and wastewater service. Uisce Éireann is implementing a business wide climate mitigation and adaptation strategy, aligned with the Water Sector Adaptation Plan under the National Adaptation Framework. The strategy identifies the adaptation and mitigation actions to be undertaken to minimise the consequences of climate change on Uisce Éireann, their customers and the environment.

Improving energy efficiency is one of Uisce Éireann's key sustainability measures for improving their carbon footprint and reducing greenhouse gas emissions. Uisce Éireann aims to become a low carbon, energy efficient, sustainable water utility with targets to improve energy efficiency by 50% by 2030 (2009 baseline) and achieve an absolute reduction (51%) in GHG emissions from energy by 2030 (2016-18 baseline). The strategy includes business wide energy action plans that focus on Capital Energy Efficiency, Operational Energy Efficiency, Renewable Energy, Innovation and Transformation and Energy Management. Significant progress has been made in implementing the sustainable energy strategy with a 30% improvement in energy efficiency performance to date. Uisce Éireann is on track to meet the target of 50% energy efficiency improvement by 2030 and achieving an absolute reduction (51%) in GHG emissions energy by 2030, putting them in a strong position for net zero carbon by 2040.

Energy efficiency improvement is also a key mitigation measure of Uisce Éireann climate change policy to help ensure water and wastewater services are resilient to climate change, developing a low greenhouse gas emitting water and wastewater service. Uisce Éireann is implementing a business wide climate mitigation and adaptation strategy, aligned with the Water Sector Adaptation Plan under the National Adaptation Framework. The strategy identifies the adaptation and mitigation actions to be undertaken to minimise the consequences of climate change on Uisce Éireann, their customers and the environment.

Biodiversity Action Plan

Uisce Éireann's Biodiversity Action Plan (BAP) (2021)[19] details specific objectives and actions to address the biodiversity emergency. These objectives and actions align with Uisce Éireann policy-level strategic objectives and implementation is in progress. The plan will be reviewed and updated every five years in line with the company's periodic review. The following key objectives have been identified:

- Issue all Uisce Éireann sites with a clear set of measures that will enhance and protect biodiversity. Raise awareness and provide educational supports on biodiversity to Uisce Éireann staff and its partners.
- Ensure 'no net loss' of biodiversity when carrying out activities, or delivering plans or projects.

[19] Irish Water. 2021. *Irish Water's Biodiversity Action Plan*. Accessed: 29.08.2023. Available from: https://www.water.ie/docs/21668_Ervia_IrishWaterBiodiversityActionPlan_v7.pdf

- Implement actions arising from the All-Ireland Pollinator Plan across all Uisce Éireann sites, to support and increase our pollinator population.
- Promote the use of nature-based solutions for water protection and wastewater treatment.
- Manage invasive alien species at Uisce Éireann's sites.
- Collaborate and work with key internal and external stakeholders, and the wider community, to protect and enhance biodiversity.

4.2.2 Implementation Plans

National Water Resources Plan

The NWRP (Uisce Éireann, 2023)[20] is Ireland's first national water resources plan and is a 25-year strategy covering the period 2019 to 2044. The plan identifies how Uisce Éireann will provide a safe, sustainable, secure and reliable water supply to Uisce Éireann customers for now and into the future while safeguarding the environment.

The first Phase in the development of the NWRP was the preparation of the NWRP - Framework Plan (the Framework Plan), which was adopted in May 2021.

The second Phase of the NWRP involved the production of four Regional Water Resources Plans that assess need and propose a Preferred Approach for each of the 539 water supplies that make up the national public water supply. The NWRP comprises the Framework Plan and four Regional Water Resources Plans together will be treated as a unified Plan and the regional groupings will have no ongoing application in future cycles).

The status of the Regional Plans is as follows:

- Regional Water Resources Plan for the Eastern and Midlands Region (RWRP-EM) was adopted in September 2022.
- Regional Water Resources Plan for the South West Region (RWRP-SW) was adopted in February 2023.
- Regional Water Resources Plan for the North West Region (RWRP-NW) was adopted June 2023;
- Regional Water Resources Plan South East (Draft RWRP-SE), is currently out for consultation and will be the fourth and final Regional Plan.

The NWRP aims to:

- Enable Uisce Éireann to address Need across our water supplies in the most effective way over time, through the regulated investment cycles.
- Ensure that there is a transparent framework to develop the most appropriate projects/programmes to meet statutory obligations in relation to water supply.
- Provide a framework to track outcomes, allowing interventions to be prioritised in order to bring the water supply up to the required standards in the shortest possible timeframe.
- Deliver a Plan to ensure that all of our customers have access to safe, secure, reliable and sustainable water supplies, wherever they live.

[20] Uisce Éireann. 2023. *National Water Resources Plan*. Accessed: 29.09.2023. Available from: https://www.water.ie/projects/strategic-plans/national-water-resources/

In addition to this, the Regional Plans aim to achieve the following:

- Facilitate integration of government policy and legislation into our outcomes planning.
- Support balanced regional development, as outlined in the NPF and the supporting RSESs, by assessing water supply Needs across our growing communities.
- Improve the security of our supplies in terms of both quality and quantity.
- Improve the environmental Sustainability of our supplies and ensure that we can adapt to the impacts of climate change.
- Facilitate improvement in the Reliability of our supplies, resulting in less frequent interruptions to supplies and boil water notices.
- Allow Uisce Éireann to have a strategic approach to planning our supplies in terms of improving biodiversity and reducing carbon.

The Regional Plans set out programmes of proposed solutions for reducing and eliminating the SDB deficits in the Water Resource Zones (WRZs), meeting water quality requirements and bringing greater resilience to the water supply network. The aims of the programme are based around the following three pillars:

- Lose Less: Reducing water lost to the system through leakage;
- Use Less: Reducing water use through efficiency measures; and
- Supply Smarter: Improving the quality, resilience and security of Uisce Éireann's supply through infrastructure improvements.

The Regional Plans identify the preferred supply options for addressing the projected SDB for each WRZ. These include increased or new abstractions from groundwater and surface water, storage options, rationalisation and network improvements, new and upgraded Water Treatment Plants (WTPs). The plans also identify the leakage reduction and demand management programmes to be applied in the region.

The Regional Plans, and NWRP as a whole, also set out commitments for implementation including a process of review and updating taking account of new data as well as developments in legislation, policy and plan context. These will be considered as part of the monitoring and feedback reported through annual reviews and feeding into a five year plan cycle. The WSSP 2050 will therefore influence the NWRP's implementation once approved.

National Wastewater Sludge Management Plan

Uisce Éireann has published a long-term National Wastewater Sludge Management Plan (referred to as the NWSMP) that outlines its strategy to ensure a nationwide, standardised approach for managing wastewater sludge over the next 25 years[21]. The NWSMP is one of Uisce Éireann 's Tier 2 Implementation Plans.

Uisce Éireann has looked at how wastewater sludge is currently managed throughout the country and estimates that the quantity of wastewater sludge generated is expected to increase by more than 80% by 2040 as new and upgraded plants to treat Uisce Éireann's wastewater are completed. The management of this wastewater sludge poses economic, planning and environmental challenges. The NWSMP presents a national approach to wastewater sludge. This will ensure that, for the first time, treated wastewater sludge

[21] Irish Water. 2016. *National Wastewater Sludge Management Plan*. Accessed: 20.05.2023. Available from: https://www.water.ie/iw-documents/our-projects/Final-NWSMP.pdf

across the country is effectively managed, stored, transported and re-used or disposed of in a sustainable way, to the benefit of the public and the environment we all live in.

Uisce Éireann is currently reviewing and updating the NWSMP. The next revision of the Plan will provide a progress update on the objectives identified in the original Plan (2016). The next revision of the Plan will also include detail around sludge management activities and how these activities impact climate change, sustainability and circular economy initiatives.

Lead in Drinking Water Mitigation Plan

Lead in drinking water is a known health concern with regular consumption of even low levels of lead having negative health effects. The use of lead as a plumbing material was commonplace in properties that were built up to and including the 1970s. The legal limit for lead in drinking water has been reducing over time. It is now at a very low level of 10µg/L or 10 microgrammes per litre and is set to reduce further in 2036 to 5µg/L or five microgrammes per litre under the new EU Drinking Water Regulations published in 2023.

In response to this known risk, the Government published its National Strategy to Reduce Exposure to Lead in Drinking Water in 2015. This strategy was prepared by the Department of Environment, Community and Local Government and the Department of Health. Uisce Éireann then adopted the Lead in Drinking Water Mitigation Plan in 2017[22] after a period of public consultation.

Water leaving Uisce Éireann treatment plants is lead free and Uisce Éireann records show that there are no lead public water mains in Ireland. Minimising lead levels in drinking water is both the responsibility of water suppliers and property owners. Uisce Éireann is responsible for any lead pipework in the public water distribution network. This is known as public-side lead. Uisce Éireann is currently working on the replacement of all known public side lead, which in most cases are short segments of pipe called service connections which run from the mains to the property boundary. There are an estimated 180,000 lead service connections in Ireland and Uisce Éireann replaced over 51,600 up to the end of 2022.

The recommendation of the HSE, EPA and the World Health Organisation is that all lead pipes in public and private ownership should be replaced, and the Government is currently offering homeowners grants to assist with this on the private side. Uisce Éireann offers a customer opt in service where a homeowner replaces their private side lead, and we will prioritise the replacement of any public side lead at no cost to the customer.

While the lead replacement works are ongoing Uisce Éireann is introducing orthophosphate treatment to reduce the plumbosolvency of the water at priority WTPs.

Orthophosphate is a food grade additive which is found in products such as soft drinks and is naturally occurring in milk, cheese, apples, fish and poultry. It is extensively used in the United States as a measure to reduce lead in drinking water and is used in approximately 95% of UK drinking water supplies and all Northern Ireland water supplies with demonstrated improvements in lead compliance.

The implementation of orthophosphate is subject to strict environmental controls. In relation to potential Environmental impacts, an Environmental Assessment Methodology (EAM) has been agreed with the Lead Mitigation Advisory Group (LMAG) which comprises relevant departmental and regulatory representatives. The EAM has specifically included assessment against WFD objectives of receiving waters and conservation objectives of European sites respectively. This assessment has been completed for all 138 high priority WTPs. This assessment has been completed in advance of the introduction of orthophosphate and

[22] Irish Water. 2017. *Lead Mitigation Plan*. Accessed: 23.08.2023. Available from: https://www.water.ie/projects/strategic-plans/lead-mitigation-plan/

treatment will only proceed where it is determined that there will be no likely significant effects or cumulative impacts on the environment.

To date, orthophosphate treatment has been commissioned at six WTPs. There are currently a further 14 plants where construction works are completed, and these are at various stages of commissioning. At present there are also 38 plants at various stages of design and construction and a further 28 plants at preliminary planning stage.

5 Baseline Environment

This Section presents the key environmental constraints and opportunities identified for each of the SEA topics. The detailed baseline description is provided in Appendix C, which includes:

- A description of the existing baseline environment – the baseline is an outline of the current situation or condition drawn from available information, which provides a benchmark against which environmental effects of proposals can be assessed.
- The likely future trends and the basis for the potential evolution of the existing baseline environment in the absence of the WSSP 2050 is set out.
- The key considerations for the development of the WSSP 2050 and undertaking the SEA – this summarises the key points to be considered from the review of the existing baseline environment most relevant to the development of WSSP 2050, including challenges and opportunities, to help focus the environmental assessment and inform the SEA objectives.

5.1 Types of Actions and Activities Influenced by the WSSP

As background for the scoping assessment, the broad types of activities that Uisce Éireann will be responsible for during the implementation of the WSSP are considered to identify the types of impacts that could give rise to significant effects on the environment. These are generically summarised in Table 5.1 to encompass all potential impacts. For example, 'Loss/change in habitat area' refers to terrestrial, estuarine, coastal and marine habitats rather than any specific habitat type.

Table 5.1 Types of WSSP related activities and potential environmental impacts

WSSP Related Activity	Potential types of environmental Impacts
New or enhanced water abstraction from surface water or groundwater locations.	• Hydrological and hydrogeological changes - water level and flow changes with potential implications for water quality and WFD status. • Hydrological and hydrogeological changes could potentially lead to changes in coastal processes which could impact Annex I habitats such as submerged sandbanks and Reefs and their associated species • Land take and habitat loss or change from structures. • Species impacts related to hydrological water level and flow changes and related to how aquatic and wetland habitats are affected. • Cultural heritage sites and structures and archaeological interest impacts associated with hydrological changes to waterbodies and wetlands. • Associated ecosystem services impact such as wetland loss, recreation and visual impacts, fisheries and angling impacts. • Aquatic ecosystems resilience to climate change and other pressures could also be affected. • Increased abstraction can support security of supply for the relevant WRZs meeting changing population and business needs.
Development of new water services infrastructure including reservoirs, pipelines and wastewater treatment	• Land use change/loss - temporary and permanent. • Loss/change in habitat area. • Disturbance (short-term or long-term) to species, including marine mammals. • Habitat fragmentation including barrier effects to species movement.

WSSP Related Activity	Potential types of environmental Impacts
plants – construction operation and decommissioning	• Species mortality (including prey species). • Hydrological changes to aquatic environments. • Transfer of invasive non-native species through construction and operational activities. • Construction disturbance effects from noise, air pollution, water pollution, visual amenity on nearby receptors and traffic disruption impacts. • Cultural heritage impacts on sites and risk to buried archaeological interest. • Direct impacts (removal) of terrestrial and underwater archaeological sites, features and artefacts, both previously known and unknown. • Impacts to the settings of archaeological and cultural heritage sites. • Landscape/ townscape and seascape impacts depending on structure and location. • Geological sites and soils loss or damage. • Source of carbon emissions, energy and material resource use for construction and waste generation. • Benefits from improved access to treated water and wastewater collection. • Improved operational energy efficiency and carbon emissions from rationalisation and related leakage reductions. • Potential to remove barriers to fish/eel migration or provide passes. • Potential to include habitat creation and river restoration as part of work designs. • Odour issues from wastewater treatment but also potential for improvement with operational practices and upgraded treatment. • Potential vulnerability to effects of climate change on structures and operations – e.g., from increase in extreme events such as storms, floods, droughts and freeze/thaw events. • Supporting supply and wastewater service demand and improving reliability and flexibility in the network.
Discharge of treated wastewater and stormwater and untreated discharges	• Surface and groundwater pollution from discharge of wastewaters from sewage treatment plant and water treatment, and stormwater and raw sewage discharges affecting WFD water quality objectives for freshwater, estuarine and coastal waters and Marine Strategy Framework Directive objectives to achieve good status in coastal and marine waters. • Impacts on the aquatic ecology of freshwater, estuarine and coastal waters with associated effects on ecosystem services such as through reduced biodiversity, recreation impacts (for example on designated Bathing Waters and angling), and fisheries impacts including on Shellfish Waters Protected Areas and associated users and livelihoods. • Landscape and visual amenity impacts related to effects of pollution such as algal blooms and untreated sewage. • Reduced resilience to climate change and other pollutant pressures.
Sludge management and disposal	• Water treatment residuals discharged to water or disposed to landfill – potential contaminants in residuals from treatment - also potential for recovery of resources.

WSSP Related Activity	Potential types of environmental Impacts
	• Wastewater sludge - high nutrients can provide source of agricultural fertilizer and potential for other resource recovery. • Air pollution emissions from ammonia and with potential impacts to sensitive habitats and soils
Other types of activity	These can include a range of supporting actions, many of which can provide beneficial impacts for example: • Water conservation, demand management and drought planning requiring communication and awareness raising but also need to consider how specific groups of customers can be affected. • Catchment management initiatives and Nature Based Solutions (NBS) typically requiring collaboration with other stakeholders for delivery but also potentially providing wider environmental benefits. • Drinking water quality improvement programmes and other supporting or associated measures with health and access benefits • Property and operations management, investigations, monitoring, studies, and mitigation measures related to delivery and improving services and reducing impacts or uncertainty of outcomes.

5.1.1 Level and Scale of Assessment for WSSP

The WSSP 2050 will not be including project specific proposals or locations for action but will set objectives for implementation through the lower tier plans and programmes. The environmental assessment will therefore also be high level with focus on the broad combined and in combination effects resulting from how the WSSP 2050 is expected to influence implementation.

5.2 SEA Topics

The baseline information is described under the following environmental topics:

- Water Environment;
- Population, Economy, and Tourism and Recreation;
- Health and Wellbeing;
- Climate Change;
- Biodiversity, Flora and Fauna;
- Fisheries and Angling;
- Material Assets;
- Landscape, Townscape and Seascape;
- Cultural Heritage – Archaeological and Architectural;
- Geology and Soils;
- Air Quality;
- Noise and Vibration; and

- Transboundary Environment (covering all the above topics and highlighting potential pathways for effects).

5.3 SEA Study Area

Uisce Éireann's operating area is the Republic of Ireland. Uisce Éireann supplies 82% of people in Ireland with their drinking water and provides about two-thirds of households with wastewater services (DHLGH, 2022b). The infrastructure supporting this is widespread and abstraction, discharges of wastewaters and sludge spreading can affect wider areas.

The broad Study Area for the SEA covers the entirety of Ireland, including the surrounding coastal waters. There are river and groundwater catchments shared between Ireland and Northern Ireland in addition to the coastal and marine environment meaning that there are potential pathways for transboundary issues due to both proximity and connectivity. Therefore, the Study Area also includes the transboundary baseline environment.

A full list of the key sources of information on the transboundary baseline environment is provided as part of the baseline environment description in Appendix C.

5.4 SEA Time Frame

The time frame for the SEA is proposed to be focused on the 25 year period to 2050 and aligned with the plan period. The environmental assessment will also be updated periodically alongside periodic updates to the plan. The plan is required to be reviewed every 5 years and should the plan require an update, the update will be subject to SEA.

5.5 Sources

A wide range of publicly available sources of information are used as a basis for identifying the baseline environment including, web-based searches, published reports and Geographic Information Systems mapped data. These sources, along with Uisce Éireann's own data, are referred to in the relevant topic sections and a reference list for the sources is provided at the end of the report. Key general sources for the review of the existing baseline environment for the SEA of WSSP 2050 also include (but are not limited to):

- The EPA https://gis.epa.ie/EPAMaps/
- The Central Statistics Office (CSO) https://www.cso.ie/en/index.html
- The National Parks and Wildlife Service (NPWS) https://www.npws.ie/
- The European Environment Agency (EEA) https://www.eea.europa.eu/

5.6 High Level Environmental Trends Across Ireland

The EPA's latest State of the Environment Report (EPA, 2020a)[23] provides:

- An assessment of the overall quality of Ireland's environment;
- An outline of the pressures being placed on this environment; and
- The key actions that can address these pressures.

[23] EPA. 2020a. I*reland's Environment 2020 - An Assessment – Report.* Accessed: 25.07.2023. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/state-of-the-environment/irelands-environment-2020---an-assessment.php

The following areas identified as challenges to address across Ireland within the State of the Environment Report (EPA, 2020a) are environmental issues particularly pertinent to development of the WSSP 2050:

- Climate: high GHG emissions continue, and the scale and pace of GHG reductions must accelerate to meet 2023 Climate Action Plan targets.
- Water: deteriorating water quality trends over the last 20 years, particularly for coastal waters and rivers.
- Biodiversity: deteriorating protected habitat trends, with 85% of EU protected habitats having unfavourable status. Trends for EU protected species are mixed, however freshwater species are most at risk and some freshwater species are under threat.
- Waste, soil health and the circular economy (including the EU Soil Strategy's aims to achieve good soil health by 2050): these aspects also support carbon, water quality and biodiversity, where further action is needed to meet long-term objectives and targets. Further detail regarding the baseline environment for each of these topic areas is provided in the baseline topic sections below.

These key challenges of relevance to the WSSP 2050 are all considered in the WSSP 2050- and directly link to the following ten UN Sustainable Development Goals (SDGs):

- **SDG 3**: Good health and wellbeing: Ensure healthy lives and promote well-being at all ages
- **SDG 6** Clean Water and Sanitation: Ensure availability and sustainable management of water and sanitation for all.
- **SDG 7:** Affordable and clean energy; Ensure access to affordable, reliable, sustainable and modern energy for all.
- **SDG 8:** Decent work and economic growth: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
- **SDG 9:** Industry, Innovation, and Infrastructure: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation.
- **SDG 11:** Sustainable cities and communities; Make cities and human settlements inclusive, safe, resilient and sustainable.
- **SDG 12:** Responsible consumption and production: Ensure sustainable consumption and production patterns.
- **SDG 13** Climate Action: Take urgent action to combat climate change and its impacts.
- **SDG 14** Life Below Water: Conserve and sustainably use the oceans, seas and marine resources for sustainable development.
- **SDG 15** Life On Land: Protect and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
- **SDG 17** Partnerships for the goals: Strengthen the means of implementation and revitalize the global partnership for sustainable development.

Figure 5-1 Relevant Sustainable Development Goals

Significant population increase is anticipated over the coming decades, which is an important consideration for water demand and wastewater treatment, and therefore relevant for the water environment including compliance with the WFD and with respect to challenges for climate change and biodiversity. SDGs 3, 6, 13 and 14 are identified as particularly relevant for the SEA.

Specific indicators for meeting the UN SDGs in Ireland are reported on Ireland's SDG data hub (2023)[24], and include a CSO Report on Indicators for Goal 6 Clean Water and Sanitation: Overview – SDG 6 Clean Water and Sanitation (CSO, 2021)[25].

5.7 Key Challenges, Opportunities and Scope of Assessment

The key challenges and opportunities during the construction and operation phase of water services infrastructure have been established through the baseline assessment and the potential for transboundary effects has also been identified in Table 5.2. Further details are provided in Appendix C.

Table 5.2 Key challenges and opportunities identified through the baseline assessment

SEA Topic	Challenges and Opportunities	Construction phase	Operation phase	Potential for Transboundary Effects
		Y = scoped in N = scoped out		
Water Environment	**Challenges**: • Water pollution affecting fresh, estuarine and coastal waters from wastewater discharges, untreated and stormwaters and need for investment.	Y	Y	Y

[24] Government of Ireland. 2023. *Ireland's Sustainable Development Goals data hub*. Accessed: 25.07.2023. Available from: https://irelandsdg.geohive.ie

[25] CSO. 2021. *Ireland's UN SDGs 2019 - Report on Indicators for Goal 6 Clean Water and Sanitation*. Accessed: 25.07.2023. Available from: https://www.cso.ie/en/releasesandpublications/ep/p-sdg6/irelandsunsdgs2019-reportonindicatorsforgoal6cleanwaterandsanitation/

SEA Topic	Challenges and Opportunities	Construction phase	Operation phase	Potential for Transboundary Effects
		Y = scoped in N = scoped out		
	• Abstraction for water supply to be sustainable with additional demand and climate change. • Raw water quality affected by diffuse pollution and discharges affecting water treatment for supply. • New and upgraded infrastructure requirements to meet needs and improve resilience. **Opportunities**: • Continued investment to reduce pressure and achieve environmental improvements. • Targeted and wider catchment-based actions to improve water quality, ecosystems services and resources and use of nature-based solutions through 'blue dot catchments programme'			
Population, Economy, and Tourism and Recreation	**Challenges**: • Population and economy growth with implications for the level of demand for water and wastewater services and where and when - such as seasonality and peak demand from tourism. • Access to natural environment including rivers, lakes, canals coastal areas and bathing waters important for tourism, recreation and wellbeing. • Construction and operational nuisance from noise, air pollution and traffic generation and from WWTP odour. **Opportunities**: • Investment in water treatment and supply network DWSP and catchment management plans support sustainable supply with wider environment benefits. • Opportunities to reduce nuisance effects from wastewater treatment odour.	Y	Y	N
Health and Wellbeing	**Challenges**: • Water treatment affected by raw water quality with heath and access issues although performing well - risk areas reflected in the EPA's Remedial Action List.	Y	Y	Y

SEA Topic	Challenges and Opportunities	Construction phase	Operation phase	Potential for Transboundary Effects
		Y = scoped in N = scoped out		
	• Access to, and quality of the natural environment including rivers, lakes, canals, coastal areas and bathing waters is important for tourism, recreation and wellbeing. • Construction and operational nuisance from noise, air pollution and traffic generation and from WWTP odour. **Opportunities**: • Opportunities to reduce nuisance effects from wastewater treatment odour.			
Climate Change	**Challenges**: Changes to rainfall patterns, temperature, sea level rise and increase frequency of weather events affecting the environment and risks to infrastructure and services. **Opportunities**: • Support environment resilience by reducing pressure from wastewater discharges and avoiding exceeding sustainable abstraction thresholds and planning for drought conditions. • Making infrastructure and services more resilient to extreme events.	Y	Y	Y
Biodiversity	**Challenges**: • Impacts from wastewater and water discharges to waterbodies – pollution and abstraction pressure potentially affecting aquatic ecology, fresh water estuarine and marine, and designated sites, including European and national sites. • New and upgrading of infrastructure – plants and pipelines with potential for habitat loss, fragmentation, disturbance and pollution. **Opportunities**: • Reduce pollutant loads and pressure on the aquatic environment from abstraction. • Opportunities to remove barriers for fish/eel migration or provide passes. • Biodiversity no net loss and potential for net gain including benefits from nature-based solutions	Y	Y	Y

SEA Topic	Challenges and Opportunities	Construction phase	Operation phase	Potential for Transboundary Effects
		Y = scoped in N = scoped out		
	and catchment management actions through 'blue dot catchments programme'.			
Fisheries	**Challenges**: • Water pollution from wastewater discharges with potential effect on freshwater, estuarine and marine fisheries; including Shellfish Waters Protected Areas with livelihood and recreational impacts. **Opportunities**: • Improvements to water quality and reduced pressure on water resources. • Reduced barriers for fish migration will support fisheries.	Y	Y	Y
Material Assets	**Challenges**: • Ageing water and wastewater infrastructure assets needing repair, maintenance and replacement. • Waste management challenges for sewage sludge and water treatment residuals to avoid pollution and minimise disposal of waste to landfill. **Opportunities**: • Potential to adopt circular economy principles and potential for waste resource recovery through use on land and innovation for use for renewable energy/fuel.	Y	Y	N
Landscape, Townscape and Seascape	**Challenges**: • Infrastructure development and construction work can have impacts on visual amenity and landscape, townscape or seascape depending on location. • Wastewater discharges, storm water overflows and pollution can lead to algal blooms, also affecting visual amenity such as litter. **Opportunities**: • Sensitive siting and construction of new infrastructure.	Y	Y	Y

SEA Topic	Challenges and Opportunities	Construction phase	Operation phase	Potential for Transboundary Effects
		Y = scoped in N = scoped out		
	• Improvements to the wastewater discharge and support for improving water quality to benefit aquatic ecology and recreation			
Cultural Heritage – Archaeological and Architectural	**Challenges**: • Infrastructure development and construction work can have impacts on cultural heritage and archaeology and architecture either through direct loss or impacts on their settings. This is particularly relevant for river and coastal heritage structures. • Abstraction affecting wetlands and other waterbodies can lead to loss of archaeological assets. **Opportunities**: • Sensitive siting and construction of new infrastructure actions supporting the enhancement of water courses, wetland and soil conservation could also help conserve archaeological interest.	Y	Y	Y
Geology and Soils	**Challenges**: • Potential impacts on designated geological sites of interest from infrastructure construction and soil loss. **Opportunities**: • Potential for nutrient recovery and reuse of sewage sludge in agriculture, supporting soil health and circular economy principles. • Catchment management and nature-based solutions aimed at improving raw water quality can support soil health with related benefits for water retention and water quality and carbon sequestration. • Wetland restoration and peat and soil conservation measure can help to reduce soil erosion, polluting run off and flash flooding.	Y	Y	N
Air Quality	**Challenges**: • Air pollution from construction works, vehicle movements and operations, including odour from wastewater treatment works.	N	Y	Y

SEA Topic	Challenges and Opportunities	Construction phase	Operation phase	Potential for Transboundary Effects
		Y = scoped in N = scoped out		
	• Air pollution from ammonia emission on sensitive habitats and sols from sewage sludge spreading, **Opportunities**: • Construction air emissions can be managed through good construction practice and fuel/ energy policy. • Wastewater treatment improvements - higher design standards and operation practice can reduce odour. These are considered local issues addressed through application of appropriate standards at lower programme and project levels and are therefore generally considered as potential nuisance or disturbance effects under population and health and wellbeing. Odour is scoped into the assessment in relation to consideration of odour emission standards at wastewater treatment plants.			
Noise and Vibration	**Challenges**: • Noise and vibration from construction works and operations including vehicle movements (effects of construction in marine environments addressed in biodiversity topic). **Opportunities**: • Construction noise can be managed through good construction practice and appropriate design standards and siting to take account of sensitive receptors. These are considered local issues addressed through application of appropriate standards at lower programme and project levels and are therefore generally considered as potential nuisance or disturbance effects under population and health and wellbeing.	N	N	N
Interrelated aspects	**Opportunities**: Potential to use natural capital and ecosystems-based approaches to support consideration of scale and multiple environmental impacts and benefits using quantification and metrics to add to qualitative environmental assessment approaches.			

5.8 Interrelated SEA Topics

In accordance with the SEA Directive, it is important to recognise the interrelationships between environmental topics, as changes to one environmental aspect can directly and indirectly influence others, as summarised in Table 5.2.

All SEA topics will be relevant to some degree through potential positive or negative impacts from the implementation of the WSSP 2050. Further details are provided in Appendix C and Table 5.3 illustrates the potential interrelationships between the environmental topics.

Table 5.3 Interrelated SEA topics

Y Potential for interaction N Minimal interaction likely

	Water Environment	Population, Economy, and Tourism and Recreation	Health and Wellbeing	Climate Change	Biodiversity	Fisheries and Angling	Material Assets	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils
Population, Economy, and Tourism and Recreation	Y									
Health and Wellbeing	Y	Y								
Climate Change	Y	Y	Y							
Biodiversity	Y	Y	Y	Y						
Fisheries and Angling	Y	Y	Y	Y	Y					
Material Assets	Y	Y	N	Y	Y	N				
Landscape, Townscape and Seascape	Y	Y	Y	Y	Y	N	Y			
Cultural Heritage – Archaeological and Architectural	Y	Y	Y	Y	Y	N	Y	Y		
Geology and Soils	Y	Y	N	Y	Y	Y	Y	Y	Y	
Air Quality	N	Y	Y	Y	Y	Y	N	N	N	Y
Noise and Vibration	Y	Y	Y	N	Y	Y	Y	N	Y	N

5.9 Future Baseline Evolution

The baseline environment may change naturally, e.g., through ecological trends, or may change as a result of other factors, such as nearby projects.

There are certain SEA topics that have a higher likelihood of change over time. For example, the water environment (specifically water quality) topic, is more likely to undergo change than the cultural heritage topic. Table 5.4 provides a summary of the likely future baseline evolution for the SEA topics. The general trends identified are also largely applicable in Northern Ireland but influenced by a different set of policy plans and programmes. The baseline development and key challenges and influences are described in more detail in Appendices B and C.

Table 5.4 Future baseline evolution for the SEA topics

SEA Topic	Baseline Evolution
Water Environment	There have been both improvements and declines in water quality across the waterbodies in Ireland as a whole over the 2016-2021 assessment period. However, when looking at the second cycle RBMP's Priority Areas for Action there has been a net improvement (EPA, 2022b)[26]. Proposed future development must meet the requirements of the WFD, aiming to drive improvements, maintain water quality in the short term and provide a framework for the maintenance of good status in the future. Stormwater and raw sewage discharges could also affect WFD water quality objectives for coastal waters and impacts Ireland's ability to achieve good status in coastal and marine waters in line with the Marine Strategy Framework Directive's objectives. Climate change could alter the water environment of Ireland significantly. Rising sea levels, hotter, drier summers, ocean acidification and ocean deoxygenation are the key pressures on the water environment. Flooding has also become a greater issue in Ireland in recent years with the frequency of flood events increasing, and with climate change, is expected to increase further. Flood events are likely to become more frequent and are likely to seriously affect marine and coastal ecosystems and existing water infrastructure.
Population, Economy, and Tourism and Recreation	A growth in population and employment is predicted, according to the NDP (DPER, 2021). As part of this Project Ireland 2040 aims to invest in rural towns and villages, and ensure the cities of Cork, Galway, Limerick and Waterford grow at twice the pace of Dublin through sustained development. Tourism in Ireland is continuing to grow substantially, and the targets set in the national policy "People, Place and Policy, Growing Tourism to 2025"[27] have now been surpassed. An increase in population will also increase the demand for recreational resources. The water environment is important for supporting recreation and tourism activities. Seasonal tourism and recreation demand for water also adds to peak demand and pressure of resources.

[26] EPA. 2022b. *Water Quality in Ireland 2016 – 2021 Summary Report*. Accessed: 22.08.2023. Available from: https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/water-quality-in-ireland-20162021-summary-report.php

[27] Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media. 2019. *People, Place and Policy - Growing Tourism to 2025*. Accessed: 29.09.2023. Available from: https://www.gov.ie/en/publication/7e58d7-people-place-and-policy-growing-tourism-to-2025/

SEA Topic	Baseline Evolution
Health and Wellbeing	The Healthy Ireland Framework (Department of Health, 2019)[28] was adopted by the Government of Ireland with the goals of increasing the proportion of healthy Irish people, reducing health inequalities, protecting the public from threats to health and wellbeing, and creating an environment where every individual and sector of society can play their part in achieving a healthy Ireland.
Climate Change	Under the Climate Action Plan 2023 (DECC, 2023), Ireland's target is to halve GHG emissions by 2030 and reach net zero no later than 2050. These projections assume significant reductions in key sectors such as power generation, residential, transport, commercial and public services, and agriculture.
Biodiversity	Increasing land-use change, both within and outside protected sites, such as urbanisation, plantation forestry and changing agricultural practices and climate change are all likely to continue to pose risks to the quality and distribution of aquatic and terrestrial habitats and species. Water abstraction and wastewater treatment discharges add resource pressure and pollution loads especially for water dependent including freshwater, estuarine and coastal/marine habitats and species. However, the continued implementation of measures required to achieve the objectives of the WFD and RBMP and meet the requirements of the Habitats Directive are likely to benefit protected sites and wider biodiversity (terrestrial and aquatic) into the future.
Fisheries	Key challenges and opportunities in relation to Fisheries are: Potential for the operation of wastewater treatment plants and wastewater discharge or overflow to cause hazard to human health and undermine commercial shellfish fisheries and aquaculture and affect freshwater or estuarine or marine water quality, fish stock and related livelihoods or recreation and tourism. The main trends likely to influence include • Potential for changes climate change and changes to hydrology which could impact coastal processes and water quality that are particularly important for shellfish and aquaculture habitats • Requirements to operate wastewater treatment plants to comply with UWWTP, WFD and RBMP obligations including specific monitoring plans • Agricultural and other uses diffuse sources of pollution affecting water quality and fisheries
Material Assets	The Government's intention for the future development of Ireland is to maximise the use of valuable land for agriculture, business and society. DAFM (2023)[29] state that one of the over-riding objectives between now and 2030 is to urgently expand the national forest estate on both public and private land in a manner that will deliver lasting benefits for climate change, biodiversity, water quality, wood production, economic development, employment and quality of life. The Food Vision 2030 Strategy is a ten year Strategy for the Irish agri-food sector including

[28] Department of Health. 2019. *Healthy Ireland Framework 2019-2025*. Accessed: 29.08.2023. Available from: https://www.gov.ie/en/publication/e8f9b1-healthy-ireland-framework-2019-2025/

[29] DAFM. 2023. *Forest Strategy Implementation Plan including the Forestry Programme 2023-2027*. Accessed: 29.08.2023. Available from: https://www.gov.ie/en/publication/1f6c6-forest-strategy-implementation-plan-including-the-forestry-programme-2023-2027/

SEA Topic	Baseline Evolution
	forestry. The ambitious targets included in these strategies will result in an increase in the demand for water and pose challenges to water quality. With an increase in population and economic regeneration plans, changes in land use are expected, particularly in the urban and suburban areas.
Landscape, Townscape and Seascape	Some local changes are expected due to other planned developments in the future. This has the potential to result in a loss of landscape features and associated increases in traffic that can affect landscape tranquillity. Longer term influences on landscape character would be related to land use changes such agricultural and forestry practices and climate change responses and their impacts on habitats and landscape features.
Cultural Heritage – Archaeological and Architectural	It is unlikely that the cultural heritage environment will change significantly in the near future, due to the continued protection of cultural, archaeological and architectural heritage in national legislation. There is the potential of threats to heritage assets from development activities that could affect settings or result in the loss of unknown, buried assets. Climate change and drainage also have the potential to affect the preservation of buried remains.
Geology and Soils	Changes in geology generally happen over very long timescales, therefore, baseline forecasting is not considered to be critical with regards to geology and soils over the lifetime of the WSSP 2050. Changes affecting soils due to climate change and land use practices can influence soil carbon, nutrient levels and erosion rates.
Air Quality	Although air quality in Ireland is currently good, there is potential for emerging pollutants to rise above limits/targets in the future. Vehicle emissions are one of the main sources of air pollution in Ireland, along with electricity generation, industry and agriculture (EPA, 2022e)[30].
Noise and Vibration	Future noise trends are difficult to predict. The trend for more electric vehicle use can support reduced noise emissions where traffic speed is low. The Environmental Noise Regulations 2006 may be revised in future to enforce a stricter level of noise management, and further strategic noise maps and plans may be developed. Noise and vibration are not scoped in for this level of assessment although would need to be considered for lower-level plans where appropriate.

[30] EPA. 2022b. *Air Quality in Ireland Report 2022*. Accessed: 29.10.2023. Available from: https://www.epa.ie/publications/monitoring--assessment/air/air-quality-in-ireland-2022.php

6 Assessment Methodology

The existing baseline conditions, future baseline trends and legal requirements within relevant plans, policies and programmes have shaped the development of the scope and objectives for this assessment.

This Section sets out the proposed SEA methodology, noting that Section 0 of this report describes how the development of the WSSP 2050 will be influenced through the SEA process.

Key guidance taken into account in the approach to the SEA includes:

- SEA pack (EPA, 2021b)[31];
- Developing and Assessing Alternatives in SEA (EPA, 2015) [32];
- Guidance on SEA Statements and Monitoring (EPA, 2023a)[33];
- Integrating Climatic Factors into SEA in Ireland – A Guidance Note (EPA, 2019)[34];
- Good practice guidance on Cumulative Effects Assessment in SEA (EPA, 2020b)[35];
- EPA guidance 'The Tiering of Environmental Assessment – The influence of Strategic Environmental Assessment on Project-level Environmental Impact Assessment' (EPA, 2021c)[36]; and
- Good Practice Guidance Strategic Environmental Assessment in the Water Sector (EPA, 2022).

6.1 SEA Objectives

During this scoping stage of the SEA process, a set of Strategic Environmental Objectives (SEOs) and assessment criteria were developed based on the key considerations from the baseline review and the policy, plan and programme review. These objectives will provide the framework for assessing the alternative plan approaches and preferred plan proposals. The Strategic Environmental Objectives and assessment criteria are provided in Table 6.1.

[31] EPA. 2021b. *SEA Pack*. Accessed: 28.07.2023. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/SEA-Pack-2022.pdf

[32] EPA. 2015. *Developing and Assessing Alternatives in Strategic Environmental Assessment*. Accessed: 28.08.2023. Available from: https://www.epa.ie/publications/research/biodiversity/EPA-157_web.pdf

[33] EPA. 2023a. *Guidance on SEA Statements and Monitoring*. Accessed: 28.08.2023. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/guidance-on-sea-statements-and-monitoring.php

[34] EPA. 2019. *Integrating Climatic Factors into Strategic Environmental Assessment in Ireland - A Guidance Note*. Accessed: 25.09.2023. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/EPA-SEA-Climatic-Factors-Guidance-Note.pdf

[35] EPA. 2020b. *Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment*. Accessed: 28.08.2023. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/EPA-Good-Practice-Guidelines-SEA.pdf

[36] EPA. 2021c. *Research 391: Tiering of Environmental Assessment – The Influence of Strategic Environmental Assessment on Project-level Environmental Impact Assessment*. Accessed: 28.09.2023. Available from: https://www.epa.ie/publications/research/epa-research-2030-reports/research-391-tiering-of-environmental-assessment--the-influence-of-strategic-environmental-assessment-on-project-level-environmental-impact-assessment.php#:~:text=Improving%20impact%20assessment%20tiering%20involves,revisited%20for%20each%20subsequent%20project.

Table 6.1 SEA objectives

SEA Topic	SEA Objectives - in relation to Uisce Éireann's provision of water and waste water services
Water Environment	*Water quality and quantity* Restore and improve rivers, lakes, transitional and coastal waters, and groundwater to meet WFD, MSFD and RBMP objectives where possible, and prevent status deterioration, in relation to the provision of water and wastewater services. *Flood risk* Protect and, where possible, reduce risk from flooding as a result of provision of water and wastewater services.
Population, Economy, and Tourism and Recreation (including angling)	Protect and support sustainable economic and population growth, including housing provision and recreation, through the provision of reliable good quality water supply and wastewater services.
Health and Wellbeing	Improve access to reliable good quality water supply and to wastewater services including to protect bathing waters.
Climate Change	*Climate change mitigation* Minimise contributions to greenhouse gas emissions through energy efficiency and measures contributing to meeting carbon reduction targets, related to the provision of water and wastewater services. *Climate change adaptation* Promote measures supportive of climate change resilience for the environment and resilience for the provision of water and wastewater services.
Biodiversity	Protect and enhance terrestrial, aquatic and soil biodiversity and habitat connectivity; particularly European sites and national sites (including proposed and candidate sites), and for protected species and the achievement of national and Uisce Éireann Biodiversity Action Plan (BAP) commitments, related to the provision of water and wastewater services.
Fisheries	Protect marine and freshwater fisheries including shellfish waters, related livelihoods and safety for human consumption and support measures contributing to restoring or improving fisheries and fish/eel passage in relation to provision of water and wastewater services.
Material Assets	*Resource use and waste management* Seek to apply circular economy principles across lifecycle decision making for resources and wastes including minimising resource use and waste generation from provision of water and wastewater services including management of sludge and residuals. *Asset use* Minimise impacts on other material assets and infrastructure, optimise use of existing assets and support capacity and upgrades of existing sites and assets in relation to provision of water and wastewater services.
Landscape, Townscape and Seascape	Protect and, where possible, contribute to enhancing designated and valued landscapes, townscapes and seascapes and visual amenity in relation to the provision of water and wastewater services.

SEA Topic	SEA Objectives - in relation to Uisce Éireann's provision of water and waste water services
Cultural Heritage – Archaeological and Architectural	Protect, conserve where possible enhance cultural heritage assets in terms of their condition, settings or access - including for designated sites, undesignated heritage and archaeological interest (including terrestrial and underwater heritage) related to the provision of water and wastewater services.
Geology and Soils	Protect soils and geological heritage sites and contribute towards improved management of soil resources related to the provision of water and wastewater services.
Air Quality	Improve performance on odour emissions, where possible, in relation to the provision of wastewater services

6.2 SEA Assessment Approach

This SEA report includes assessment of the WSSP 2050 and the alternative approaches considered against the SEOs identified in Table 6.1.

The assessment has been summarised through matrices identifying the potential for significant effects against each SEO. The assessment has taken planning procedures and legislative protection into account, since they would be implemented regardless of the SEA process. The evidence that has informed the assessment, along with the level of certainty, will also be reported.

Recommendations for mitigation to help avoid or reduce the potential impacts or to contribute to achieving objectives has been identified as part of the assessment. An assessment of significance has been recorded with mitigation in place to address how the effects will change following implementation of the mitigation recommendations and provide an assessment of residual effects.

A description of the expected nature of these effects is included. For example, whether they are cumulative, direct/indirect, short-term/ long-term, negative, positive, mixed positive and negative or neutral, in accordance with Schedule 2, part (f) of the SEA Directive and Schedule 2B of the Planning and Development (SEA) Regulations, 2004 (as amended).

The assessment covers the proposals in the WSSP 2050 comprising:

- Overall approach and alternatives considered in the development of the proposed Draft plan;
- Assessment of the Draft plan proposals including:
    - Assessment and recommendations for amendment of proposed WSSP 2050 objectives and identified actions or measures as means of achieving them;
    - Overarching comparative assessment of the proposed Draft plan considering all the proposals compared to a no plan scenario assuming no update to the current WSSP;
    - Assessment of cumulative impacts of the proposed WSSP 2050 with other plans and programmes; and
    - Identification of mitigation measures and recommended actions and monitoring requirements for the plan implementation.

6.2.1 Assessment of Significant Effects

The assessment of the effects that are expected to occur from the implementation of the WSSP 2050 have been based on technical judgement and knowledge of similar schemes. The significance of the effects has

been determined based on the sensitivity of the receptor and the scale of the change. Using this method, a sensitive receptor, such as a European designated site, may only require a small change to be considered as a significant effect.

Alternatively, a less sensitive environment may tolerate a larger change and may therefore be judged as having a minor effect or as having no effect. The effects can be beneficial or adverse as indicated by colour and by the symbology indicated in section 7.1. The effects have been assessed both before and after the identification of mitigation. The magnitude of the predicted effect takes into account the likelihood of the effect occurring, the severity of the effect and the spatial extent (i.e., how large an area, or size of population) that would be affected.

6.3 Alternatives Assessment

The SEA Directive requires the SEA process to identify and describe 'reasonable alternative' means of achieving the objectives of the WSSP 2050. It states under Article 5(1) that:

"*Where an environmental assessment is required under Article 3(1), an environmental report shall be prepared in which the likely significant effects on the environment of implementing the plan or programme, and* ***reasonable alternatives*** *taking into account the* ***objectives*** *and the* ***geographical scope*** *of the plan or programme, are identified, described and evaluated.*"

The reasons for selecting (a) the alternatives and (b) the preferred approach for the plan must be documented, together with a description of how this assessment of alternatives was undertaken.

6.4 Limitations and Assumptions

The WSSP 2050 is a high level national plan setting the direction for lower tier plans and does not include specific investments or locations. The assessment of alternative approaches, of the proposed plan and the potential for cumulative and transboundary effects is also high level and based on how proposed actions identified could potentially support or conflict with the SEA objectives. Mitigation measures identified aim to support beneficial effects in terms of meeting SEA objectives and to avoid the risk of significant adverse effects.

More detailed consideration of environmental effects is expected to be undertaken on the lower tier plans and programme through SEA and AA where applicable and also through EIA and AA are project level where required and through appropriately focused environmental assessments where statutory assessments are not required. The assessment also assumes the application of good practice mitigation measures.

7 Assessment of the WSSP 2050 and Alternatives

7.1 Introduction

An iterative process has been undertaken to develop the best proposed approach for the WSSP 2050. This was completed through a series of internal workshops held with the departments across Uisce Éireann which will be implementing the plan and delivering water and wastewater services and supporting activities. The workshops identified the strategic objectives and aims and also the actions required to achieve these.

SEA requires a consideration of reasonable alternatives for meeting plan objectives and this was achieved by taking each of the potential actions identified for the WSSP 2050 and testing them against the following:

- Continue current approach - Business as usual (BAU) based on existing including recently established practice?
- Could less be undertaken while still meeting requirements but involving less resources – do minimum?
- Could actions go beyond to reach targets sooner or go further?
- Could different approaches be used to meet objectives such as used by other water agencies/ companies>

In many cases it was recognised that there was a continuity of actions across the alternatives. For example, approaches had developed since the previous WSSP (2015) in response to changing legislation, emerging policy and challenges, with new practices already starting which would be built upon and implemented through the proposed WSSP 2050 actions. So the alternative actions considered could be seen as being on a sliding scale from a do minimum, to the BAU reflecting how practice has developed within Uisce Éireann including for example publication of the National Water Resources Plan (NWRP) in 2023, and a range of new initiatives that have recently started. For many actions, scope was identified to build on this further for the WSSP2050 to meet vision and challenges ahead. Scope to either go further or consider different approaches was also explored.

Uisce Éireann has developed and evolved considerably since the WSSP 2015 and therefore, under some actions the BAU is very much aligned or is the objective for the WSSP 2050, for instance, in the drinking water compliance space new legislative requirements will require significant investment and activities to be undertaken. Uisce Éireann would be undertaking this as part of its BAU. Other actions the WSSP 2050 would go above legislative requirements and the implementation of exiting plans, and this is reflected in the assessments.

The proposed alternatives were considered first in terms of if they could be reasonable alternatives at this stage for meeting the plan objectives. The 'do minimum' alternative was not considered for some actions as in many cases it represented a backward step from the BAU and would not meet plan objectives or legislative requirements or would involve not implementing existing plans. Therefore, the do minimum was only considered for actions where it might be possible while complying with the current legal framework. In some cases while actions to go further and do more or different approaches were identified as potentially beneficial, these were used through the iterative discussions to help clarify and develop the WSSP 2050 actions. In some cases, the alternatives identified were not considered feasible without proposed WSSP 2050 steps being taken and embedded first, or other reasons such as being reliant on outside parties to take forward. However, in many cases the process identified actions that could be revisited and considered further through later plan iterations and were considered useful to raise as part of the forward looking approach.

The five main alternatives were identified as:

Alternative 0: Do minimum for actions where this could meet current legislative requirements

Alternative 1: BAU: Continue with current approach – involving implementing existing plans and meeting legislative requirements

Alternative 2: BAU+ : Approach proposed for WSSP 2050 to meet plan objectives – this builds on the BAU actions

Alternative 3: WSSP 2050 +: Do more, or reach targets quicker than the proposed WSSP 2050 actions

Alternative 4: Different: Take a different approach to the proposed WSSP 2050

The alternatives were defined for each action and where no reasonable alternative was identified this was also recorded.

The assessment undertaken for the aims and actions against the SEA objectives under each of the four WSSP 2050 objectives is summarised in sections 7.2 to 7.6 below. These include assessment tables for each action against the SEA objectives.

The assessment scoring applied for the actions and alternatives is provided below:

Description of Comparison of Effect	Effect score	Description of Comparison of Effect	Effect score
Plan approach/alternative is likely to make a considerable positive contribution to SEOs or greatly improve likelihood of delivery of positive effects and reduce risk of adverse effects.	++	Plan approach/alternative has potential to conflict to a greater extent with SEOs or increase risk of adverse effects.	-
Plan approach/alternative has potential to provide a positive contribution to SEOs or improve likelihood of delivery of positive effects and reduce risk of adverse effects.	+	Plan approach/alternative has potential to conflict to a greater extent with SEOs or increased risk of adverse effects.	- -
Plan approach/alternative has no identifiable difference from other alternatives in terms of actual or potential contribution or conflict with SEOs or risk of effects. Or the outcome is too uncertain at this stage to indicate how SEA Objectives will be supported.	0/?	Plan approach/alternative has potential to provide mixed effects so both positive and negative contribution to SEOs or in terms of likelihood of delivery of beneficial effects or risk of adverse effects.	+/-

7.2 Strategic Objective 1: Safe and Reliable Drinking Water

The WSSP 2050 recognises that over the period to 2050, issues such as climate change, population growth and changes in catchments will present difficult challenges that must be managed effectively to continue to supply safe and reliable drinking water. Population growth will increase the demand for water supplies and development of new sources. Climate change will increase the frequency and duration of droughts, reducing the availability of supplies. Climate change will also increase the risk of flooding due to more intense rainfall events. New legislation, for instance the European Union (Drinking Water Regulations), 2023 (the Drinking Water Regulations) and the Water Environment (Abstractions and Associated Impoundments) Act, 2022 (the Abstractions Act) will require increased monitoring, treatment, risk assessment and the provision of new treatment infrastructure. In December 2023, Uisce Éireann completed the first National Water Resources Plan (NWRP) for Ireland. The NWRP sets out how supply and demand for drinking water will be balanced over the short, medium and long term. It outlines the approach to providing a safe, sustainable, secure and reliable water supply to our customers for the next 25 years. This approach embraces three pillars: Lose Less, Use Less and Supply Smarter.

The WSSP 2050 objective 1 states:

Draft WSSP 2050 Objective 1: Safe and Reliable Drinking Water

We ensure the quality of our water supplies are safe, and we deliver a water service that customers, communities, and the broader economy can rely on.

Under this objective, the WSSP 2050 identifies, three strategic aims with nine actions to achieve them:

Strategic aim 1: Safe Drinking Water - Uisce Éireann will manage the safety and quality of drinking water from source to tap to protect human health.

Strategic aim 2: Reliable Water Supplies - Uisce Éireann will improve their assets and sources to ensure water supplies are robust enough to meet customers' needs at the target level of service.

Strategic aim 3: Conserving precious resources - Uisce Éireann will take pressure off resources through leakage reduction and helping our customers to conserve water.

Alternatives and the WSSP 2050 proposed actions are considered in the sections below against the SEA objectives.

7.2.1 Alternatives Considered for Each Action

A summary of the alternatives considered for the actions is provided in Table 7.1 below.

Table 7.1 Summary of the alternatives considered for the actions

Alternatives Considered		Alternative 0: Do Minimum	Alternative 1: Continue current approach BAU	Alternative 2: Proposed (WSSP 2050) BAU+	Alternative 3: Do more / faster (WSSP 2050+)	Alternative 4: Do things differently to WSSP 2050
Action Ref	**Action heading**					
Strategic Aim 1: Ensuring safe drinking water						
Action 1.1	Managing risks	None identified	✓	✓	None identified	None identified
Action 1.2	Meeting DWD and other regs	None identified	✓	✓	✓	None identified
Action 1.3	Champion source protection measures	None identified	✓	✓	✓	None identified
Strategic Aim 2: Delivering reliable water supplies						
Action 1.4	National water resources plan	None identified	✓	✓	✓	None identified
Action 1.5	Contingency plans	None identified	✓	✓	✓	None identified
Action 1.6	Improving operational resilience	None identified	✓	✓	None identified	None identified
Strategic Aim 3: Conserving our precious resources						

Alternatives Considered		Alternative 0: Do Minimum	Alternative 1: Continue current approach BAU	Alternative 2: Proposed (WSSP 2050) BAU+	Alternative 3: Do more / faster (WSSP 2050+)	Alternative 4: Do things differently to WSSP 2050
Action Ref	**Action heading**					
Action 1.7	Water conservation measures	✓	✓	✓	✓	None identified
Action 1.8	Water stewardship	✓	✓	✓	None identified	✓
Action 1.9	Leakage reduction	None identified	✓	✓	None identified	None identified

7.2.2 Strategic Aim 1

The assessment is summarised by strategic aim based on the assessment undertaken for each action.

Strategic Aim 1: Assessment

Strategic Aim 1: Ensuring safe drinking water	
Action 1.1	**Managing risks** - Undertake risk assessments across our supplies and implement appropriate measures to manage risk.
Action 1.2	**Meeting Drinking Water Directive and other legislative requirements** - Conform with Drinking Water Directive and other legislative requirements relating to drinking water quality.
Action 1.3	**Champion source protection measures** – Coordinate catchment management measures and champion nature-based solutions for improving source water quality

Alternatives assessed for Strategic Aim 1 were:

Alternative 0: Do minimum No reasonable 'do minimum' alternatives were identified for the actions within Strategic Aim 1 as these would not meet legislative requirements.

Alternative 1: BAU Meeting Drinking Water Directive requirement & ensuring safe water quality for customers is a priority for Uisce Éireann. As reported in the EPA 2022 report, Uisce Éireann compliance rates with micro, chemical and indicator parameters was over 99%. Additionally, Uisce Éireann will continue to evaluate and address risks related to lead in the distribution system and implement initiatives to address non-compliance with known contaminants such as trihalomethanes (THMs), pesticides and manganese.

Uisce Éireann has started Drinking Water Safety Plans (DWSPs) and Asset Management Plans (AMPs), the approach encompasses the glide path under the Drinking Water Regulations for preparing DWSPs for all supplies over a certain threshold – the risk assessment and management of the catchment must be completed by July 2027 and a risk assessment of the supply system and domestic distribution systems must be completed by January 2029. Uisce Éireann is committed to meeting the Drinking Water Regulations requirements and this will require significant efforts, costs and resources, including increased monitoring and new laboratory facilities.

Uisce Éireann has implemented source protection and catchment management for some specific issues and these have been successful for example for pesticide management. The full implementation of the risk assessment and risk management, particularly in relation to catchment areas, will require co-operation and actions by third parties.

Alternative 2: BAU+ WSSP 2050 For Actions 1.1 and 1.2, BAU + builds on initiatives started as part of the current BAU and will develop and apply these throughout as part of compliance with the recast Drinking Water Directive and related legislation, taking a proactive and holistic approach taking account of the influence of wider environment quality on drinking water risk. In line with the Drinking Water Directive's emphasis on a risk-based approach, Uisce Éireann will develop our monitoring programmes to extend beyond compliance aspects. They will incorporate an operational monitoring programme designed to provide real-time data on operational performance and water quality issues Uisce Éireann is fully engaged in collaboration with all key stakeholders to deliver on the recast DWD. For Action 1.3, BAU+ Uisce Éireann will also build on existing catchment management activities. Co-ordinating catchment management and in particular using nature-based solutions for improving drinking water quality where appropriate.

Alternative 3: WSSP 2050+ Potential additional actions were identified for Actions 1.2 and 1.3 to use new technology advances and smarter systems to manage data and to involve and support other agencies in wider catchment management which however would depend on other regulatory actions and funding approvals.

The assessment is summarised in Table 7.2 below.

Table 7.2 Strategic Aim 1 alternatives assessment

Strategic Aim 1: Ensuring safe drinking water															
	Action	SEA Objectives													
Alternatives	Action reference	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Alternative 0: Do minimum (Rejected)	1.1														
	1.2														
	1.3														
Alternative 1: BAU	1.1	+	0	+	+	+/-	+	+	+	+/-	+/-	0	0	0	0
	1.2	+	0	+	+	+/-	+	+	+	+/-	+/-	0	0	0	0
	1.3	+	0	+	+	0	+	+	+	+	0	+	0	+	0
Alternative 2: BAU+ WSSP 2050	1.1	+	0	++	++	+/-	+	+	+	+/-	+/-	0	0	0	0
	1.2	+	0	++	++	+/-	+	+	+	+/-	+/-	0	0	0	0

Strategic Aim 1: Ensuring safe drinking water														
Alternatives	Action	SEA Objectives												
	Action reference	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
	1.3	++	0	++	++	+	+	+	+	+	+	+	0	+	0
Alternative 3: WSSP 2050+	1.1	+	0	++	++	+/-	+	+	+	+	+	0	0	0	0
	1.2	+	0	++	++	+/-	+	+	+	+	+	0	0	0	0
	1.3	++	0	++	++	+	+	++	++	+	+	+	0	+	0
Alternative 4: Do things differently (Rejected)	1.1														
	1.2														
	1.3														

Summary of assessment for Strategic Aim 1

For Alternative 1, the current approach to meet existing and new drinking water directive requirements includes the implementation of the plans required and provides positive support to SEA Objectives for Water, Population and Health, Climate Adaptation and Biodiversity. Delivering these will involve additional resources and therefore can be associated with energy and materials use, for example to enhance water treatment but this is also largely based on using and upgrading the existing asset network therefore there are potentially negatives and positives in terms of the SEA Objectives. The source protection measures are expected to also support SEA Objectives for Water, Biodiversity, Fisheries and wider catchment measures can also have benefits for SEA Objectives for Landscape and Soils.

Alternative 2 by building on the BAU and taking a more proactive approach and going beyond compliance requirements, can provide additional support to SEA Objectives for Population and Health and linked to this also benefits to Water, Biodiversity, Fisheries and Material Asset objectives. Alternative 3 is similar but potentially with additional benefits supporting SEA objectives for Actions 1.2 and 1.3 from the use of new technology and based on wider collaboration and implementation for catchment management. However, the technology and partnership working approaches required for Alternative 3 are not yet available or are currently outside Uisce Éireann's scope of responsibilities and cannot be taken forward. However, these could be considered further as opportunities to develop for future WSSP iterations.

Alternative 2 BAU+ is taken forward in the WSSP 2050 for Actions 1.1, 1.2 and 1.3.

Mitigation and Enhancement

Key measures to support meeting SEA objectives are to include environmental baseline and quality objectives in the assessment of risk to sources and assets. Develop guidance and processes used for

identifying risk solutions to consider relevant stakeholder engagement, wider catchment management measures and nature-based solutions where appropriate.

7.2.3 Strategic Aim 2

The assessment is summarised by strategic aim based on the assessment undertaken for each action.

Strategic Aim 2: Assessment

Strategic Aim 2: Delivering reliable water supplies	
Action 1.4	**National Water Resources Plan** - Implement and continue to review our National Water Resources Plan, delivering improvements in water supply infrastructure to ensure resilient supplies into the future.
Action 1.5	**Contingency plans** - Develop contingency plans to improve reliability of our water supplies
Action 1.6	**Improving operational resilience** - Improve operational resilience through preventative measures and developing and implementing improved incident response processes.

The alternatives assessed for strategic aim 2 were:

Alternative 0: Do minimum No reasonable 'do minimum' alternatives were identified for the actions within Strategic Aim 2 as these would not meet legislative requirements or plan objectives.

Alternative 1: BAU For Action 1.4 this includes the implementation and continuous review of the National Water Resources Plan (NWRP) to improve water supply to provide for resilient and robust services over the next 25 years. Implementation of the NWRP is also subject to regulatory and funding approval. Currently in relation to Action 1.5, development of a framework for contingency plans including for managing droughts and other severe weather events management is underway but is not yet business practice. For Action 1.6 currently measures are in place to improve monitoring and provide more risk-based maintenance programme.

Alternative 2: BAU+ WSSP 2050 For Action 1.4, the BAU already includes commitment to deliver and review the NWRP improving understanding of risks with better data for water supply and demand side management against emerging challenges. BAU + additionally includes undertaking research on climate change on supply and demand to improve long term planning. For Actions 1.5 and 1.6, BAU + includes the development and implementation of contingency plans and improvement to operational resilience. Uisce Éireann are currently in the process of developing drought plans for supplies that were identified at risk with a target completion date of 2030 and will continue to develop contingency plans to address various scenarios such as winter weather impacts that can lead to pipe bursts (due to freeze-thaw events), water quality contamination resulting from intense storms, and power outages. This will include reviewing flood and extreme weather risk to assets.

Alternative 3: WSSP 2050+ This would build further from Alternative 2 for Actions 1.4, 1.5 and 1.6 by including identification of different mechanisms to fund large capital projects, to prioritise investment and deliver higher levels of service and work with external partner's real-time modelling approaches to inform targeting of drought monitoring.

The assessment is summarised against the SEA objectives for the strategic aim in Table 7.3 below.

Table 7.3 Strategic Aim 2 alternatives assessment

Strategic Aim 2: Delivering reliable water supplies															
Alternatives	Action	SEA Objectives													
	Action reference	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Alternative 0: Do minimum (Rejected)	**1.4**														
	1.5														
	1.6														
Alternative 1: BAU	**1.4**	++	0	++	++	+/-	++	++	++	+	+	+/-	+/-	+/-	0
	1.5	+	0	+	+	+/-	+	-	-	-	-	0	0	0	0
	1.6	+	+/-	+	+	+/-	+	+/-	+/-	+/-	+/-	+/-	0	0	0
Alternative 2: BAU+ WSSP 2050	**1.4**	++	0	++	++	+/-	++	++	++	+	++	+/-	+/-	+/-	0
	1.5	+/-	+	++	++	+/-	++	+/-	+/-	+	+	0	0	0	0
	1.6	++	+	++	++	+/-	++	++	+	+	+	0	0	0	0
Alternative 3: WSSP 2050+	**1.4**	++	0	++	++	+/-	++	++	++	+	++	+/-	+/-	+/-	0
	1.5	++	+	++	++	+/-	++	+	+	+	++	+/-	0	0	0
	1.6	++	+	++	++	+/-	++	++	++	+	++	+/-	0	0	0
Alternative 4: Do things differently (Rejected)	**1.4**														
	1.5														
	1.6														

Summary of assessment for Strategic Aim 2

Alternative 1 continues with current approaches which includes a start on rolling out the NWRP water supply investment process as identified in Action 1.4. The NWRP has been subject to SEA and AA and mitigation measures have been identified, with process in place and monitoring on these committed so therefore, these are not repeated here. In relation to Action 1.5 and 1.6 there are some existing abstractions potentially putting pressure on water resources and associated habitats especially during drought conditions. Alternative 2 commits to improved planning for extreme events and supply resilience which provide further support to SEA objectives related to improving reliability in water supply and also water environment and biodiversity. This could involve improving network connectivity and allow

increased use of more resilient sources as well as demand management during critical events. Alternative 3 could further support meeting some SEA objectives and provide a basis for prioritisation and resource efficiency within water supply management funding constraints but if this resulted in reduced resources for delivering other actions such as for wastewater service improvements this could lead to negative effects in terms of meeting SEA objectives overall, however this funding approach and the technological and partnership information are not currently available although could be considered further in the future iterations of the plan within balanced funding provision.

Alternative 2 BAU+ is taken forward in the WSSP 2050 for Actions 1.4, 1.5 and 1.6.

Strategic Aim 2: Mitigation and Enhancement

NWRP mitigation and monitoring measures are already identified and part of the implementation programme. These measures include mitigation for carbon emissions and for effects from infrastructure construction and operation. Additional measures recommended are to ensure drought and contingency planning and operational resilience measures, take account of environmental constraints and objectives to reduce pressure on vulnerable sources and habitats. Measures for supporting meeting climate change targets in relation to carbon emissions and energy efficiency are addressed through actions supporting Strategic Objective 4.

7.2.4 Strategic Aim 3

The assessment is summarised by strategic aim based on the assessment undertaken for each action.

Strategic Aim 3: Assessment

Strategic Aim 3: Conserving our precious resources	
Action 1.7	**Water conservation measures** - Use less water through promoting water conservation to help customers reduce their use.
Action 1.8	**Implementing an enhanced Water Stewardship Programme** - Use less water through developing and implementing an enhanced Water Stewardship Programme.
Action 1.9	**Delivering leakage reduction** - Lose less water through delivering leakage reduction.

The alternatives assessed for strategic aim 3 were:

Alternative 0: Do minimum Possible do minimum actions were identified given these actions are not required under specific legislative requirements. These would involve not continuing the current programmes.

Alternative 1: BAU Uisce Éireann has a range of existing water conservation programmes in place supporting 'use less' aims including the Water Stewardship and Green Schools programmes. These initiatives are supported by an integrated multi-channel approach including stakeholder and media engagement. Uisce Éireann recognise, based on their own research that there is a need to further encourage a change in attitude and behaviour to water conservation. The current conservation campaigns tend to target water shortage periods and non- domestic customers.

There is an ongoing National Leakage Reduction Programme, aligned to the NWRP 'lose less; aims, which includes measures such as pressure management, active leakage control and the 'First Fix Free' initiative, addressing leaks within the boundaries of domestic properties. establishing District Meter Areas (DMAs), to measure the flow into small areas to monitor unusual flows and detect leaks, replacing old meters and installing new meters to better understand the flow and distribution of water in the networks. Using innovation for cost effective leakage reduction, and the Leakage Management System (LMS) facilitates

uniform assessment of leakage trends across the network. Ongoing efforts involve embedding and calibrating the system and exploring emerging acoustic technologies and intelligence systems for optimised active leakage control activities.

Alternative 2: BAU+ WSSP 2050 This builds on the BAU to address the potential to further support the aims to use less water by promoting water conservation to help customers reduce their use by developing and implementing an enhanced Water Stewardship Programme and delivering enhanced leakage reduction. BAU + includes additional initiatives to promote water conservation and manage demand across all customer groups and types of water usage. The enhanced Water Conservation Strategy will build on Uisce Éireann's Demand Analysis capability to better understand the demand profile and will establish a methodology to tactically deploy the most suitable water conservation measures in given circumstances that will have the greatest impact. Uisce Éireann are committed to continue to invest in technology, including modern metering and meter reading systems, to provide the data to customers that will support a sustainable approach to water conservation. Uisce Éireann will also continue to explore opportunities for Rainwater Harvesting and the Circular Use of Water, complementary to nature-based solutions for stormwater management. Public awareness raising of the value of the water resources and the benefits of water services for customers, communities, environment and economy, will be supported by sustained investment in high-profile communications activity through a multi-channel approach combined with stakeholder and media engagement.

Uisce Éireann will engage with other stakeholders active in the area of water conservation and seek to collaborate to achieve shared objectives including the national water conservation working group to be established under Objective 3 of the Water Services Policy Statement 2024 to 2030.

Alternative 3: WSSP 2050+ Adds to Alternative 2 for Action 1.7 to work with policy makers to mandate /advocate water efficiency buildings and appliance labelling schemes. Also to leverage An Forum Uisce research in this area.

Alternative 4: Different Adds to Alternative 2 for Action 1.8 for the Water Stewardship programme to use a non-domestic tariff structure with reduced charges for those who show that they have implemented significant water reduction measures. Advocate for policy makers or regulatory authorities to require new businesses to install Rain water harvesting as part of their design process.

The assessment is summarised against the SEA objectives for the strategic aim in Table 7.4 below.

Table 7.4 Strategic Aim 3 alternatives assessment

Strategic Aim 3: Conserving our precious resources															
Alternatives	Action	SEA Objectives													
	Action reference	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Alternative 0: Do minimum	**1.7**	-	0	-	-	-	-	-	-	-	-	0	0	0	0
	1.8	-	0	-	-	-	-	-	-	-	-	0	0	0	0
	1.9	--	0	-	-	-	-	-	--	-	-	0	0	0	0
Alternative 1: BAU	**1.7**	+	0	0	0	+	+	0	0	+	+	0	0	0	0
	1.8	+	0	0	0	+	+	0	0	+	+	0	0	0	0
	1.9	+	0	0	0	+	+	0	0	+	+	0	0	0	0
Alternative 2: BAU+ WSSP 2050	**1.7**	++	0	0	0	++	++	0	0	+	+	0	0	0	0
	1.8	++	0	+	+	++	++	0	0	+	+	0	0	0	0
	1.9	++	0	0	0	++	++	0	0	+	+	0	0	0	0
Alternative 3: WSSP 2050+	**1.7**	++	0	0	0	++	++	0	0	++	++	0	0	0	0
	1.8														
	1.9														
Alternative 4: Do things differently	**1.7**														
	1.8	++	0	+	+	++	++	0	0	+	+	0	0	0	0
	1.9														

Summary of assessment for Strategic Aim 3

Do minimum actions were considered not to meet Strategic plan or SEA objectives. Overall, the existing BAU approach outlined in Alternative 1 includes significant water conservation and demand management programmes and these are supportive for SEA objectives for water environment and for climate change mitigation and adaptation and resource and asset use. There is potential for these actions to also reduce pressure on biodiversity and fisheries but this will depend on the extent increased demand is offset by current programme measures. Alternative 2 BAU + Actions 1.7, 1.8 and 1.9 are considered to provide some enhanced or broader support for improving water conservation and demand management with potential to reduce or mitigate pressure on water sources in the face of climate change and population growth and are therefore supportive for SEA objectives for water, climate, resource use and existing assets. Alternatives 3 and 4 are specific measures that could strengthen or provide additional tools for

supporting Plan and SEA objectives, however are not considered practical or available currently but could be considered in future plan iterations.

Alternative 2 BAU+ is taken forward in the WSSP 2050 for Actions 1.7, 1.8 and 1.9

Strategic Aim 3: Mitigation and Enhancement

The WSSP 2050 actions proposed are considered beneficial and supportive of the SEA objectives. Measures to support them provide these benefits are covered in actions already identified in the NWRP and also support WSSP 2050 Actions 1.5 and 1.6 and also link with Strategic Objective 2 related to communication and awareness raising and demand analysis and to Strategic Objective 4 related to managing assets.

7.3 Strategic Objective 2: Support our Customers, Communities and the Economy

The WSSP 2050 recognises that as the population of Ireland grows, the demand for water services will increase. Provision of water services infrastructure capacity in the right place, at the right time, is critical to enable delivery of housing and economic growth. Uisce Éireann are committed to supporting Government housing targets and national, regional and local spatial planning policy, in this regard. This includes a commitment to supporting regionally balanced economic and social development. Uisce Éireann states that it understands the importance of engaging with communities and stakeholders and highlights that communities can also help achieve shared goals and support sustainable economic growth.

The WSSP 2050 Strategic Objective 2 states:

Draft WSSP Strategic Objective 2: Supporting our Customers, Communities and the Economy

We strive to provide an excellent service to our customers, and work with our stakeholders to deliver aligned priorities and support sustainable growth.

Under this objective, the WSSP 2050 identifies three strategic aims with eight actions to achieve them:

Strategic aim 4: Delivering for customers - We will put our customers at the heart of what we do and deliver on their needs.

Strategic aim 5: Engaging with customers - We will engage with communities at a local level to realise the value from our shared water resources.

Strategic aim 6: Providing for growth - We will manage the availability of capacity to support housing and the economy in line with national policy.

Alternatives and the WSSP 2050 proposed actions are considered in the sections below against the SEA objectives.

7.3.1 Alternatives Considered for Each Action

A summary of the alternatives considered for the actions is provided in Table 7.5 below.

Table 7.5 Summary of the alternatives considered for the actions

Alternatives Considered	Alternative 0: Do Minimum – (rejected)	Alternative 1: Continue current approach BAU	Alternative 2: Proposed (WSSP 2050) BAU+	Alternative 3: Do more/faster (WSSP 2050+)	Alternative 4: Do things differently
Strategic Aim 4: Delivering for customers					
Action 2.1	✓	✓	✓	None identified	None identified
Action 2.2	✓	✓	✓	✓	None identified
Action 2.3	✓	✓	✓	None identified	None identified
Strategic Aim 5: Engaging with communities					
Action 2.4	None identified	✓	✓	✓	✓
Action 2.5	None identified	✓	✓	✓	None identified
Strategic Aim 6: Providing for growth					
Action 2.6	None identified	✓	✓	✓	None identified
Action 2.7	None identified	✓	✓	✓	None identified
Action 2.8	None identified	✓	✓	✓	None identified

7.3.2 Strategic Aim 4

The assessment is summarised by strategic aim based on the assessment undertaken for each action.

Strategic Aim 4: Assessment

Strategic Aim 4: Delivering for customers	
Action 2.1	**Understand customer needs and expectations** - Understand customer needs and expectations.
Action 2.2	**Enhance customer communications** - Enhance customer communications to address our customer expectations and provide real-time information on usage, incidents and water quality.
Action 2.3	**Supporting customers to play their part** - Support our customers to play their part in protecting water as a precious resource and enabling better water services.

The alternatives assessed for strategic aim 4 were:

Alternative 0: Do minimum Potential to take a minimal reactive approach to customer communications.

Alternative 1: BAU Customer research/surveys are currently used to track satisfaction on specific customer journeys, and this is used to understand customer needs and expectations and to inform

strategic decision making; Communications for domestic customers can be reactive with direct contact usually limited to vulnerable customers. All other notifications are currently through media channels or on website/contact centre IVR. Currently there is a lack of readily available data to customers on water usage and no self-serve options. However actions have been initiated to provide a more proactive approach to support customer engagement.

Alternative 2: BAU+ WSSP 2050 Actions 2.1, 2.2 and 2.3 aim to listen to customer feedback and insights and to deliver a seamless and integrated multi-channel service. The aim is to use information to inform strategic decision making and improve provision of information to customers on water services, planned works, incidents and water quality. The approach outlined is for engagement with customers to be not only focussed on when things go wrong but to include positive interactions on a day-to-day basis.

This includes evolving the approach to customer research to expand from the current focus of tracking satisfaction to understanding expectations and to develop research programmes to look at areas such as customer expectations and water conservation. The aim is to engage with cohorts from the customer base across the range of demographic and geographic groups for domestic customers and non-domestic customers to understand preferences and expectations. The focus will cover areas such as planned works, maintenance, upgrades and infrastructure projects, which will help customers to anticipate any disruptions to their water service.

Uisce Éireann plans to develop a digital self-service platform which will offer customers a seamless experience across key interaction, such as for example new connections and around water outages. This should empower customers with information when they need it. Customers can make a real difference by taking actions to reduce their water usage and to protect wastewater assets and receiving waters by not pouring, flushing or putting any liquids, chemicals or items down sinks, toilets, and sewers that can damage the environment.

By empowering customers with real-time information and self-serve options, Uisce Éireann will allow customers to be better informed and equipped to make more informed decisions. Uisce Éireann will provide the technology to assist customers to do this. This will enhance customer understanding of their water usage patterns to enable them to take proactive measures to manage their consumption more effectively.

More information on proposals relating to communication on water conservation is included under Action 1.7. Regarding wastewater, Uisce Éireann aim to embed a broader understanding of the wastewater process with our customers and communities, including the need for new and sustainable solutions to wastewater management. Uisce Éireann recognise that it is important to gain public support and understanding for this infrastructure which often attracts initial negativity or planning objections

Alternative 3: WSSP 2050+ Considers the potential against Action 2.2 to accelerate the programme to deliver real time information for customers.

The assessment is summarised against the SEA objectives for the strategic aim in Table 7.6 below.

Table 7.6 Strategic Aim 4 alternatives assessment

Strategic Aim 4: Delivering for customers															
Alternatives	Action	SEA Objectives													
	Action reference	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Alternative 0: Do minimum	**2.1**	-	0	-	0	0	0	0	0	0	-	0	0	0	0
	2.2	-	0	-	0	0	0	0	0	0	-	0	0	0	0
	2.3	-	0	-	0	0	0	0	0	0	-	0	0	0	0
Alternative 1: BAU	**2.1**	0	0	+/-	0	0	0	0	0	0	+/-	0	0	0	0
	2.2	0	0	+/-	0	0	0	0	0	0	+/-	0	0	0	0
	2.3	+	0	+	0	0	0	0	0	0	+	0	0	0	0
Alternative 2: BAU+ WSSP 2050	**2.1**	+	0	+	+	0	0	0	0	0	+	0	0	0	0
	2.2	+	0	+	+	0	0	0	0	0	+	0	0	0	0
	2.3	+	0	+	+	0	0	0	0	0	+	0	0	0	0
Alternative 3: WSSP 2050+	**2.1**														
	2.2	+	0	+	+	0	0	0	0	0	+	0	0	0	0
	2.3														
Alternative 4: Do things differently (Rejected)	**2.1**														
	2.2														
	2.3														

Summary Assessment for Strategic Aim 4

A do minimum approach across Actions 2.1, 2,2 and 2.3 would be limited to mainly reactive communication and would not be considered supportive to managing water and wastewater services in terms of raising awareness and changing behaviours and for Uisce Éireann to develop a better understanding of customer needs and expectations. Therefore, would not support SEA objectives for water, assets and population. Alternative 1 BAU includes the initiation of more proactive approaches for customer communications, but it is also recognised that further action is needed including improving awareness of behaviours especially related to protecting wastewater assets and receiving waters and the potential to inform and involve customers more. Alternative 2 BAU+ builds on the current initiatives and aims to provide a more proactive approach to support customers in decision making, awareness of behaviours needed to protect assets and the water environment and therefore provides more positive support to SEA objectives for water as well as for population and health and asset use. Alternative 3 is

additionally supportive but is not possible to commit to until the proposed WSSP 2050 actions are implemented but could be considered further in future plan iterations.

Alternative 2 BAU+ is taken forward in the WSSP 2050 for Actions 2.1, 2.2 and 2.3.

Strategic Aim 4: Mitigation and Enhancement

The WSSP 2050 actions proposed are considered beneficial and supportive of relevant SEA objectives. Measures which will support them provide these benefits include WSSP 2050 Strategic aim 3 Action 1.7 and Strategic aim 5. Action 2.4.

7.3.3 Strategic Aim 5

The assessment is summarised by strategic aim based on the assessment undertaken for each action below.

Strategic Aim 5: Assessment

Strategic Aim 5: Engaging with communities	
Action 2.4	**Value of water** - Develop a community education and engagement programme to raise awareness on the value of water and the water services we provide.
Action 2.5	**Develop amenity value** - Continue to develop amenity value in our assets with local communities, where safe and appropriate.

The alternatives assessed for strategic aim 5 were:

Alternative 0: Do Minimum Would involve not taking actions to develop community education and awareness raising and not supporting development of amenity value and use of assets.

Alternative 1: BAU Currently Uisce Éireann sponsors the Water Theme under Green schools programme and engages with communities as projects or issues arise. Uisce Éireann own and manage over 6,000 sites around the country as part of our water treatment and distribution and wastewater collection and treatment assets. As these are operational sites with safety hazards, Uisce Éireann must generally keep the sites secure with no public access. Uisce Éireann have over 50 impounding reservoirs and a small number of constructed wetlands nationally and some of these already provide local amenity value.

Alternative 2: BAU+ WSSP 2050 This commits to expanding the community education and engagement programme to include community groups and organisations, the wider community, schools, universities and businesses to enhance peoples' understanding of the value of water and water services and highlight how everyone can contribute to protecting our water supplies and the environment. Continue to develop amenity value in our assets with local communities, where safe and appropriate collaborating with other partners who may be in a position to develop these "community assets" at some of our sites.

Alternative 3: WSSP 2050+ Work with policy makers to embed water conservation and wastewater management in the school curriculum. Measure amenity benefit / how many people visit proactively and build into the design stage of suitable projects. Uisce Éireann could look to develop visitor facilities (e.g., heritage type visitor centre/ coffee shop/ public toilet facilities) at any of our suitable sites. While not possible to commit to this currently this could potentially be considered further as part future plan reviews.

Alternative 4: WSSP 2050 different Develop a dedicated community liaison team that would work across the regions and liaise with communities on a regular basis and be a dedicated point of contact. Currently Uisce Éireann do not have the resources to support the continuity to build lasting relationships with

communities. Uisce Éireann could have an education team or wider education programme to link in with schools and universities and set up a programme to work with the department of education. While not possible to commit to this currently this could potentially be considered further as part future plan reviews.

The assessment is summarised against the SEA objectives for the strategic aim in Table 7.7 below.

Table 7.7 Strategic Aim 5 alternatives assessment

Strategic Aim 5: Engaging with communities														
Alternatives	Action	SEA Objectives												
	Action reference	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource Use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Alternative 0: Do minimum	**2.4**	+/-	0	-	-	0	0	0	0	0	0	0	0	0	0
	2.5	0	0	-	-	0	0	0	0	0	0	0	0	0	0
Alternative 1: BAU	**2.4**	+	0	+	+	0	+	+	0	0	0	0	0	0	0
	2.5	0	0	+/-	+	0	0	0	0	0	0	0	0	0	0
Alternative 2: BAU+ WSSP 2050	**2.4**	++	0	++	++	0	+	+	0	0	+	0	0	0	0
	2.5	0	0	+	+	0	0	+/-	0	0	+	+/-	+/-		
Alternative 3: WSSP 2050+	**2.4**	++	0	++	++	0	0	+	0	0	+	0	0	0	0
	2.5	0	0	++	++	0	0	+	0	0	+	+	+	0	0
Alternative 4: Do things differently	**2.4**	++	0	++	++	0	0	+	0	0	++	0	0	0	0
	2.5														

Summary of assessment for Strategic Aim 5

The do minimum would not support SEA objectives aiming to improve access to greenspaces for recreation and wellbeing. Alternative 1 with the continuation of the current situation would provide some benefits in relation to SEA objectives supporting raising awareness of the value of the water environment and some access for recreation but there is recognised to be scope for more comprehensive and coordinated actions. Alternative 2 for the WSSP 2050 builds on and expands existing initiatives with potential for significant support on awareness and protection of the water environment and opportunities for recreation with associated health and wellbeing benefits. This will also be supportive of government recreation strategy. Alternatives 3 and 4 would build on the proposed WSSP 2050 Actions 2.4 and 2.5 identifying additional ways these could be developed further strengthening potential benefits. However, they would rely on significant additional resources and approvals. Alternative 2 is selected as a feasible

approach supporting SEA objectives and needed before further steps can be taken and Alternatives 3 and 4 can be reviewed as part of future plan iterations.

Alternative 2 BAU+ is taken forward in the WSSP 2050 for Actions 2.4, and 2.5.

Strategic Aim 5: Mitigation and Enhancement

The WSSP 2050 actions proposed are considered beneficial and supportive of relevant SEA objectives. The approach of continuing to develop amenity value in Uisce Éireann assets with local communities, where safe and appropriate to do so will need to include consideration for risk of impacts on water quality, biodiversity, cultural heritage, and landscape. This is recommended to be considered alongside identification of opportunities for enhancement and as part of the process for identifying appropriate sites and designing access. Potential to make provision for access should be a consideration in new asset design where appropriate.

7.3.4 Strategic Aim 6

The assessment is summarised by strategic aim based on the assessment undertaken for each action.

Strategic Aim 6: Assessment

Strategic Aim 6: Providing for growth	
Action 2.6	**Support planning policy** - Engage and collaborate with key stakeholders to support national, regional and local planning policy.
Action 2.7	**Engage with housing and industry stakeholders** - Engage with housing and industry stakeholders to support delivery of new homes and economic growth.
Action 2.8	**Develop demand analysis capability** - Develop and embed demand analysis capability to inform, forecast and plan for future investment requirements.

Alternative 0: Do minimum Would involve not taking ongoing actions on engagement and collaboration or using current demand forecasting approach and is not considered reasonable.

Alternative 1: BAU Uisce Éireann is actively engaged in contributing to national, regional and local planning policy. It is advocating that water policy should be built in and considered at the early stage of plan and policy development. Uisce Éireann currently utilises demand forecast capability based on high level settlement data and this was used to inform the NWRP on where increased water supply demand would be located.

Alternative 2: BAU+ WSSP 2050 This commits to supporting planning policy including the NPF and subsidiary plans and investing in infrastructure to facilitate well-planned social and economic growth that is based on principles of environmental sustainability and enhanced liveability. Uisce Éireann aims to undertake strategic and coordinated engagement with housing and industry stakeholders to support delivery of new homes and economic growth. Action 2.8 aims to develop and embed demand analysis capability to inform, forecast and plan for future investment requirements.

Alternative 3: WSSP 2050+ An alternative to go further than Alternative 2 Action 2.6 would be to map sustainable development areas and Identify areas where development would not be cost-effective or support sustainable environmental outcomes and to use this to influence where development should occur and support planning authorities to consider source vulnerability when zoning land. For Action 2.7, there is potential also to advocate for policy standards on building legislation to include minimum levels of reuse and water efficiency for new developments. While this would be more of a water conservation measure it can also provide more capacity for growth. However, these actions are currently outside Uisce

Éireann's capability to deliver. In relation to Action 2.8, Uisce Éireann could conduct their own annual census on community needs rather than rely on 6-year census cycle, however this is funding and resource constrained. Potentially these additional approaches could be considered through future plan reviews.

The assessment is summarised against the SEA objectives for the strategic aim in Table 7.8 below.

Table 7.8 Strategic Aim 6 alternatives assessment

Strategic Aim 6: Providing for growth															
Alternatives	Action	SEA Objectives													
	Action Reference	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Alternative 0: Do minimum (Rejected)	**2.6**														
	2.7														
	2.8														
Alternative 1: BAU	**2.6**	+/-	0	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	0	0	0	0
	2.7	+/-	0	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	0	0	0	0
	2.8	+/-	0	+/-	+/-	+/-	+/-	+/-	+/-	+/-	+/-	0	0	0	0
Alternative 2: BAU+ WSSP 2050	**2.6**	+/-	0	+	+	0	+/-	+/-	+/-	+	+	0	0	0	0
	2.7	+/-	0	+	+	0	+/-	+/-	+/-	+	+	0	0	0	0
	2.8	+	0	+	+	0	+	+	+	+	+	0	0	0	0
Alternative 3: WSSP 2050+	**2.6**	+/-	0	+	+	0	+/-	+/-	+/-	+	+	0	0	0	0
	2.7	+	0	+	+	0	+	+	+	+	+	0	0	0	0
	2.8	+	0	+	+	0	+	+	+	+	+	0	0	0	0
Alternative 4: Do things differently (Rejected)	**2.6**														
	2.7														
	2.8														

Summary of assessment for Strategic aim 5

Alternative 2, the WSSP 2050 actions provide proactive planning which can support SEA objectives for the water environment as well as meeting population growth and water demand and efficient asset investment. Supporting growth while supporting SEA population and health objectives can lead to pressures on the water environment, in some areas this approach is considered to have mix of positive and negative effects for SEA objectives for water, biodiversity and fisheries depending on the location of planned growth. Alternative 3 actions could further support SEA objectives but cannot be taken forward as

largely outside Uisce Éireann's remit and restricted by funding and resource availability although there maybe be potential to consider some of the approaches outlined further in the future.

Alternative 2 BAU+ is taken forward in the WSSP 2050 for Actions 2.6, 2.7, and 2.8.

Strategic Aim 6: Mitigation and Enhancement

The WSSP 2050 actions proposed are considered largely beneficial or mixed in support of relevant SEA objectives. However, there could be potential to go further and provide a greater influence on location and type of growth and inclusion of water conservation in development design. Mitigation actions will include linking to other commitments and plans including related to the NWRP for sustainable water supply (Action 1.4) and those which will need to be identified as part of the wastewater plans (Actions 3.1 and 3.2). Although currently outside scope, there could be potential to draw from Alternative 3 actions including identifying areas to avoid due to sustainability concerns to support proactive engagement on zoning land and strategic land use planning and inclusion of water conservation considerations in building standards.

7.4 Strategic Objective 3: Protect and Restore the Environment

The WSSP 2050 recognises that protecting and restoring the environment is critical to providing safe water services and safeguarding human health and biodiversity. An effective wastewater management system is also essential to safeguarding the environment and public health. In terms of water treatment and supply, there is a responsibility to ensure that when abstracting water from water bodies, enough water is left to support the needs of the natural environment and other water users. When discharging treated wastewater to the water environment Uisce Éireann recognises the need to plays its part in achieving Water Framework Directive objectives for the receiving water bodies:

The WSSP 2050 Objective 3 states

Draft WSSP 2050 Strategic Objective 3: Protect and Restore the Environment

We deliver a reliable water and wastewater service that protects the environment, and we support a healthy environment by enhancing habitats and ecosystems.

Under this objective, the WSSP 2050 identifies three strategic aims with eight actions to achieve them:

Strategic aim 7: Protecting our water environment - We will play our part in protecting and restoring our water environment.

Strategic aim 8: Playing our part under the Water Framework Directive - We will work with others to progressively deliver on Water Framework Directive (WFD) objectives.

Strategic aim 9: Contributing to positive biodiversity - We will manage our assets to have biodiversity net gain.

Alternatives and the WSSP 2050 proposed actions are considered in the sections below against the SEA objectives.

7.4.1 Alternatives Considered for Each Action

A summary of the alternatives considered for the actions is provided in Table 7.9 below.

Table 7.9 Summary of the alternatives considered for the actions

Alternatives Considered		Alternative 0: (Do Minimum)	Alternative 1: Continue current approach BAU	Alternative 2: Proposed (WSSP 2050) BAU+	Alternative 3: Do more/faster (WSSP 2050+)	Alternative 4: Do things differently
Action Ref	**Action heading**					
Strategic Aim 7: Protecting our water environment						
Action 3.1	Wastewater Strategy Framework	None identified	✓	✓	None identified	None identified
Action 3.2	Integrated Urban Wastewater management Plans	None identified	✓	✓	✓	None identified
Action 3.3	Sustainable Water Supplies	None identified	✓	Same as BAU	None identified	None identified
Strategic Aim 8: Playing our part under the Water Framework Directive						
Action 3.4	Protect and restore water bodies	None identified	✓	✓	✓	None identified
Action 3.5	Manage wastewater services	None identified	✓	✓	None identified	None identified
Action 3.6	Manage water services	None identified	✓	✓	✓	None identified
Strategic Aim 9: Contributing to positive biodiversity						
Action 3.7	Biodiversity net gain	✓	✓	Same as BAU	None identified	None identified
Action 3.8	Nature based solutions and catchment measures	✓	✓	✓	✓	None identified

7.4.2 Strategic Aim 7

The assessment is summarised by strategic aim based on the assessment undertaken for each action.

Strategic Aim 7: Assessment

Strategic Aim 7: Protecting our water environment	
Action 3.1	**Wastewater Strategy Framework** - Work with regulators and stakeholders to develop a Wastewater Strategy Framework.
Action 3.2	**Integrated Urban Wastewater Management Plans** - Develop and implement Integrated Urban Wastewater Management Plans.

Strategic Aim 7: Protecting our water environment	
Action 3.3	**Environmentally sustainable water supplies** – Manage our water service assets and operations to reduce the risk of impacts to water bodies.

Alternative 0: Do minimum Do minimum was not considered a reasonable alternative for Actions 3.1 and 3.2 as there are already requirements to meet the current UWWTD and this is included in the BAU. For action 3.3 no 'do minimum' alternative was identified as the NRWP is already in place addressing sustainable abstraction and a WTP water treatment plant residuals strategy is in development.

Alternative 1: BAU For Actions 3.1 and 3.2 relating to wastewater services, the current approach is focussed primarily on addressing existing compliance issues and managing the foul sewer network. Regulatory obligations for wastewater collection and treatment are set by the EPA in Uisce Éireann's Waste Water Discharge Authorisations for each agglomeration. These obligations include compliance with the Urban Waste Water Treatment Directive (UWWTD). Uisce Éireann has made steady progress and based on current projections and expect 97% of the connected population equivalent to be served by wastewater treatment plants compliant with the UWWTD by the end of 2024. In addition, some strategic wastewater/drainage plans have been completed such as the Greater Dublin Drainage project or are in progress. The drainage of cities and towns is a shared responsibility with Uisce Éireann being responsible for the public wastewater network (including combined sewers) and the local authorities being responsible for the public storm water network and overall management of flood risk. There can be interactions between these networks and water bodies, particularly in the larger agglomerations, with complexity involved in understanding how the existing system operates hydraulicly and in planning to meet future performance requirements.

For Action 3.3 relating to abstraction for water supply, a risk assessment of existing abstractions has been completed as part of the NWRP and this has allowed Uisce Éireann to identify existing abstractions that may need to moved away from over time to ensure Uisce Éireann can provide a secure supply to customers into the future, while protecting the water environments. A risk assessment of discharges of water treatment plant residuals has been completed as part of Uisce Éireann's Water Treatment Plant (WTP) Residuals Strategy with a view to informing monitoring to verify risk and inform intervention.

The BAU for Action 3.3 includes continuing improvements to the management of water service assets and operations to mitigate the potential pollution threats to water bodies. This involves conducting risk assessments, implementing preventative measures, and enhancing contingency plans and incident response processes. Uisce Éireann's approach aims to improve the resilience of its operations and protect the environment. The risk assessments help identify potential pollution sources and evaluate their impact on the environment. These include risks associated with chemical storage and handling. Uisce Éireann is strengthening preventative measures through the asset maintenance programmes and regular training for staff on chemical handling procedures and emergency response actions. Regular site inspections and equipment checks are part of the strategy to manage water service assets and operations to reduce risks to the environment.

Uisce Éireann's established Incident Management Framework and overarching Crises Response Plan are designed to handle incidents such as pollution events. The associated Operational incident Management Procedures set out the approach for addressing incidents occurring at water service sites or related activities. Uisce Éireann is committed to reviewing and updating the incident response plans based on new information, incidents, and regulatory changes,

Alternative 2: BAU+ WSSP 2050 For Actions 3.1 and 3.2, Uisce Éireann will work with regulators and stakeholders to develop a Wastewater Strategy Framework. The framework will provide an understanding of strategic needs and drivers, allowing Uisce Éireann clear sight of current and future population needs, environmental priorities, asset risks and service resilience. Meeting the requirements of the recast Urban Wastewater Treatment Directive, such as enhanced tertiary and quaternary treatment in the larger plants and Integrated Urban Wastewater Management Plans. The framework will underpin future plans and provide strategies that aim for:

- Positive, collaborative engagement with regulators and stakeholders on approaches to enable accelerating achievement of environmental objectives; Anticipating future (environmental and growth) needs with timely and appropriately phased delivery;
- Appropriate risk assessment and management to reduce stress on assets and ensure resilience and good levels of service;
- Meeting the requirements of the recast Urban Wastewater Treatment Directive, such as enhanced tertiary and quaternary treatment in our larger plants and Integrated Urban Wastewater Management Plans;
- Uisce Éireann playing their part in delivering Water Framework Directive objectives by meeting compliance with our Wastewater Discharge Authorisations;
- Adaptive planning that allows scenario testing, considering the whole asset lifecycle and ensures that future needs can be met efficiently, effectively and sustainably through capital or operational activities.

For Action 3.3 the approach is to ensure sustainable abstractions and manage water treatment residuals which is a continuation of the BAU and involves implementing, reviewing and updating the existing NWRP and the WTP Residuals Strategy which are current commitments.

Alternative 3: WSSP 2050+ For Action 3.2 an alternative approach would be to deliver wastewater management plans and investment for all agglomerations in one go - rather than a phased approach. However, due to funding constraints and market capacity to deliver, this option is considered not to be achievable and would take resources away from other proposed actions. There is potential to include more nature-based SUDs in wastewater network solutions with multiple benefit but it will require time to identify these and CRU approval is needed for investment in assets owned by others and delivery at scale.

The assessment is summarised against the SEA objectives for each action within strategic aim 7 in Table 7.10 below.

Table 7.10 Strategic Aim 7 alternatives assessment

Strategic Aim 7: Protecting our water environment															
Alternatives	Action	SEA Objectives													
	Action reference	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
	3.1														

Strategic Aim 7: Protecting our water environment															
Alternatives	Action	SEA Objectives													
	Action reference	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Alternative 0: Do minimum (Rejected)	3.2														
	3.3														
Alternative 1: BAU	3.1	+/-	+/-	+/-	+/-	-	-	-	-	+/-	-	+/-	+/-	0	+/-
	3.2	+/-	+/-	+/-	+/-	-	-	-	-	+/-	-	+/-	+/-	0	+/-
	3.3	+	+	+	+	+/-	+	+	+	+	+	+/-	+/-	0	0
Alternative 2: BAU+ WSSP 2050	3.1	+/-	+	+	+	+/-	+	+	+	+	+	+/-	+/-	0	+
	3.2	+/-	+/-	+	+	+/-	+	+	+	+	+	+/-	+/-	0	+
	3.3	+	+	+	+	+/-	+	+	+	+	+	+/-	+/-	0	0
Alternative 3: WSSP 2050+	3.1														
	3.2	+/-	+	+/-	+/-	+/-	+/-	+/-	+/-	+	+	+	+/-	0	+
	3.3														
Alternative 4: Do things differently (Rejected)	3.1														
	3.2														
	3.3														

Summary assessment for Strategic Aim 7

Alternative 1 BAU for Actions 3.1 and 3,2, include the continued focus on compliance with the requirements of the UWWTD and WFD and in some areas this is already addressing issues and is expected to provide some support for the SEA Objectives. While this provides the basis for significant improvements in specific locations, in some areas this approach may not meet future challenges of increased wastewater treatment demand, pressures on the environment and changes to legislative requirements. The current lack of strategic integrated plans for investment in place is considered limiting to comprehensive and consistent action.

For action 3.3, the Alternative 1 BAU includes the implementation of the NWRP. Alternatives for water supply investment have been addressed within this plan. Overall, the NWRP is supportive for SEA Objectives with mitigation identified through the plan SEA taken into account. The NWRP process is forward looking and sets out a process for review and updating as well as for improvements to data

collection. Where possible, the NWRP identified solutions that enable the reduction or removal of potentially unsustainable abstractions. In the five-early review of the NWRP, Uisce Éireann will continue to seek alternative water sources, improve water use efficiency, and reduce leakage to minimise the risk of abstraction impacts on water bodies.

Uisce Éireann also has an approach for improving management of operational risks and incident response and to keep these under review. There is a commitment to developing asset and water quality monitoring programmes and data management systems which will support the identification of pollution threats and response. The approach includes incorporating monitoring outcomes in the next update of the residuals strategy within the next iteration of the National Water Resources Plan. Implementation of these approaches is considered supportive to reducing risk of and impacts from pollution incidents on the environment and SEA Objectives.

Alternative 2 BAU+ for Actions 3.1 and 3.2 the development of the Wastewater Strategy Framework and the downstream plans and investment projects can be expected to be largely supportive across the SEA Objectives although investment and location specific impacts will need to be subject to SEA/EIA as appropriate. Alternative 2 for Action 3.3 is the same as BAU. While alternative 3 for action 3.2 could allow benefits to be achieved more quickly in theory it does not take account of constraints to funding and resources and could compete with other resources and reduce ability to respond to priorities for other aspects of water and wastewater services with implications for supporting SEA objectives for the plan as a whole.

Alternative 2 BAU+ is taken forward to the WSSP 2050 for Actions 3.1 and 3.2 and Alternative 1 BAU for Action 3.3.

Strategic Aim 7: Mitigation and Enhancement

The Wastewater Framework and subordinate plans will all be subject to SEA and AA which will inform investment decision making and identify relevant mitigation measures. As part of this the objectives of the WSSP 2050 and SEA and AA will be taken into account through the development of these plans including the options appraisal and review process. The NWRP was subject to SEA and AA and these included identifying mitigation, monitoring and review recommendations which are in the process of being implemented. The next iteration of the NWRP including a revised residuals strategy will be updated to incorporate and respond to monitoring outcomes. The revised residuals strategy will provide guidance on the preferred sustainable and circular economy options for WTP residuals (see also Action 4.4), ensuring that investment in new infrastructure is the most cost-effective over the asset's lifespan, while also protecting the environment. As support for the SEA objectives, mitigation proposed is for prioritisation of risk assessments and actions for the most sensitive environments including for example European Sites and High Status/Blue Dot water bodies,

New resources and investment will require new infrastructure, treatment plants and consume energy and produce waste and the implications from these for carbon emissions and circular economy are covered by Strategic objective 4.

7.4.3 Strategic Aim 8

The assessment is summarised by strategic aim based on the assessment undertaken for each action.

Strategic Aim 8: assessment

Strategic Aim 8: Playing our part under the Water Framework Directive	
Action 3.4	**Protect and restore water bodies** - Protect and restore water bodies through collaboration.
Action 3.5	**Manage wastewater services** - Manage wastewater services to achieve regulatory requirements.
Action 3.6	**Manage water services** - Manage drinking water services to achieve regulatory requirements.

Alternative 0: Do Minimum Would involve not meeting regulatory requirements and is not considered reasonable.

Alternative 1: BAU Uisce Éireann has made steady progress in reducing the impact of urban wastewater on receiving water bodies related to Action 3.4. The number of water bodies where urban wastewater is a significant pressure has reduced from 291 in the second cycle River Basin Management Plan to 197 in the third cycle Plan. Uisce Éireann is committed to making further significant reductions over the period of the third cycle Plan. However, besides urban wastewater there are multiple other pressures, for example agriculture and forestry, impacting on our water bodies. Currently different agencies are responsible for aspects of river basin planning in Ireland and there is limited sharing of data or integrated collaborative working between all the key stakeholders. There is also a lack of data and sophisticated catchment modelling which could determine the most cost-effective combination of measures to achieve WFD environmental objectives for all water bodies.

In relation to Action 3.5 there is an ongoing process of upgrading wastewater treatment plants to address growth requirements and legislative requirements with aim to progressively invest to achieve full compliance over time. Steady progress has been made and based on current projections we expect 97% of the connected population equivalent to be served by wastewater treatment plants compliant with the current UWWTD by the end of 2024. Significant investments have been made as part of implementing RBMP obligations. Uisce Éireann is committed to implementation of all actions required under the RBMP required to address all the significant urban wastewater pressures identified. For Action 3.6, currently the maintenance approach is largely reactive with limited predictive maintenance and remote operation. In relation to managing water services, the NWRP sets the basis for more sustainable abstractions and supply for example through rationalisation and upgrading. Under the new abstraction regime, Uisce Éireann will be required to apply to the EPA for licences for abstractions above certain thresholds and meet EPA in-stream flow requirements. The commitment is to manage water services throughout the asset lifecycle to achieve regulatory requirements.

Alternative 2: BAU+ WSSP 2050 This includes proposals to continue to develop catchment modelling capability and collaborate to meet Ireland's obligations under the WFD. In relation to managing water services, a Fish Pass Programme is planned to be developed in collaboration with Inland Fisheries Ireland to improve local hydromorphological conditions and address migration barriers at impounding structures supporting abstraction. Management of wastewater services aim to achieve future regulatory requirements throughout the asset lifecycle. The approach will take on board the proposed recast UWWTD and wastewater discharge authorisation requirements, monitoring programme on bathing and shellfish waters, use of remote management and predictive systems for proactive maintenance. Significant capital investment will be required over several funding cycles.

Alternative 3: WSSP 2050+ Using technology such as creating a 'digital twin' of the natural environment based on advanced catchment sensors to support investment and management decisions to protect the environment (digital twins can help organisations simulate real situations and outcomes and helps to inform decision making). However, relevant stakeholders would need to be on board in principle, and

currently there would not be sufficient information to make use of this technology with other steps needed first. The use of this approach could however, be considered in future reviews and iteration of the WSSP2050. Other alternatives identified included using community initiatives to develop more extensive catchment monitoring and data; the introduction of Asset Class Strategies to allow for better management of assets for example for chemical storage, residual management; and preventative maintenance of assets using technology to help predict when they will fail and having better and smarter systems in place to manage assets through their life cycle.

The assessment is summarised against the SEA objectives for the strategic aim in Table 7.11 below.

Table 7.11 Strategic Aim 8 alternatives assessment

Strategic Aim 8: Playing our part under the Water Framework Directive															
Alternatives	**Action**	**SEA Objectives**													
	Action Reference	**Water quality and quantity**	**Flood risk**	**Population and economy**	**Health and wellbeing**	**Climate change mitigation**	**Climate change adaptation**	**Biodiversity**	**Fisheries**	**Resource use and waste management**	**Asset use**	**Landscape, Townscape and Seascape**	**Cultural Heritage – archaeological and architectural**	**Geology and soils**	**Air quality**
Alternative 0: Do minimum (Rejected)	3.4														
	3.5														
	3.6														
Alternative 1: BAU	3.4	++	0	0	+	+/-	+	+	+	+	+	+	+	+	0
	3.5	++	+/-	0	+	+/-	+/-	+	+	+	+	0	0	0	+/-
	3.6	++	0	+	+	+/-	++	++	++	+	+	0	0	0	0
Alternative 2: BAU+ WSSP 2050	3.4	++	+	0	++	+	++	++	++	+	+	+	+	+	0
	3.5	++	+	0	++	+/-	+	++	++	+	+	0	0	0	+
	3.6	++	0	+	+	+/-	++	++	++	+	+	0	0	0	0
Alternative 3: WSSP 2050+	3.4	++	+	0	++	+	++	++	++	+	+	+	+	+	0
	3.5	++	+	0	++	+/-	+	++	++	++	++	0	0	0	+
	3.6	++	+	0	+	+/-	++	++	++	++	++	0	0	0	0
Alternative 4: Do things differently (Rejected)	3.4														
	3.5														
	3.6														

Summary assessment for Strategic Aim 8

Alternative 1 BAU with continuation of the current management approach aimed at compliance with current UWWTD legislation is aimed at addressing existing WFD issues and RBMP requirements and is supportive to SEA objectives on health, water, biodiversity and fisheries and related wide environmental from this approach but meeting future challenges especially related to climate change remain. With Alternative 2, BAU +, supports the management of water and wastewater services throughout the asset lifecycle to meet more challenging regulatory requirements is expected to be largely supportive across SEA objectives taking a proactive approach and going beyond requirements including plans to remove fish barriers. Alternative 3 could provide additional benefits using new technologies, reducing risks and supporting decision making, however, these approaches are not yet available and would require the steps proposed in Alternative 2, first but could be considered in future plan reviews.

Alternative 2 BAU+ is taken forward to the WSSP 2050 for Actions 3.4, 3.5 and 3.6

Strategic Aim 8: Mitigation and Enhancement

The proposals support better management and monitoring and additional SEA mitigation recommendations are to ensure that the wider environmental benefits are considered and captured in data collection and analysis to support decision making across operations and asset lifecycles. Actions will have resource and energy requirements and mitigation in relation to carbon and materials are covered by Strategic Objective 4.

7.4.4 Strategic Aim 9

The assessment is summarised by strategic aim based on the assessment undertaken for each action.

Strategic Aim 9: Contributing to positive biodiversity	
Action 3.7	**Ensure 'Biodiversity Net Gain'** - Manage our assets to have biodiversity 'net gain'.
Action 3.8	**Nature-based solutions** - Champion nature-based solutions and integrated catchment measures in the delivery of water and wastewater projects.

Alternative 0: Do minimum Assumes only undertaking actions to meet legal obligations and not continuing with application Uisce Éireann's biodiversity net gain policy or taking forward nature-based solutions and catchment management measures.

Alternative 1: BAU Uisce Éireann's BAP 2021 details the specific objectives and actions to be taken by Uisce Éireann to ensure that biodiversity is valued and is an integral factor in decision-making processes across the business. Uisce Éireann has in addition set a commitment to achieve biodiversity net gain across infrastructure projects by 2030. This commitment, along with related activities, will be incorporated into our next Biodiversity Action Plan, which will consider Ireland's 4th Biodiversity Action Plan 2023-2030 and the European Nature Restoration Law. Uisce Éireann already has examples of using nature-based solutions, but has not yet embedded an approach to implementation. Uisce Éireann is committed to manage assets to provide biodiversity 'net gain'. This includes the commitment to review and update the BAP in 2025 and to proactively engage with all relevant stakeholders in the further development and implementation of biodiversity actions.

Alternative 2: BAU+ WSSP 2050 Uisce Éireann's BAU approach on biodiversity net gain is already going beyond requirements. Uisce Éireann will champion nature-based solutions and catchment measures in the delivery of water and wastewater projects. This will include encouraging and promoting the identification of opportunities for the incorporation of integrated constructed wetlands, sludge drying reed beds, and other nature-based solutions into wastewater treatment sites and undertake catchment management activities.

Alternative 3: WSSP 2050+ New technology advances and smarter systems to manage data and to involve and support other agencies in wider catchment management, this however would depend on other regulatory actions and funding approvals. The assessment is summarised against the SEA objectives for the strategic aim in Table 7.12 below.

Table 7.12 Strategic Aim 9 alternatives assessment

Strategic Aim 9: Contributing to positive biodiversity															
	Action	SEA Objectives													
Alternatives	Action reference	Water quality and quantity	Flood risk	Population and economy	Health and well being	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural Heritage – Archaeological and Architectural	Geology and Soils	Air Quality
Alternative 0: Do minimum	**3.7**	-	-	0	0	-	-	--	--	-	0	-	-	-	0
	3.8	-	-	0	-	-	-	-	-	-	0	-	-	-	0
Alternative 1: BAU	**3.7**	++	+	+	+	+	++	++	++	+	+	+	+	+	+
	3.8	++	+	+	+	+	+	++	++	+	+	0	0	0	+
Alternative 2: BAU+ WSSP 2050	**3.7**	++	+	+	+	+	++	++	++	+	+	+	+	+	+
	3.8	++	++	+	+	+	++	++	++	+	+	++	++	++	+
Alternative 3: WSSP 2050+	**3.7**	++	+	+	+	+	++	++	++	+	+	+	+	+	+
	3.8	++	++	+	+	+	++	++	++	+	+	++	++	++	+
Alternative 4: Do things differently (Rejected)	**3.7**														
	3.8														

Summary assessment for Strategic Aim 9

Alternative 2 provides a basis for supporting SEA biodiversity and water objectives as well as associated wider environmental and ecosystem services benefits from delivering biodiversity net gain and integrating the nature-based solutions and catchment management measures more comprehensively into delivery of water and waste water services where appropriate. Alternative 3 can provide similar but potentially more widespread benefits however would be dependent on availability of technology and partnerships for delivery which are currently either not available or outside Uisce Éireann's responsibility although scope for more action on these could be considered further in future plan iterations.

Alternative 2 BAU+ is taken forward to the WSSP 2050 for Actions 3.8 and Alternative 1 BAU for Action 3.7.

Strategic Aim 9: Mitigation and Enhancement

The measures proposed are beneficial across the SEA objectives and to support realising these benefits. To support this, mitigation proposed is to develop guidance and processes to consider relevant stakeholder engagement, wider catchment management measures and nature-based solutions so that these are included where appropriate.

7.5 Strategic Objective 4 Sustainable Services Fit for the Future

The WSSP 2050 recognises the scale of the challenges that are faced in the medium to long term and the need to transform assets and ways of working to become sustainable and fit for the future. This transformation is recognised to be challenging and will involve Uisce Éireann becoming a net zero carbon utility, as well as minimising resource consumption. To be sustainable Uisce Éireann also aim to develop their asset lifecycle management and long-term planning capabilities so that social, economic and environmental values that can be delivered from our assets can be maximised.

The WSSP 2050 Strategic Objective 4 states:

Strategic Objective 4: Sustainable Services Fit for the Future

We make decisions for the long-term which enable us to adapt and ensure our assets remain resilient.

Under this objective, the WSSP 2050 identifies five strategic aims with ten actions to achieve them:

Strategic aim 10: Achieving net zero carbon: We will progressively work towards achieving net zero carbon services.

Strategic aim 11: Adopting circular approaches: We manage our assets to maximise resource recovery and resource efficiency and minimise waste.

Strategic aim 12: Managing our assets: We will manage the risk and resilience of our services through best practice asset management.

Strategic aim 13: Gaining value from innovation: We will drive research and innovation to deliver value and meet future challenges.

Strategic aim 14: Securing long-term funding; We will work with our stakeholders to secure long-term funding for efficient and resilient services.

Alternatives and the WSSP 2050 proposed actions are considered in the sections below against the SEA objectives.

7.5.1 Alternatives Considered for Each Action

A summary of the alternatives considered for the actions is provided in Table 7.13 below.

Table 7.13 Summary of the alternatives considered for the actions

Alternatives Considered	Alternative 0: Do Minimum – (rejected)	Alternative 1: Continue current approach (BAU – Current embedded practice)	Alternative 2: Proposed (WSSP 2050)	Alternative 3: Do more/faster (WSSP 2050+)	Alternative 4: Do things differently
Strategic Aim 10: Achieving net zero carbon					
Action 4.1	✓	✓	✓	None Identified	None Identified
Action 4.2	✓	✓	✓	✓	None Identified
Strategic Aim 11: Adopting circular approaches					
Action 4.3	None Identified	✓	Same as BAU	None Identified	None Identified
Action 4.4	None Identified	✓	✓	None Identified	None Identified
Strategic Aim 12: Managing our assets					
Action 4.5	None Identified	✓	✓	✓	None Identified
Action 4.6	None Identified	✓	✓	None Identified	None Identified
Strategic Aim 13: Gaining value from innovation					
Action 4.7	None Identified	✓	✓	✓	None Identified
Action 4.8	None Identified	✓	✓	✓	None Identified
Strategic Aim 14: Secure multi-annual funding approach					
Action 4.9	None Identified	✓	✓	✓	None Identified
Action 4.10	None Identified	✓	✓	None Identified	None Identified

7.5.2 Strategic Aim 10

The assessment is summarised by strategic aim based on the assessment undertaken for each action.

Strategic Aim 10: Achieving net zero carbon	
Action 4.1	**Net Zero Road Map** - Develop and implement a Net Zero Road Map.
Action 4.2	**Embed sustainability with our supply chain** - Work with our supply chain to embed sustainability in the delivery of water and wastewater infrastructure.

Alternative 0: Do minimum Without a Net Zero Road map and strategy for meeting targets.

Alternative 1: BAU Uisce Éireann is currently developing a Net Zero Roadmap to support the delivering of their ambition to achieve Net Zero by 2040. Currently the approach to net zero and sustainability is not consistent and there is uncertainty on achieving targets. The roadmap will build on current programmes including initiatives such as energy efficiency, renewable energy adoption, greenhouse gas reductions including process emissions management, nature-based solutions and supply chain collaboration. Data supporting the calculation of embodied carbon is recognised to be limited. To support the extensive supply chain to transition to a climate resilient, biodiversity rich and climate neutral economy a Supply Chain Charter was published in 2024 supporting Uisce Éireann's overarching Sustainability Framework. Uisce Éireann are also a founding partner of the newly established Irish branch of the Supply Chain Sustainability School.

Alternative 2: BAU+ WSSP 2050 Uisce Éireann recognised that Net zero cannot be achieved by Uisce Éireann alone that partnerships, collaboration and stakeholder engagement will be central to achieving their goals and proposed actions include.

- Empowering people within Uisce Éireann through a clear top-down company strategic direction, to focus on activities which will deliver net zero emissions.
- Collaborate with the extensive supply chain to develop solutions, share our learnings and deliver projects that are sustainable, cost-effective and mutually beneficial.
- Work with customers and communities to help achieve net zero emissions through active engagement e.g., on leakage reporting and through awareness campaigns such as our How to Conserve Water campaign.
- Encourage innovation within the supply chain, and continue to build collaborative partnerships to assess value and performance through whole life cycle costing methodologies.
- Work with suppliers to support them through guidance on sustainable practices, such as energy efficiency measures and carbon reduction initiatives.
- Explore sustainability incentives to leverage clients, contractors and suppliers who have a mutual interest in building the skills and knowledge to deliver a sustainable future, shared resources and best practices.

Alternative 3: WSSP 2050+ For action 4.2, an alternative approach could be to set mandatory requirements for suppliers to support our sustainability ambitions.

The assessment is summarised against the SEA objectives for the strategic aim in Table 7.14 below.

Table 7.14 Strategic Aim 10 alternatives assessment

Strategic Aim 10: Achieving net zero carbon															
Alternatives	Action	SEA Objectives													
	Action reference	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Alternative 0: Do minimum	**4.1**	-	0	0	0	--	-	0	0	-	-	0	0	0	-
	4.2	-	0	0	0	-	-	0	0	-	-	0	0	0	-
Alternative 1: BAU	**4.1**	+	0	0	0	+	+	0	0	+	+	0	0	0	+
	4.2	+	0	0	0	+	+	0	0	+	+	0	0	0	+
Alternative 2: BAU+ WSSP 2050	**4.1**	+	0	0	0	++	+	+	0	++	+	0	0	0	+
	4.2	+	0	0	0	++	+	+	0	++	+	0	0	0	+
Alternative 3: WSSP 2050+	**4.1**														
	4.2	+	0	0	0	++	+	+	0	++	+	0	0	0	+
Alternative 4: Do things differently (Rejected)	**4.1**														
	4.2														

Summary assessment for Strategic Aim 10

Alternative 2 BAU+ for Actions 4.1and 4.2 will provide important routes to reduce carbon emissions, move to renewable energy sources, improve on materials use and reduce waste building on existing plans and programmes already started (and included in Alternative 1 BAU). BAU+ includes the aim to meet the net zero carbon target by 2040. These actions can contribute to SEA Objectives for water, climate change, biodiversity, resource and asset use and air quality. In terms of Alternative 3 Uisce Éireann recognise the need to work with supply chain and allow the time to establish a partnership approach to embed and to facilitate accurate sustainability reporting before mandatory requirements are imposed.

Alternative 2 BAU+ is taken forward to the WSSP 2050 for Actions 4.1 and 4.2.

Strategic Aim 10; Mitigation and Enhancement

These actions are expected to support meeting SEA objectives for all Uisce Éireann's actions. This can be further strengthened by linking the Net Zero Road Map closely with other plans and projects in preparation including the current NWRP (Action 1.4) and the proposed Wastewater Management Strategy and Plans

(Action 3.1. 3.2 and 4.3) to influence the approaches taken and ensure that opportunities are identified for implementation and the lifecycle management approaches (Actions 3.5 and 3.6).

7.5.3 Strategic Aim 11

The assessment is summarised by strategic aim based on the assessment undertaken for each action.

Strategic Aim 11: Adopting circular approaches	
Action 4.3	**National Wastewater Sludge Management Plan** - Review and implement the National Wastewater Sludge Management Plan.
Action 4.4	**Circular economy design standard** - Maximise circular economy benefits.

Alternative 0: Do Minimum - no reasonable alternative to the current approach. based on existing plans, was identified.

Alternative 1: BAU The current National Wastewater Sludge Management Plan was published in 2016 and the 2nd revision of National Wastewater Sludge Management Plan is underway. At present 100% of wastewater sludge is treated to produce biosolids used in agriculture and a good proportion of WTP waste is used in cement manufacture. Actions include development of Sludge hub centres. The approach has however been a predominantly linear approach and does not currently addressing circular economy. Uisce Éireann is committed to review and implement the NWSMP and as part of this, Uisce Éireann will explore new and innovative ways to use the materials recovered from treatment processes (bioresources) and consider advanced technologies and processes to extract more value from sludge including energy.

Alternative 2: BAU+ WSSP 2050 Uisce Éireann's ambition is to embed a circular economy approach where products and materials are part of a continuous cycle rather than reaching a linear end of life disposal point. At the core of our strategy is the development and implementation of a new Circular Economy Design Standard. This standard will cover the entire life cycle of managing our water and wastewater assets, from initial design and procurement through to delivery, storage, handling and end use.

Table 7.15 Strategic Aim 11 alternatives assessment

Strategic Aim 11: Adopting circular approaches															
Alternatives	Action	SEA Objectives													
	Action reference	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Alternative 0: Do minimum (Rejected)	**4.3**														
	4.4														
	4.3	+/-				+	+	+/-	+/-	++	++			++	

Strategic Aim 11: Adopting circular approaches															
Alternatives	Action	SEA Objectives													
	Action reference	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Alternative 1: BAU	**4.4**	+/-				+/-	+/-	+/-	+/-	+	+			+	
Alternative 2: BAU+ WSSP 2050	**4.3**	+/-				+	+	+/-	+/-	++	++			+	
	4.4	+/-				++		+/-	+/-	++	++			+	
Alternatives 3 and 4 (Rejected)	**4.3**														
	4.4														

Summary assessment for Strategic Aim 11

Alternative 1 BAU Action 4.3 includes the implementation of the first NWSMP and the review and update of the second NWSMP which is currently under development with the commitment to incorporate innovation. Agricultural use of wastewater sludge is considered positive for SEA objectives for soils and resource use although mixed in terms of water, biodiversity and fisheries given potential for nutrient rich run-off which can contribute to water pollution. The revised NWSMP will provide potential to achieve higher value from waste streams which could support reduction in carbon emissions and provide additional environmental benefits. Alternative 2 includes the BAU for Action 4.3 and for Action 4.4 BAU+ Circular Economy approach which can provide additional benefits, particularly for SEA objectives for climate change mitigation, resource and asset use.

Alternative 2 BAU+ is taken forward to the WSSP 2050 for Actions 4. 4 and BAU for Action 4.3.

Strategic Aim 11: Mitigation and Enhancement

The proposed updated new NWSMP will be subject to SEA and AA and mitigation measures will be identified with respect to the more detailed proposals in this plan. Overall, the approach to reviewing and updating the plan and the inclusion of circular economy approaches are considered positive for SEA. There is potential to link to other WSSP 2050 actions including catchment management initiatives (Action 1.3) and drinking water source risk assessments (Action 1.1) to encourage use of existing guidance on the use wastewater sludge (along with other agricultural fertilisers and pesticides) to minimise the risk of water pollution from run off.

7.5.4 Strategic Aims 12, 13 & 14

The assessment is summarised by strategic aim based on the assessment undertaken for each action.

Strategic Aim 12: Managing our assets	
Action 4.5	**Managing our assets** - Manage activities on our assets in a coordinated manner across their full lifecycle, with the aim of achieving ISO 55000 certification.
Action 4.6	**Risk and value based decision making** - Ensure risk and value-based decision making across the lifecycle of assets.
Strategic Aim 13: Gaining value from innovation	
Action 4.7	**Research and innovation** - Develop a culture of innovation in the water services sector to enable a sustainable future.
Action 4.8	**Foresight programme** - Continue to develop foresight and horizon scanning capability.
Strategic Aim 14: Securing long-term funding	
Action 4.9	**Long-term investment** - Quantify and articulate long-term investment needs for our water and wastewater assets.
Action 4.10	**Multi-annual funding** - Secure multi-annual funding approach.

Alternative 0: Do Minimum No reasonable do minimum alternatives were identified.

Alternative 1: BAU Currently Uisce Éireann is in the process of improving data on asset condition and performance but is limited by access to information on all risks, relevant strategies and planned activities related to an asset. There is limited integrated asset management to support optimal performance and investment.

Uisce Éireann has already built up an extensive portfolio of research and innovation initiatives. This includes information from UK utilities, leveraging their experience, capacity and funding through UKWIR, OFWAT and SPRING. Uisce Éireann delivers innovation through the CRU innovation fund and with supply chains on capital projects and programmes. Currently the focus for innovation on shorter term core company objectives such as leakage, compliance, energy.

Vision2050 provided an initial collaborative horizon scanning but was a start and a one off. The plan has been to refresh/review the Vision 2050 study on a periodic basis for example every 5 years and to incrementally develop foresight studies and tools.

Given the scale of Uisce Éireann's asset base and the requirement for sustained long-term investment the need to continue to prioritise investment to reduce the most significant risks while maximising the value delivered to the customer and delivering on the Government's Water Services Policy Statement. Uisce Éireann use an approach which focuses on managing asset and service risk, while realising value from water and wastewater assets. Processes have been developed to comply with the public spending code and infrastructure guidelines, and are based on an I20 workshop process which uses multi-criteria analysis and costing approaches to ensure environment, sustainability and cost are factored in at each governance stage to support informed and balanced decision making.

Currently Uisce Éireann investment funding is based on 5 year investment cycles. There is multi annual funding through the Strategic Funding Plan and Regulatory allowances, but this is still subject to annual government budgeting process

Alternative 2: BAU+ WSSP 2050 Apply an ISO55000 Asset Management approach to all activities for its assets, which will support the delivery of strategic objectives. The aim is that the Asset Management System

will ensure consideration of the whole life of our assets when making decisions regarding investment, operation, maintenance and disposal/reuse of our assets. The commitment is to continue to develop risk and value-based decision-making capability including leveraging digital technologies to ensure the right investment decisions are made at the right time.

Develop a culture of innovation in the water services sector to enable a sustainable future. The plan commits to continue to develop foresight and horizon scanning capability. Adopting a foresight and horizon scanning process is essential to facilitate a flexible and adaptive planning approach and support making 'low regret' decisions. This would support not only short-term objectives but also delivery of longer term strategic objectives and essentially provides a more strategic and co-ordinated approach.

Quantify and articulate long-term investment needs for water and wastewater assets. Manage investment over several investment periods and continue to develop long-term investment planning capability including rolling water and wastewater plans for 10-15 years also supporting a 25-30 year forward investment view to underpin long-term water and wastewater strategies. The BAU + aims to secure a multi-annual funding approach. In order to build continued confidence in the project pipeline and in turn for the supply chain to build and maintain their capacity, Uisce Éireann seek certainty on funding availability on a multi-annual basis.

Alternative 3: WSSP 2050+ In addition to the proposals in Alternative 2, further actions include capturing all asset data using smart systems to provide real-time information combined with using more automated operations . Other alternative action ideas included:

- Expand innovation activities through external funding streams e.g. Enterprise Ireland, SFI, SEAI.
- Lead the way in water services research and innovation, being clear on the challenges and priorities and invite collaboration.
- Open access to reference sites and data to accelerate research and innovation in the water and related sectors.
- Develop efficient innovation pathways for funding, collaboration, procurement, and scaling of innovation and improve capacity to roll out innovation across the asset base.
- Investment planning to be longer term by developing detailed 25 year investment plans.

The assessment is summarised against the SEA objectives for the strategic aim in Table 7.16 below.

Table 7.16 Strategic Aim 12, 13, & 14 alternatives assessment

Strategic Aim 12: Managing our assets Strategic Aim 13: Gaining value from innovation Strategic Aim 14: Securing long-term funding															
	Action	SEA Objectives													
Alternatives	Action reference	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural Heritage – archaeological and architectural	Geology and soils	Air quality
Strategic Aim 12: Managing our assets															
Alternative 1: BAU	**4.5**	0	0	+	+	0	0	0	0	+/-	+/-	0	0	0	0
	4.6	++	+	++	++	+	+	+	+	++	++	+	+	+	+
Alternative 2: BAU+ WSSP 2050	**4.5**	++	+	++	++	++	++	+	+	++	++	+	+	+	+
	4.6	++	+	++	++	+	+	+	+	++	++	+	+	+	+
Alternative 3: WSSP 2050+	**4.5**	++	+	++	++	++	++	+	+	++	++	+	+	+	+
	4.6	++	+	++	++	+	+	+	+	++	++	+	+	+	+
Strategic Aim 13: Gaining value from innovation															
Alternative 1: BAU	**4.7**	+	0	0	0	0	0	0	0	+	+	0	0	0	0
	4.8	0	0	0	0	+	+	0	0	+	+	0	0	0	0
Alternative 2 – BAU+ WSSP 2050	**4.7**	+	0	+	+	+	+	+	+	+	+	0	0	0	0
	4.8	0	0	0	0	+	+	0	0	+	+	0	0	0	0
Alternative 3: WSSP 2050+	**4.7**	+	0	+	+	+	+	+	+	+	+	0	0	0	0
	4.8	0	0	0	0	+	+	0	0	+	+	0	0	0	0
Strategic Aim 14: Securing long-term funding															
Alternative 1: BAU	**4.9**	0	0	+	+	+/-	+	0	0	+/-	+	0	0	0	0
	4.10	0	0	0	0	+/-	+	0	0	+/-	+	0	0	0	0
Alternative 2: BAU+ WSSP 2050	**4.9**	0	0	++	++	+/-	+	0	0	++	++	0	0	0	0
	4.10	0	0	++	++	+/-	+	0	0	++	++	0	0	0	0
Alternative 3: WSSP 2050+	**4.9**	0	0	++	++	+/-	+	0	0	++	++	0	0	0	0
	4.10	0	0	++	++	+/-	+	0	0	++	++	0	0	0	0

Strategic Aim 12: Managing our assets Strategic Aim 13: Gaining value from innovation Strategic Aim 14: Securing long-term funding															
	Action	SEA Objectives													
Alternatives	Action reference	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural Heritage – archaeological and architectural	Geology and soils	Air quality
Alternative 0: Do Minimum (Rejected)	**4.5-4.10**														
Alternative 4: Do things differently (Rejected)	**4.5-4.10**														

Summary assessment for Strategic Aims 12,13 & 14

Alternative 1 BAU for Action 4.6 includes a process for considering environmental risk and balance decision through the investment planning cycle and is considered supportive for SEA objectives as it provides a basis to consider and address issues at each stage. Alternative 2 BAU+ develops from the current processes with improvements to asset management, whole life cycle approaches, development of better data and tools for decision making, and more continuous forward planning compared to the Alternative BAU 1 in relation to Actions 4.5, 4.7, 4.8, 4.9 and 4.10, with potential to support SEA objectives for climate change, resource use and asset use and for 4.7 and 4.8 also wider benefits for water, population, health, biodiversity and fisheries. Asset management efficiencies can also reduce carbon emission. For actions 4.9 and 4.10 effects on other SEA objective are considered uncertain depending on the balance of decisions across cost, resilience, resources and environmental objectives, Alternative 3 could provide additional support for better asset and resource use, however comprehensive data collection rather than targeted data collection could be less efficient and extending the long-term investment planning period is not considered feasible without the Alternative 2 proposals embedded first.

Alternative 2 BAU+ is taken forward to the WSSP 2050 for Actions 4. 5,4.7,4.8, 4.9 and 4.10 and Alternative 1 BAU is taken forward for Action 4.6.

Strategic Aims 12, 13 & 14: Mitigation and Enhancement

Mitigation measures to address uncertainty over how the asset management and investment planning include development of environmental valuation or quantification approaches such as natural capital and ecosystem services and carbon calculation tools along with the potential to use digital mapping based tools to support inclusion of wider environmental impacts and benefits in decision making. Ensure environmental objectives are linked into Asset management processes and use data from the water and wastewater plan

reviews and monitoring reporting to support identification of issues for research and innovation. Regular monitoring, review and updating of processes and procedures used in informing decision-making.

7.6 Selecting the WSSP 2050 actions

For Actions 3.3, 3.7, 4.3 and 4.6, Alternative 1, the BAU, has been incorporated into the WSSP 2050. This reflected areas were the current processes or plans had already been developed to meet and go beyond requirements with the aim to meet future pressures and challenges. For most actions Alternative 2 BAU+ was identified as the proposed approach for the WSSP 2050 where opportunity to enhance and address future challenges had been identified. In some cases, Alternative 2 BAU+ was also largely based on current process or plans such as for Action 1.4 implementation of the NWRP which is now part of the BAU but additional supporting elements had been identified for the BAU+.

For some actions, scope for going further to support plan and SEA objectives was identified in Alternatives 3 and 4 but were not included as part of the WSSP 2050 due either being outside current Uisce Éireann scope of activities, based on technology not yet available or feasible to apply or needing other priority actions to be undertaken as a first next step. This followed extensive iteration to develop the WSSP 2050 actions to provide a balance of ambition in achieving the Plan's strategic objectives and supporting SEA objectives while being pragmatic and deliverable within the scope of Uisce Éireann's responsibilities for water and wastewater services and access to resources.

The SEA assessment of the WSSP 2050 for each action is summarised in Table 7.17 to Table 7.20 including identification of lower tier plans and interventions and action specific mitigation recommendations.

Table 7.17 SEA assessment of the WSSP 2050 Strategic Objective 1 Actions

Strategic Objective 1: Safe and Reliable Drinking Water						
Strategic Aims (Priorities)	**Action**	**WSSP 2050** **Commentary and Potential impacts**	**Downstream plans and actions / interventions**	**Potential types of effect**	**SEA Objectives supported/conflicted** (SEA objective specific assessment other than Neutral)	**Mitigation at this plan level*** Reference to linked actions and to Environmental Mitigation Actions (See Table 9.1)
1: Ensuring safe drinking water: We will manage the safety and quality of drinking water from source to tap to protect human health.	**Action 1.1:** Undertake risk assessments across our supplies and implement appropriate measures to manage risk.	Proactive management of the safety and quality of drinking water, through comprehensive risk assessments across supplies from source to tap. This will involve developing and implementing Drinking Water Safety Plans (DWSPs), and implementation of the European Union (Drinking Water) Regulations 2023. These assessments will inform the catchment-based, organisational, operational, maintenance and capital interventions that will mitigate these risks The development and implementation of such plans can be expected to identify actions to reduce risk through investment in water treatment, operation for drinking water quality and some measures can improve raw water quality through including source protection restrictions, wider catchment measures and nature based solutions.	Drinking Water Safety Plans (DWSPs) Asset Management Plans WTP upgrades/ new	These plans will identify site specific actions and need for further assessment and mitigation Overall the commitment to Action 1.1 supports long term beneficial effects from improved drinking and raw water quality	**Water +** **Population and economy++** **Health and wellbeing ++** **Climate mitigation +/-** **Climate adaptation +** **Biodiversity +** **Fisheries +** **Resource use and waste +/-** **Asset use +/-**	Embed environmental baseline and quality objectives in the assessment of risk to sources and assets. Develop guidance and processes for identifying solutions to risk, including considering relevant stakeholder engagement, wider catchment management measures and nature-based solutions where appropriate. Mitigation on carbon and resource use through **Actions 4.1 and 4.4** **Actions 1.3 & 3.8** are also supportive for biodiversity and fisheries **EAP 2**
	Action 1.2: Conform with the Drinking Water Directive and other legislative requirements relating to drinking water quality.	The action provides for the development of monitoring programmes to extend beyond compliance aspects. The programme will be tailored to the outcomes of hazard identification and risk assessments within the supply system undertaken as part of the DWSPs. Their purpose will both support the identification of risks and validate the effectiveness of control measures at every stage — from source to consumer tap. The action will also allow the development of procedures to investigate and evaluate contaminants of emerging concern.	Drinking Water Safety Plans (DWSPs) Monitoring programmes WTP upgrades/ new	These plans will identify site specific actions and need for further assessment and mitigation Overall the commitment to Action 1.2 supports long term beneficial effects from improved drinking and raw water quality	**Water +** **Population and economy ++** **Health and wellbeing ++** **Climate mitigation +/-** **Climate adaptation +** **Biodiversity +** **Fisheries +** **Resource use and waste +/-** **Asset use +/-**	As above adding considering sources of future contamination and upstream actions needed. Mitigation on carbon and resource use through **Actions 4.1 and 4.4** **EAP 2**
	Action 1.3: Coordinate catchment management measures and	Through the DWSP approach Uisce Éireann will assess catchment risks to raw water quality, so that Uisce Éireann can identify and prioritise measures to protect the source and ensure that investments do not only	Source protection communication campaign	These plans will identify site specific actions and need for further assessment and mitigation	**Water ++** **Population and economy++** **Health and wellbeing ++**	As above **EAP 2**

Strategic Objective 1: Safe and Reliable Drinking Water						
Strategic Aims (Priorities)	**Action**	**WSSP 2050** **Commentary and Potential impacts**	**Downstream plans and actions / interventions**	**Potential types of effect**	**SEA Objectives supported/conflicted** (SEA objective specific assessment other than Neutral)	**Mitigation at this plan level*** Reference to linked actions and to Environmental Mitigation Actions (See Table 9.1)
	champion nature-based solutions for improving source water quality.	focus on treatment facilities. Uisce Éireann will integrate catchment management and nature-based solutions into our infrastructure planning. Catchment management also provides multiple benefits for biodiversity and climate change.	Pioneering projects /Trialling NBS/Pilot study on catchment management including NBS	Long term beneficial effects from improved and safeguarded drinking and raw water quality	**Climate mitigation +** **Climate adaptation +** **Biodiversity +** **Fisheries +** **Resource use and waste +** **Asset use +** **Landscape +** **Geology and soils +**	
2: Delivering Reliable water supplies: We will improve our assets and sources to ensure our supplies are robust enough to meet our customers' needs at the target level of service	**Action 1.4:** Implement and continue to review our National Water Resources Plan, delivering improvements in water supply infrastructure to ensure resilient supplies into the future.	The NWRP was completed in December 2023 and is a long-term plan designed to secure a safe, sustainable and reliable drinking water supply for customers across Ireland over the next 25 years. The NWRP was subject to SEA and AA with mitigation actions and monitoring plan, The NIS concluded no AESI with mitigation in place. Review (and continued implementation) of the NWRP will be required to take into account the conclusions and recommendations of the SEA & NIS and updates to these assessments as needed.	Implementation of NWRP updates to data and assessments as part of this linking to DWSP/AMPs Future NWRP reviews and updates NWRP identifies infrastructure requirements	See NWRP/SEA 2020- 2023 Future development of NWRP expected to be based on improved data, new regulatory requirements and embedded procedures for environmental assessment and monitoring	**Water ++** **Population and economy ++** **Health and wellbeing ++** **Climate mitigation +/-** **Climate adaptation ++** **Biodiversity ++** **Fisheries ++** **Resource use and waste +** **Asset use ++** **Landscape +/-** **Cultural heritage +/-** **Geology and soils +/-**	None required Mitigation measures already identified in NWRP and with commitment to implement the Monitoring Plan M mitigation on carbon and resource and soil use through **Actions 4.1 and 4.4** Mitigation for Biodiversity landscape and cultural heritage also through **Actions 1.1, 1.3, 3.7 and 3.8** **EAP 3 and 4**
	Action 1.5: Develop contingency plans to improve reliability of our water supplies.	The action requires the development of contingency plans, to enhance the reliability of water supplies, particularly in light of vulnerabilities to extreme weather events. As part of the NWRP the supplies at risk during dry weather events was identified and UÉ is currently in the process of developing drought plans for these supplies with a target completion date of 2030. Other contingency plans are/will be developed to address various scenarios, and are committed to a	Contingency Plans	These plans will identify site specific actions and need for further assessment and mitigation Long term beneficial effects from improved and safeguarded drinking and raw water quality	**Water +/-** **Flood risk +** **Population and economy ++** **Health and wellbeing ++** **Climate mitigation +/-** **Climate adaptation ++**	Develop procedures to ensure drought and contingency planning and operation resilience measures take account of environmental constraints and objectives For Water and Biodiversity **Actions 1.3, 3.7 and 3.8** can support supply resilience

Strategic Objective 1: Safe and Reliable Drinking Water						
Strategic Aims (Priorities)	**Action**	**WSSP 2050** **Commentary and Potential impacts**	**Downstream plans and actions / interventions**	**Potential types of effect**	**SEA Objectives supported/conflicted** (SEA objective specific assessment other than Neutral)	**Mitigation at this plan level*** Reference to linked actions and to Environmental Mitigation Actions (See Table 9.1)
		review of flood/extreme weather risk to existing infrastructure/operations.			**Biodiversity +/-** **Fisheries +/-** **Resource use and waste +** **Asset use +**	along with **Action 1.4** providing a more resilient network and using water supply sources sustainably.
	Action 1.6: Improve operational resilience through preventative measures and developing and implementing improved incident response processes.	The action plans to avoid disruption to water supplies through a combination of asset design and operational plans and by implementing enhanced incident response processes. This will include design stages as well as developing operational plans, real-time data and monitoring capabilities, and cyber security improvements.	Asset design and operational plans	These plans will identify site specific actions and need for further assessment and mitigation Long term beneficial effects from improved and safeguarded drinking and raw water quality	**Water ++** **Flood risk +** **Population and economy ++** **Health and wellbeing ++** **Climate mitigation +/-** **Climate adaptation ++** **Biodiversity ++** **Fisheries +** **Resource use and waste +** **Asset Use +**	Take account of environmental constraints and objectives in asset design and operational plans and incident response – and link to catchment level and source protection measures. Mitigation on carbon and resource use through **Actions 4.1 and 4.4** **EAP 3**
3: Conserving our precious resources: We will take pressure off our resources through leakage reduction and helping our customers to conserve water.	**Action 1.7:** Use less water through promoting water conservation to help customers reduce their use.	UÉ is developing a Water Conservation Strategy Management Strategy that incorporates our existing water conservation activities and additional demand management initiatives and provides a framework to address water demand. The strategy will seek to better understand demand profile and will include better metering systems.	Water Conservation Management Strategy	This plan will identify specific actions and need for further assessment and mitigation Long term beneficial effects from Action 1.7 reducing increases in demand for drinking water and reducing pressure on water sources	**Water ++** **Climate mitigation ++** **Climate adaptation ++** **Resource use and waste +** **Asset use +**	None required NWRP includes measures to support achieving environmental benefits from the implementation of water conservation. WSSP 2050 Strategic Objective 2 is also supportive to achieving beneficial effects from Action 1.7 **EAP 5**
	Action 1.8: Use less water through developing and implementing an enhanced Water Stewardship Programme.	The action aims to further develop the existing Water Stewardship Programme (which includes identifying on-site water waste or upgrading to water efficient devices) to offer further metrics and work with new cohorts of customers. UÉ will also explore technologies for rainwater harvesting and greywater recycling.	Water Stewardship programme expansion	These plans will identify site specific actions and need for further assessment and mitigation. Long term beneficial effects from reducing increases in demand for drinking water	**Water ++** **Population and economy +** **Health and wellbeing +** **Climate mitigation ++** **Climate adaptation ++**	None required NWRP includes measures to support achieving environmental benefits from the implementation of water conservation.

Strategic Objective 1: Safe and Reliable Drinking Water						
Strategic Aims (Priorities)	**Action**	**WSSP 2050** **Commentary and Potential impacts**	**Downstream plans and actions / interventions**	**Potential types of effect**	**SEA Objectives supported/conflicted** (SEA objective specific assessment other than Neutral)	**Mitigation at this plan level*** Reference to linked actions and to Environmental Mitigation Actions (See Table 9.1)
				and reducing pressure on water sources	**Resource use and waste +** **Asset use +**	WSSP 2050 Strategic Objective 2 is also supportive to achieving beneficial effects from Action 1.8
	Action 1.9: Lose less water through delivering leakage reduction.	Since 2018, UÉ have been working with local authority partners to address the high leakage rate of almost 50% of Ireland's drinking water supplies. UÉ's aim is to further reduce leakage to sustainable levels, reaching a national target of 25% by 2050. The action intends to build on the existing programme of works/management and develop them further through innovation and new technologies.	NWRP- lose less pillar National Leakage Reduction Programme	These plans will identify site specific actions and need for further assessment and mitigation Long term beneficial effects from reducing increases in demand for drinking water and reducing pressure on water sources	**Water ++** **Climate mitigation ++** **Climate adaptation ++** **Resource use and waste +** **Asset use +**	None required NWRP includes measures to avoid significant adverse effects and achieve environmental benefits from implementation of leakage reduction. WSSP 2050 Strategic Objective 2 is also supportive to achieving beneficial effects from Action 1.9.

*Implementation of all lower-level plans and projects will need to comply with relevant regulatory and planning and licencing requirements)

Table 7.18 SEA assessment of the WSSP 2050 Strategic Objective 2 Actions

Strategic Objective 2: Support our Customers, Communities and the Economy						
Strategic Aims	**Action**	**Commentary and potential impacts**	**Downstream Plans and actions/ interventions**	**Potential types of effect**	**SEA objectives supported/conflicted**	**Mitigation**
4: Delivering for customers: We will put our customers at the heart of what we do and deliver on their needs.	**Action 2.1:** Understand customer needs and expectations.	UÉ intends to engage with cohorts of our customer base across the range of demographic and geographic groups for domestic customers and non-domestic customers to understand their preferences and expectations. UÉ will work with stakeholders to enhance opportunities to engage with customer representative groups. UÉ will embed the insight UÉ gain through this approach into business planning and decision-making processes. UÉ will also embed a customer centred approach ensuing that they understand customer expectations.	Targeted engagement Research Programmes on customer expectations and water conservation	No direct effects on the environment but the improved understanding can support other actions and some SEA objectives	**Water +** **Population and economy +** **Health and wellbeing +** **Asset Use +**	None required
	Action 2.2: Enhance customer communications to address our customer expectations and provide real-time information to customers on usage, incidents, and water quality.	UÉ intend to enhance customer communications to address customer expectations and provide relevant, accurate and timely information on water services, including planned works, incidents and water quality. UÉ will listen to customer feedback and insights and aim to deliver a seamless and integrated multi-channel service.	Information to customers on planned works, incidents or water quality concerns Integrated interactive system for customer engagement	No direct effects on the environment but the improved understanding and communication can support other actions and some SEA objectives	**Water +** **Population and economy +** **Health and wellbeing +** **Asset Use +**	None required.
	Action 2.3: Support our customers to play their part in protecting water as a precious resource and enabling better water services.	The Action aims to raise public awareness of the value of water resources and the benefits they deliver for the environment, communities and the economy. The Action will provide customers with real time information and self-serve options including the technology to do this. This action focuses on wastewater aspects and aims (see action 1.7 covers communication on water conservation) to embed a broader understanding of the wastewater process with our customers and communities, including the need for new and sustainable solutions to wastewater management.	Integrated interactive system for customer engagement and information on wastewater management	No direct effects on the environment but the improved understanding and communication and specifically supports other actions and SEA objectives	**Water ++** **Population and economy ++** **Health and wellbeing ++** **Asset Use ++**	None required. Linked to Action 1.7 and 2.4
5: Engaging with communities: We will engage with communities at a local level to realise the value from our shared water resources.	**Action 2.4:** Develop a community education and engagement programme to raise awareness on the value of water and the water services we provide.	UÉ are committed to building upon their community engagement and education activities and programmes, including supporting the education and engagement of primary and secondary school students in water conservation and efficiency. UÉ intend to build on these engagement programmes on projects at assessment, preplanning, planning, build and completion stages.	Education activities and programmes expanded to wider groups	No direct effects on the environment but the improved understanding and communication and specifically supports other actions and SEA objectives	**Water ++** **Population and economy ++** **Health and wellbeing ++** **Climate adaptation +** **Biodiversity +** **Asset use +**	None required. Linked to Action 1.7 and 2.3
	Action 2.5: Continue to develop amenity value in our assets with local	The Action aims to seek opportunities to explore how UÉ can develop amenity value in suitable UÉ assets where this can be done safely and without compromising their core function of delivering quality water and wastewater services.	Amenity access and provision at suitable Uisce Éireann -	Generally supportive of recreational access and wellbeing but potential for mixed positive or	**Population and economy+** **Health and wellbeing +**	As part of assessment of suitability for amenity use consider environmental and

Strategic Objective 2: Support our Customers, Communities and the Economy						
Strategic Aims	**Action**	**Commentary and potential impacts**	**Downstream Plans and actions/ interventions**	**Potential types of effect**	**SEA objectives supported/conflicted**	**Mitigation**
	communities, where safe and appropriate.		suitability and safety assessments	negative effects on environment but depending on specific characteristics and sensitivity of sites.	**Biodiversity +/-** **Asset Use +** **Landscape +/-** **Cultural heritage +/-**	social impacts including European sites, biodiversity, transboundary effects, cultural heritage and landscape impacts. **EAP 5**
6: Providing for growth: We will manage the availability of capacity to support social and economic growth in line with national policy.	**Action 2.6:** Engage and collaborate with key stakeholders to support national, regional and local planning policy.	UÉ will invest in infrastructure that facilitates well-planned social and economic growth that is based on principles of environmental sustainability and enhanced liveability. Action 2.6 involves designing infrastructure with foresight, and actively engaging with national, regional and local planning authorities, recognising the importance of aligning UÉ investments with Planning Policy. UÉ will support the National Planning Framework (NPF) and its subsidiary plans. UÉ will advocate for prioritising growth areas that have available infrastructure and environmental capacities. By seeking to influence planning policies, . UÉ aim to ensure that planned growth areas are strategically located, considering the capacity of water services to meet demands, emphasizing the need for sustainable water abstractions and reducing the impact of discharges on the environment. Relevant UÉ plans covered in other actions and will be subject to further downstream assessment. Potential for growth support to requited to add pressure on sources and receiving waters.	Informing NPF and regional and local planning Alignment of UÉ strategic plans with NPF and subsidiary plans Key plans - NRWP implementation and review, and proposed new Wastewater Strategy and integrated drainage plans	Focus on plan alignment and collaboration with planning policy but emphasis is on supporting growth. Future Implementation plans will include environmental assessments and identify potential site specific effects	**Water +/-** **Population and Economy +** **Health and wellbeing +** **Climate adaptation +/-** **Biodiversity +/-** **Fisheries +/-** **Resource use and waste +** **Asset Use +**	Consider strengthening collaboration and analysis to encourage balanced growth avoiding either unsustainable water and wastewater provision or additional cost and infrastructure requirements to address this. **Actions 1.3, 3.7 and 3.8** can support meeting objectives for water and biodiversity and **Actions 1. 4 and 3.1 and 3.2** will also support sustainable provision of water and wastewater services **EAP 6**
	Action 2.7: Engage with housing and industry stakeholders to support delivery of new homes and economic growth.	UÉ will engage with housing and industry stakeholders to support efficient growth. They will establish a collaborative partnership with industry stakeholders, to identify capacity requirements for development of sustainable and inclusive communities and will continue to support new development connections. Engagement and collaboration allow UÉ to promote innovative construction methods and technologies which supports the use of sustainable solutions within the water industry.	Including supporting planned development requirements and taking account of these in strategic planning for NWRP and Wastewater Framework and associated plans.	Focus on plan alignment and collaboration with planning policy but emphasis is on supporting growth. Future Implementation plans will include environmental assessments and identify potential site-specific effects,	**Water +/-** **Population and Economy +** **Health and wellbeing +** **Climate adaptation +/-** **Biodiversity +/-** **Fisheries +/-** **Resource use and waste +** **Asset Use +**	As for 2.6 above **EAP 6**

Strategic Objective 2: Support our Customers, Communities and the Economy						
Strategic Aims	**Action**	**Commentary and potential impacts**	**Downstream Plans and actions/ interventions**	**Potential types of effect**	**SEA objectives supported/conflicted**	**Mitigation**
	Action 2.8: Develop and embed demand analysis capability to inform, forecast and plan for future investment requirements.	UÉ will undertake a pilot demand analysis study initially and thereafter embed capability, to ensure adequate monitoring and ability to act upon changes in demand. This will inform demand management measures and allow for future forecasting. Robust data will underpin demand analysis and forecasts and help inform investment plans.	Pilot demand analysis study and future capability improvement and better informed strategic planning responding to water use and demand	No direct effects on the environment but the improved understanding and data can support other actions and SEA objectives	**Water +** **Population and economy +** **Health and wellbeing +** **Climate adaptation +** **Biodiversity +** **Fisheries +** **Resource use and waste +** **Asset use +**	None required.

Table 7.19 SEA assessment of the WSSP 2050 Strategic Objective 3 Actions

Strategic Objective 3 Protect and Restore our Environment						
Strategic Aims (Priorities)	**Action**	**Commentary**	**Downstream Plans and actions/ interventions**	**Potential types of effect**	**SEA objectives supported/conflicted**	**Mitigation**
7: Protecting our water environment: We will play our part in protecting and restoring our water environment.	**Action 3.1:** Work with regulators and stakeholders to develop a Wastewater Strategy Framework.	UÉ is developing a National Wastewater Strategy Framework, to manage the collection, treatment and return of treated wastewater to the environment. The framework will provide an understanding of strategic needs and drivers, including environmental priorities. The framework will also help indicate investment needs	National Wastewater Strategy Framework and implementing plans	The Wastewater Framework and subordinate plans will all be subject to SEA and AA. However, the general approach proposed is largely supportive to SEA Objectives compared to the current situation, although there are also likely to be a mix of positive and negative effects	**Water +/-** **Flood risk +** **Population and economy +** **Health and wellbeing +** **Climate mitigation +/-** **Climate adaptation +** **Biodiversity +** **Fisheries +** **Resource use and waste +** **Asset use +** **Landscape +/-** **Cultural heritage +/-** **Air quality +**	SEA and AA for the Wastewater framework will identify mitigation measures. The WSSP 2050 and SEA and AA will be taken into account through the development of these plans Mitigation on carbon and resource use through **Actions 4.1 and 4.4** **Actions 1.3, 3.7 and 3.8** can support meeting objectives for water and biodiversity, landscape and cultural heritage. **EAP 1 and 3**
	Action 3.2: Develop and implement Integrated Urban Wastewater Management Plans.	UÉ in collaboration with local authorities will develop and introduce Integrated Urban Wastewater Management Plans, with shared aims of reducing the pollution load from storm water overflows and urban run-off, developing capacity for growth, and improving climate resilience. UÉ will develop new approaches including modelling, nature based sustainable urban drainage and smart network control.	Integrated Urban Wastewater Management Plans	Integrated Urban Wastewater Management Plans will be subject to SEA and AA However the general approach proposed is largely supportive to SEA Objectives compared to the current situation, although there are also likely to be a mix of positive and negative effects	**Water +/-** **Flood risk +/-** **Population and economy +** **Health and wellbeing +** **Climate mitigation +/-** **Climate adaptation +** **Biodiversity +** **Fisheries +** **Resource use and waste +** **Asset use +** **Landscape +/-** **Cultural heritage +/-** **Air quality +**	SEA and AA for the Integrated Urban Wastewater Management Plans will identify mitigation measures. The WSSP 2050 and SEA and AA will be taken into account through the development of these plans Mitigation on carbon and resource use through **Actions 4.1 and 4.4** **Actions 1.3, 3.7 and 3.8** can support meeting objectives for water and biodiversity, landscape and cultural heritage. **EAP 1 and 3**
	Action 3.3: Manage our water service assets and operations to reduce the risk of impacts to water bodies.	UÉ will work across their drinking water provision and wastewater service to identify and implement sustainable practices. This includes applying for abstraction licences under the new Abstraction	NWRP - review WTP Residuals Strategy - review	Abstraction licensing will comply with the new requirements and implementation and review	**Water +** **Flood risk +**	The NWRP have already been subject to SEA and AA which included mitigation, y monitoring

Strategic Objective 3 Protect and Restore our Environment						
Strategic Aims (Priorities)	**Action**	**Commentary**	**Downstream Plans and actions/ interventions**	**Potential types of effect**	**SEA objectives supported/conflicted**	**Mitigation**
		legislation. The Act sets out a system of controls to protect the environment and to ensure full compliance with Ireland's responsibilities under the Water Framework Directive. Work also includes data collection and risk assessments to inform interventions where needed. The action covers operational management and maintenance including chemicals management and residuals discharge incident risk assessment and response planning. and review process.	Abstraction Licences Risk assessments Contingency Plans Incident response plans and reviews	of NWRP and WTP will take these requirements into account. Specific environmental assessments will be undertaken as part of these. In general terms the approach is expected to be supportive to SEA Objectives There are potential risks of water pollution from discharges and spill and incidents can have significant effects on sensitive environments such as high status/Blue Dot water bodies, European Sites, aquatic ecology and recreational river users – the plan proposal provide basis for reducing risks systematically.	**Population and economy +** **Health and wellbeing +** **Climate mitigation +/-** **Climate adaptation +** **Biodiversity +** **Fisheries +** **Resource use and waste +** **Asset use +** **Landscape +/-** **Cultural heritage +/-**	and review recommendations which are in the process of being implemented. The WTP residuals strategy will be revised and including as part of the next iteration of the NWRP. Develop a basis for prioritising operational risk assessments and actions in relation to the sensitivity of the environment including for example: European Sites, high status/Blue Dot water bodies, bathing waters, shellfish waters.. Mitigation on carbon and resource use through **Actions 4.1 and 4.4** **EAP 1 and 3**
8: Playing our part under the Water Framework Directive: We will work with others to progressively deliver on the WFD objectives.	**Action 3.4:** Protect and restore water bodies through collaboration.	UÉ will work with stakeholders, including data sharing and the development of shared catchment models, to establish the most cost-effective combination of measures to protect and restore water bodies to at least good status where technically and economically feasible.	Open sharing of data Development of shared catchment models	No direct effects from these actions but overall expected to support RBMP and WFD and SEA objectives through improved information and targeted action	**Water ++** **Flood risk +** **Health and wellbeing ++** **Climate mitigation +** **Climate adaptation ++** **Biodiversity ++** **Fisheries ++** **Resource use and waste +** **Asset use +** **Landscape +** **Cultural heritage +** **Geology and soils +**	Mitigation on carbon and resource use through **Actions 4.1 and 4.4** **EAP 4**
	Action 3.5: Manage wastewater services to achieve regulatory requirements.	UÉ will manage water and wastewater assets to achieve regulatory requirements including compliance with the Urban Waste Water Treatment Directive (UWWTD) and Waste Water Discharge Authorisations. UÉ will also collaborate with stakeholders to develop	Management of water and wastewater assets	No direct effects on specific sites are identifiable at this plan level however, general approach outlined is	**Water ++** **Flood Risk +** **Health and wellbeing ++**	Mitigation on flood risk through integrated drainage plans and collaboration - **Actions 3.1 & 3.2**

Strategic Objective 3 Protect and Restore our Environment						
Strategic Aims (Priorities)	**Action**	**Commentary**	**Downstream Plans and actions/ interventions**	**Potential types of effect**	**SEA objectives supported/conflicted**	**Mitigation**
		and implement a monitoring programme to understand the water quality risks to bathing waters and shellfish habitats. UÉ will implement actions to prioritise works and accelerate compliance with UWWTD requirements. UÉ will implement our actions under the River Basin Management Plan to prioritise works and address all the significant urban wastewater pressures identified in the Plan and also assess and manage abstraction sites in order to remove barriers to the natural habitat and restore habitat connectivity. We will implement remote asset management and predictive systems using real-time monitoring to help manage operations and ensure a proactive maintenance programme that will reduce the occurrence of overflows from our networks and improve environmental outcomes.	Monitoring programme for shellfish and bathing waters RBMP actions to address UÉ related issues Predictive maintenance programme and monitoring of overflows	expected to be supportive to SEA Objectives	**Climate mitigation +/-** **Climate adaptation +** **Biodiversity ++** **Fisheries ++** **Resource use and waste +** **Asset Use +** **Air Quality +**	**EAP 3** Mitigation on carbon and resource use through **Actions 4.1 and 4.4** **EAP 8**
	Action 3.6: Manage drinking water services to achieve regulatory requirements.	UÉ will be required to apply to the EPA for licences above certain thresholds for both new and existing abstractions. UÉ will also have to manage abstractions so they are sustainable and meet the requirements of licence conditions including in-stream flow requirements necessary to support healthy ecosystems. This Action is linked to Action 3.3. UÉ are also developing a Fish Pass Programme in consultation with Inland Fisheries Ireland to improve local hydromorphological conditions.	Assessment and management of abstraction sites to remove barriers	No direct effects on specific sites are identifiable at this plan level however, general approach outlined is expected to be supportive to SEA Objectives	**Water ++** **Population and economy +** **Health and wellbeing +** **Climate mitigation +/-** **Climate adaptation ++** **Biodiversity ++** **Fisheries ++** **Resource use and waste +** **Asset use +**	Mitigation on carbon and resource use through **Actions 4.1 and 4.4** **EAP 8** **Link to Catchment Management Action 3.6**. **EAP 7**
9: Contributing to positive biodiversity: We will manage our assets to have biodiversity net gain.	**Action 3.7:** Manage our assets to have biodiversity ‘net gain’.	UÉ developed its own Biodiversity Action Plan (BAP) to detail specific objectives and actions for UÉ to undertake. They are working to ensure biodiversity net gain is achieved across infrastructure projects and will collaborate with stakeholders to deliver projects and activities that promote biodiversity enhancements. The BAP states that, UÉ is obligated to ensure that abstractions and/or discharges do not impact on SACs/SPAs and their nature conservation interests.	UÉ Biodiversity Action Plan and expected 2025 update	Enhancement measures support SEA Objectives for biodiversity but also connected objectives	**Water ++** **Flood risk +** **Population and economy +** **Health and wellbeing +** **Climate mitigation +** **Climate adaptation ++** **Biodiversity ++** **Fisheries ++** **Resource use and waste +** **Asset use +**	None required, A cross-cutting action and linked to 3.8 **EAP 7**

Strategic Objective 3 Protect and Restore our Environment						
Strategic Aims (Priorities)	**Action**	**Commentary**	**Downstream Plans and actions/ interventions**	**Potential types of effect**	**SEA objectives supported/conflicted**	**Mitigation**
					Landscape + **Cultural Heritage +** **Geology and Soils +** **Air quality +**	
	Action 3.8: Champion nature-based solutions and catchment measures in the delivery of water and wastewater projects.	UÉ will encourage and promote the identification of opportunities for the incorporation of integrated constructed wetlands, sludge drying reed beds, and other nature-based solutions into wastewater treatment sites. They will collaborate with external stakeholders, landowners and community groups on wider catchment management-based initiatives that result in source water protection.	Nature Based Solutions for water and wastewater services where appropriate Catchment management initiatives with other stakeholders Also considered within these plans: DWSPs National Wastewater Strategy and integrated drainage plans WTP and sludge management plans	Enhancement measures support SEA Objectives aimed at achieving drinking water and raw water quality but also providing wider environmental and ecosystem service benefits	**Water ++** **Flood risk ++** **Population and economy +** **Health and wellbeing +** **Climate mitigation +** **Climate adaptation ++** **Biodiversity ++** **Fisheries ++** **Resource use and waste +** **Asset use +** **Landscape ++** **Cultural Heritage ++** **Geology and Soils ++** **Air quality +**	Develop guidance and processes to consider relevant stakeholder engagement, wider catchment management measures and nature-based solutions where appropriate.. Cross cutting linked to other actions **EAP 7**

Table 7.20 SEA assessment of the WSSP 2050 Strategic Objective 4 Actions

Strategic Objective 4 Sustainable Services Fit for the Future						
Strategic Aims (Priorities)	**Action**	**Commentary and Potential impacts**	**Downstream plans and actions/ interventions**	**Potential types of effect**	**SEA Objectives supported/conflicted** (SEA objective specific assessment)	**Mitigation at this plan level***
10: Achieving net zero carbon: We will progressively work towards achieving net zero carbon services.	**Action 4.1:** Develop and implement a Net Zero Road Map.	Develop and implement a Net Zero Roadmap . The roadmap will set out a strategic plan for eliminating or offsetting greenhouse gas emissions across UÉ's operations. This will include initiatives such as energy efficiency, renewable energy generation, greenhouse gas reductions including process emissions management, nature-based solutions and supply chain collaboration.	Net Zero Road Map and linked plans and initiatives	Supportive to primarily to meeting SEA objective climate change mitigation but also related activities such as water conservation and demand management, preventative approaches provide wider benefits also	**Water +** **Climate mitigation ++** **Climate adaptation +** **Biodiversity +** **Resource use and waste ++** **Asset Use +** **Air quality +**	Cross cutting action recognised but ensure this is also linked across all investment plans, programmes and projects **EAP 8**
	Action 4.2: Work with our supply chain to embed sustainability in the delivery of water and wastewater infrastructure.	UÉ is committed to collaborating with their supply chain to help meet their Net Zero targets. They will encourage innovation within the supply chain and continue to build collaborative partnerships and are committed to clear and transparent communication with their suppliers. UÉ will work with our suppliers to support them through guidance on sustainable practices.	Supply chain Charter	No direct effects but the supply chain initiatives are aimed to support meeting sustainability objectives also reflected by the SEA objectives	**Water +** **Climate mitigation ++** **Climate adaptation +** **Biodiversity +** **Resource use and waste ++** **Asset Use +** **Air quality +**	None required.
11: Adopting circular approaches: We manage our assets to maximise resource recovery and resource efficiency and minimise waste.	**Action 4.3:** Review and implement the National Wastewater Sludge Management Plan.	UÉ will review and implement the NWSMP. UÉ will explore new and innovative ways to use the materials recovered from treatment processes (bioresources) and consider advanced technologies and processes to extract more value from sludge including potential for new energy sources. The NWSMP underwent SEA and AA in 2016. Mitigation measures were proposed for actions proposed in the NWSMP	National Wastewater Sludge Management Plan – Review and update Sludge Hub Centres	NWSMP review and update will be subject to SEA & AA identifying investment and location specific impacts. In general, the commitment to review and update is supportive of relevant SEA Objectives	**Water +/-** **Climate mitigation +** **Climate adaptation +** **Biodiversity +/-** **Fisheries +/-** **Air Quality +/-** **Resource use and waste ++** **Asset Use ++** **Geology and Soils ++**	Link actions including catchment management initiatives to existing guidance on land spreading and measures to support awareness and application of this guidance **Action 3.8** can support meeting objectives for water and biodiversity and fisheries, Linked to Action 4.4
	Action 4.4: Maximise circular economy benefits.	UÉ's ambition is to embed a circular economy philosophy. This includes the development and implementation of a new Circular	Circular Economy Design Standard	In general, the commitment to review	**Water +/-** **Climate mitigation ++**	None required.

Strategic Objective 4 Sustainable Services Fit for the Future						
Strategic Aims (Priorities)	**Action**	**Commentary and Potential impacts**	**Downstream plans and actions/ interventions**	**Potential types of effect**	**SEA Objectives supported/conflicted** (SEA objective specific assessment)	**Mitigation at this plan level***
		Economy Design Standard which will cover the entire life-cycle of managing water and wastewater assets.		and update is supportive of relevant SEA Objectives	**Biodiversity +/-** **Fisheries +/-** **Resource use and waste ++** **Asset Use ++** **Geology and Soils +**	
12: Managing our assets: We will manage the risk and resilience of our services through best practice asset management.	**Action 4.5:** Manage activities on our assets in a coordinated manner across their full lifecycle…	UÉ will apply an ISO55000 Asset Management approach to all activities on their assets. This includes the development of the culture, organisational structure, policies, strategies, plans, processes the information systems required to manage assets effectively. The Action includes the collection of data on all assets.	Asset Management system and processes	No direct effects But considered generally supportive to meeting other actions and commitments and through these is supportive of SEA objectives	**Water ++** **Flood risk +** **Population and economy ++** **Health and wellbeing ++** **Climate mitigation ++** **Climate adaptation ++** **Biodiversity +** **Fisheries +** **Resource use and waste ++** **Asset use ++** **Landscape +** **Cultural heritage +** **Geology and soils +** **Air quality +**	None required but ensure environmental objectives are linked into Asset Management processes/procedures
	Action 4.6: Ensure risk and value-based decision making across the lifecycle of assets.	UÉ use risk and value-based whole life-cycle decision-making systems for their investment planning processes and commit to enhancing their investment planning process and to develop risk and value-based decision making capability including using digital technology.	Investment decision - making process and tools	No direct effects Could be supportive for SEA objectives but depends how cost and resource aspects are balanced against environmental and social risk/ impacts	**Water ++** **Flood risk +** **Population and economy ++** **Health and wellbeing ++** **Climate mitigation +** **Climate adaptation +**	Include development of environmental valuation/quantification approaches to support existing qualitative assessments, such as natural capital and ecosystems services and carbon calculation tools and use of

Strategic Objective 4 Sustainable Services Fit for the Future						
Strategic Aims (Priorities)	**Action**	**Commentary and Potential impacts**	**Downstream plans and actions/ interventions**	**Potential types of effect**	**SEA Objectives supported/conflicted** (SEA objective specific assessment)	**Mitigation at this plan level***
					Biodiversity + **Fisheries +** **Resource use and waste ++** **Asset use ++** **Landscape +** **Cultural heritage +** **Geology and soils +** **Air quality +**	automated and map based digital tools **EAP 9**
13: Gaining value from innovation: We will drive research and innovation to deliver value and meet future challenges.	**Action 4.7:** Develop a culture of innovation in the water services sector to enable a sustainable future.	The Action aims to ensure that UÉ remain committed to driving research and innovation activities to enable a sustainable future. Their innovation strategy addresses knowledge gaps and aims to leverage new digital technologies, and harness innovation to help manage our assets to increase efficiency, resilience, customer value, and deliver wider environmental outcomes. The Action is linked to Action 4.10. .	Innovation initiatives	No direct effects Likely to be generally supportive for SEA objectives	**Water +** **Population and economy +** **Health and wellbeing +** **Climate mitigation +** **Climate adaptation +** **Biodiversity +** **Fisheries +** **Resource use and waste +** **Asset use +**	Link to plan reviews and monitoring reporting to identify area for focus and data gaps Link to Adaptive Planning **EAP 11** Transboundary collaboration **EAP 10**
	Action 4.8: Continue to develop foresight and horizon scanning capability.	UÉ will adopt a foresight and horizon scanning process to facilitate forward planning. It will build on their Vision 2050 work, improving their long-term vision.	Foresight and Horizon scanning process	No direct effects Likely to be generally supportive for SEA objectives by picking up potential challenges early	**Climate mitigation +** **Climate adaptation +** **Resource use and waste +** **Asset use +**	None identified
14: Securing long-term funding: We will work with our stakeholders to secure long-term funding for efficient	**Action 4.9:** Quantify and articulate long-term investment needs for our water and wastewater assets.	UÉ need to continue to undertake sustained capital investment. UÉ will also need to manage this investment and continue the long-term investment planning. there is a need for UÉ to manage large capital projects portfolio over multiple investment periods. In order to support this, we are developing our long-term investment planning capability which will include rolling water and wastewater plans over a 10-15 year horizon. This will also support a 25-30 year	Capital investment plans and programmes	Limitations to multiyear investment and lifecycle asset management can be a barrier to meeting plan and SEA objectives	**Population and economy ++** **Health and wellbeing ++** **Climate mitigation +/-** **Climate adaptation +**	Mitigation on carbon and resource use through **Actions 4.1 and 4.4** **EAP 8**

Strategic Objective 4 Sustainable Services Fit for the Future						
Strategic Aims (Priorities)	**Action**	**Commentary and Potential impacts**	**Downstream plans and actions/ interventions**	**Potential types of effect**	**SEA Objectives supported/conflicted** (SEA objective specific assessment)	**Mitigation at this plan level***
and resilient services.		forward investment view which will underpin our long-term water and wastewater strategies. In addition to this, funding is needed to adequately account for whole-lifecycle asset management costs.			**Resource use and waste ++** **Asset use ++**	
	Action 4.10: Secure multi-annual funding approach.	As regulated utility, UÉ's funding model presents challenges in the context of their capital investment program. Therefore, UÉ will be working to investigate more certainty on funding availability on a multi-annual basis. UÉ seek to build continued confidence in our project pipeline and in turn for our supply chain to build and maintain their capacity, and are looking for certainty on funding availability on a multi-annual basis. This would also be critical for high value multi-year projects. .	Cross entity funding working group	No direct effects and influence on SEA Objectives uncertain at this stage but multi-annual and collaborative funding could be supportive across a number of actions requiring long term investment including catchment management measures.	**Population and economy ++** **Health and wellbeing ++** **Climate mitigation +/-** **Climate adaptation +** **Resource use and waste ++** **Asset use ++**	Mitigation on carbon and resource use through **Actions 4.1 and 4.4** **EAP 8**

7.7 WSSP 2050 proposals for meeting long term challenges

The WSSP 2050 recognises the need to plan for unprecedented changes, potentially driven by climate change, population growth, environment and biodiversity crises, ageing infrastructure, regulation and policy changes, and economic conditions. New approaches and ways of working identified to support and facilitate addressing this level of change are identified as:

Collaboration – ***We collaborate with stakeholders to deliver outcomes for Ireland which could not be achieved while working in isolation.***

New collaborative approaches between stakeholders are recognised as being needed across several actions. These include for example Action 3.2 to enable compliance with the new recast Urban Wastewater Treatment Directive in relation to addressing storm overflows, for Action 1.3 and 3.8 which will benefit from collaboration to deliver catchment management measures, and for Action 3.4.

This approach is considered to be supportive to meeting SEA objectives.

Systems thinking - ***We recognize the complexity of the water cycle and aim to take a holistic view in determining optimal for the long term.***

The WSSP recognises dependence on wider systems, for example the hydrological and ecological systems of the water environment which provide raw water sources and receive treated wastewater discharges. In order to determine optimal solutions for water and wastewater services, a whole system view us required.

This approach is considered to be generally supportive to meeting SEA objectives. SEA recommendation to help realise benefits is to apply natural capital and ecosystems services assessment and valuation approaches to facilitate incorporation of wider environmental benefits into decision making processes.

Adaptive Planning - ***We plan for the future using an adaptive approach so that we can respond to changing trends and needs***

Adaptive planning is an approach which identifies possible future scenarios, tracks appropriate trend indicators and identifies trigger points in the indicators which would lead us to adapt our plan to the emerging likely scenario.

This approach is considered to be supportive to meeting SEA objectives. The SEA recommendation is to use information generated from monitoring plan reporting and the review and updating process for the WSSP 2050 and lower tier plans.

7.8 Transboundary Assessment

There are considered to be potential for transboundary impacts from the implementation of the WSSP 2050. For the WSSP 2050 specific proposals and locations of actions are not known. The potential for significant transboundary effects for each action in terms of whether positive, or negative or mixed is therefore considered based on types of action and potential pathways for an effect to occur are identified and provided in Appendix D. Any lower tier plans that have already assessed or will assess transboundary effects are also highlighted and where appropriate additional mitigation is recommended for this high-level plan.

Under **Strategic Objective 1 Safe and Reliable Drinking water**

- Potential for positive effects on the transboundary environment are identified for Actions 1.1, 1.2, 1.3, 1.6, 1.7 and 1.8;
- Potential for a mix of positive and negative effects was identified for: Actions 1.4 and 1.5
- Assessment and mitigation for 1.4 is covered by the NWRP and its review process

- For 1.5 the SEA recommendation is to include assessment of transboundary effects as part of contingency planning including development of drought plans

Under **Strategic Objective 2: Support our Customers, Communities and the Economy**

- No potential Transboundary effects were identified for Action 2.1, 2.2, 2.3, 2.4, 2.6, 2.7 and 2.8
- Potential for a mix of positive and negative effects was identified for Action 2.5
- For action 2.5 the SEA recommendation is for the potential for transboundary effects to be considered in the assessment of suitability for developing amenity value on UÉ assets

Under **Strategic Objective 3: Protect and Restore our Environment**

- Potential positive effects on the transboundary environment were identified for Actions 3.3. 3.4. 3.5, 3.6,.3.7 and 3.8
- Potential for a mix of positive and negative effects was identified for Actions 3.1 and 3.2
- Actions 3.1 and 3.2 cover the development of a National Wastewater Strategy Framework and Integrated Urban Wastewater Management Plans which will be subject to a separate SEA and AA process, and these will identify potential environmental effects and mitigation measures. Potential for mix of positive and negative effects from water and air pollution from sewage sludge spreading which will be part of consideration of potential opportunities to enhance shared water bodies and connected habitats are recommended to be part of the SEA process for the plans within these actions.

Under **Strategic Objective 4: Sustainable Services Fit for the Future**

- Potential positive effects on the transboundary environment were identified for Action 4.1
- No potential Transboundary effects were identified for Actions.4.2, 4.4, 4.5, 4.6, 4.7, 4.8, 4.9 and 4.10,
- Potential for a mix of positive and negative effects was identified for Action 4.3
- Action 4.3 covers the review and implementation of the National Wastewater Sludge Management Plan which has previously been subject to a separate SEA and AA process and the new plan will also require SEA and AA, and these will identify potential environmental effects and mitigation measures.
- In relation to Action 4.7, potential transboundary effects could result from air pollution from ammonia from sludge spreading with potential to effect sensitive habitats and soils and from water pollution, however these are expected to be addressed through the National Wastewater Sludge Management Plan and there is potential for mitigation. No significant transboundary effects are identified but in relation to supporting SEA objectives, the SEA recommendation includes consideration of potential for additional collaboration on innovation and research with relevant Northern Ireland bodies, especially in relation to shared challenges.

7.9 Conclusions from AA

The NIS section 8 concludes that mitigation measures presented in the AA (Section 6) are proposed to ensure that the WSSP 2050 will have no adverse effects on any European Site(s) either alone or in-combination with other plans and programmes.

For 18 actions it was concluded that there would be no conceivable effects on European Sites and no actions were identified as resulting in adverse effects. However, 15 actions were associated with the production of lower tier plans, the development of interventions, or the identification of a need for interventions, and it was conceivable that such lower tier plans/interventions could result in effects on sites and, as a result, the need for a requirement to comply with the Habitats Regulations was identified as mitigation i.e. undergo AA Screening/AA where identified and appropriate. Two actions (1.4 and 4.3) were identified where mitigation measures were already in place to prevent adverse effects. Seven actions were also identified where it was

concluded that beneficial effects on European Sites were likely, although outcomes of three of these actions could also conceivably result in adverse effects on European sites.

Mitigation measures identified to address actions where adverse effects were conceivable were:

- Lower tier plans and/or interventions to be required to comply with the Habitats Regulations and undergo AA where necessary.
- Existing mitigation measures within the NWRP and NWSMP should be adhered to.

7.10 SEA Recommendations for Implementation

The SEA recommendations for mitigation are included in the environmental action plan in section 9 as part of the monitoring proposals (see Table 9.1).

8 Cumulative Effects Assessment

8.1 Introduction

Article 3(5) of the SEA Directive states that it should be determined "*whether plans or programmes … are likely to have significant environmental effects".* Annex II (2) details the criteria for determining the likely significance of effects referred to in Article 3(5), including the need to take into consideration "*the cumulative nature of the effects*".

The EPA (2020a) describes cumulative effects in SEA as:

"effects on the environment that result from incremental changes caused by strategic actions together with other past, present, and reasonably foreseeable future actions. These effects can result from individually minor but collectively significant actions taking place over time or space."

A cumulative effects assessment for a plan should include:

- Intra-plan cumulative effects -effects of measures/options proposed *within* a plan or programme combined; and
- Inter-plan cumulative effects - effects between the measures/options proposed by the plan or programme *with other*, plans and programmes.

For cumulative effects to occur, there needs to be an overlap of temporal periods of the impacts and/or the effects or spatial proximity and pathways leading to additional effects on a common receptor – three types can be considered:

- wastewater treatment plants discharging to the same water body could combine to have greater total effect.
- development of infrastructure not in proximity can still have a combined effect such as emission of greenhouse gas contributing to national emissions or combined total loss of area of a specific habitat type that could have overall regional or national significant effects in relation to biodiversity.
- infrastructure being constructed at the same time and in proximity could result in cumulative traffic movements on the local road network and additional congestion and disturbance.

8.2 Intra-plan Effects

Many of the WSSP 2050 proposed actions combine to be supportive in contributing to SEA objectives especially SEA Objectives for Water, Biodiversity, Fisheries, Climate Change Mitigation and Climate Adaptation and Population and Economy and Health and Wellbeing. While there could be potential for adverse in combination and cumulative effects from implementation of the plan, the actions are high level with no site-specific or location based or timing information for proposals these effects will need to be considered as part of the lower level of plans and strategies.

As the WSSP 2050 is the overarching plan, lower tier investment plans will address interaction between Uisce Éireann plans. The NWRP has addressed cumulative effects for water services resource investments as part of the SEA process. The proposed National Wastewater Framework and subsidiary plans will need take account of cumulative effects with adopted plans including the NWRP. New plans under development including the NWSMP and future reviews of the NWRP and other plans subject to SEA will also need to consider cumulative effects with other plans as part of the SEA process.

Interactions and between actions with potential for cumulative effects on SEA objectives are identified in Table 8.1– Table 8.4.

Table 8.1 Strategic Objective 1 - Interaction between actions

Strategic Objective 1: Safe and Reliable Drinking Water	Potential cumulative actions
Strategic Aim 1: Ensuring safe drinking water	
Action 1.1: Undertake risk assessments across our supplies and implement appropriate measures to manage risk.	Actions **1.2; 1.4; 2.2; 3.3; 3.6; 4.7; 4.8.**
Action 1.2: Conform with the Drinking Water Directive and other legislative requirements relating to drinking water quality.	Actions **1.1; 1.4 3.3; 3.5; 4.6.**
Action 1.3: Coordinate catchment management measures and champion nature-based solutions for improving source water quality.	Actions **1.4; 3.4; 3.8.**
Strategic Aim 2: Delivering Reliable water supplies	
Action 1.4: Implement and continue to review our National Water Resources Plan, delivering improvements in water supply infrastructure to ensure resilient supplies into the future.	Actions **1.1; 1.3; 1.6**; **3.1, 3.2, 3.3**; **3.8; 4.1, 4.2 4.8**
Action 1.5: Develop contingency plans to improve reliability of our water supplies.	Action **1.1, 2.1; 2.2; 2.3; 3.1; 3.2; 3.3.**
Action 1.6: Improve operational resilience through preventative measures and developing and implementing improved incident response processes.	Action **1.1.2.1; 2.2; 2.3; 4.6; 4.7; 4.8**
Strategic Aim 3: Conserving our precious resources	
Action 1.7: Use less water through promoting water conservation to help customers reduce their use.	Actions **1.4; 1.8, 1.9 2.1; 2.2; 2.3; 2.4;; 2.6; 2.7; 2.8**
Action 1.8: Use less water through developing and implementing an enhanced Water Stewardship Programme.	Actions **1.4; 1.5; 1.6; 2.1; 2.2; 2.3; 2.6; 2.7; 2.8; 4.6**
Action 1.9: Lose less water through delivering leakage reduction.	Actions **1.4; 1.6 4.1**

*Potential for cumulative effects on SEA Objectives **green** combined effect supportive of SEA objectives; **amber** combined effect mixed negative and positive for SEA objectives; **red** combined effect is negative or conflicts with the SEA objective

Table 8.2 Strategic Objective 2 - Interaction between actions

Strategic Objective 2: Support our Customers, Communities and the Economy	Potential cumulative actions
Strategic Aim 4: Delivering for customers	
Action 2.1: Understand customer needs and expectations.	Actions **1.4; 1.7; 1.8; 2.4; 2.5; 3.1; 3.2;.**
Action 2.2: Enhance customer communications to address our customer expectations and provide real-time information to customers on usage, incidents, and water quality.	Actions; **1.4; 1.7; 1.8: 2,3 4.6; 4.7; 4.8.**

Strategic Objective 2: Support our Customers, Communities and the Economy	Potential cumulative actions
Action 2.3: Support our customers to play their part in protecting water as a precious resource and enabling better water services.	Actions **1.4 1.7; 1.8; 2,4**;
Strategic Aim 5: Engaging with communities	
Action 2.4: Develop a community education and engagement programme to raise awareness on the value of water and the water services we provide.	Actions **1.4 1.7; 1.8; 3.1; 3.2;**
Action 2.5: Continue to develop amenity value in our assets with local communities, where safe and appropriate.	Actions **1.4; 3.1; 3.7; 3.8**;
Strategic Aim 6: Providing for growth	
Action 2.6: Engage and collaborate with key stakeholders to support national, regional and local planning policy.	Actions **1.4; 3.1; 3.2; 3.3**; **4.1**
Action 2.7: Engage with housing and industry stakeholders to support delivery of new homes and economic growth.	Actions **1.4; 3.1; 3.2; 3.3**; **4.1**
Action 2.8: Develop and embed demand analysis capability to inform, forecast and plan for future investment requirements.	Actions **1.4, 3.1, 3.2**

Table 8.3 Strategic Objective 3 - Interaction between actions

Strategic Objective 3 Protect and Restore our Environment	Potential cumulative actions
Strategic Aim 7: Protecting our water environment	
Action 3.1: Work with regulators and stakeholders to develop a Wastewater Strategy Framework.	Actions **1.4**, **3.2. 3.5 3.7, 3.8, 4.1. 4.4**
Action 3.2: Develop and implement Integrated Urban Wastewater Management Plans.	Actions **1.4**, **3.2. 3.5 3.7, 3.8**
Action 3.3: Manage our water service assets and operations to reduce the risk of impacts to water bodies.	Actions **1.4, 4.4**
Strategic Aim 8: Playing our part on the WFD	
Action 3.4: Protect and restore water bodies through collaboration.	Actions **1.4, 3.1, 3.2, 3.3. 3.7, 3.8**
Action 3.5: Manage wastewater services to achieve regulatory requirements.	Actions **3.1. 3.2 4.1, 4.3,4.4**
Action 3.6: Manage drinking water services to achieve regulatory requirements.	Actions **1.4, 4.1, 4.4**
Strategic Aim 9: Contributing to positive biodiversity	

Strategic Objective 3 Protect and Restore our Environment	Potential cumulative actions
Strategic Aim 7: Protecting our water environment	
Action 3.7: Manage our assets to have biodiversity 'net gain'.	Actions **1.3 1.4, 3.1 3,2 3.8, 4.1**
Action 3.8: Champion nature-based solutions and catchment measures in the delivery of water and wastewater projects.	Actions **1,1, 1.3, 1.4, 3.7, 1,4, 3.2,, 3.3 3.4, 4.1,**

Table 8.4 Strategic Objective 4 - Interaction between actions

Strategic Objective 4 Sustainable Services Fit for the Future	Potential cumulative actions
Strategic Aim 10: Achieving net zero carbon	
Action 4.1: Develop and implement a Net Zero Road Map.	Actions **1.4 3.1, 3.2. 3.3. 3.4, 3.5 3.6, 3.7, 3.8, 4.4**
Action 4.2: Work with our supply chain to embed sustainability in the delivery of water and wastewater infrastructure.	Actions **1.4 3.1, 3.2. 3.3. 3.4, 3.5 3.6,**
Strategic Aim 11: Adopting circular approaches	
Action 4.3: Review and implement the National Wastewater Sludge Management Plan.	Actions **3.1, 3.2. 3.3. 3.4, 3.5**
Action 4.4: Maximise circular economy benefits.	Actions **3.5, 3.6 4.1**
Action 4.5: Manage activities on our assets in a coordinated manner across their full lifecycle, with the aim of achieving ISO550001 certification.	Actions **4.1, 4.2, 4.4**
Action 4.6: Ensure risk and value-based decision making across the lifecycle of assets.	Actions **3.5, 3.6, 4.4, 4.5**
Strategic Aim 13: Gaining value from innovation	
Action 4.7: Develop a culture of innovation in the water services sector to enable a sustainable future.	All Strategic Aims
Action 4.8: Continue to develop foresight and horizon scanning capability.	All Strategic Aims
Strategic Aim 14: Securing long term funding	
Action 4.9: Quantify and articulate long-term investment needs for our water and wastewater assets.	All Actions

Strategic Objective 4 Sustainable Services Fit for the Future	Potential cumulative actions
Action 4.10: Secure multi-annual funding approach.	All Actions

Many actions are linked and can provide cross support and overall beneficial contribution to SEA Objectives. Some actions related directly to provision of water and wastewater services responding to growth, regulatory and need requirements could result in both additional positive contribution but also could potentially also combine to have negative effects related to infrastructure development and operation depending on proximity and specific project level proposals which are not identified at this high level plan stage. Cross cutting actions such as the commitments to biodiversity net gain, net zero carbon and application of circular economy principles will also act to address these potential cumulative effects.

Table 8.5 provides a summary of the overall assessment against each SEA objectives across the 35 Actions within the 14 Strategic Aims and four SEA Objectives. Table 8.5 takes the assessment from each Action and provides the range of this assessment, presenting lowest and best score across the four Strategic Objectives.

Table 8.5 Overall assessment of WSSP 2050 against SEA Objectives

SEA Topic	Strategic Objective 1 (Strategic Aims 1-3)		Strategic Objective 2 (Strategic Aims 4-6)		Strategic Objective 3 (Strategic Aims 7-9)		Strategic Objective 4 (Strategic Aims 10-14)		Comments on assessment Mitigation and supportive measures are provided in the Environmental Action Plan (EAP) (See Table 9.1)
	Actions 1.1-1.9		Actions 2.1-2.8		Actions 3.1-3.8		Actions 4.1-4.10		
Water Environment – Water quality and quantity	+/-	++	+/-	++	+/-	++	+/-	++	Most actions across all Strategic Objectives 1-4 specifically support meeting SEA water environmental objectives for water quality and resource objectives. Actions related to implementing contingency plans such as drought and supporting growth, wastewater plans, sludge management could have both positive and negative effects depending on the resources and locations involved. Mitigation measures **EAP1 to EAP 4 and EAP 6 & 7**
Water Environment – Flood Risk	0		0		+/-	+	+		Most actions are expected to be neutral with respect to flood risk. Actions related to wastewater services could have potentially positive or negative effects depending on proposals and location but these actions also include opportunities to reduce flood risk through the implementation of integrated drainage plans and collaboration with local authorities. Actions on supporting use of nature-based solutions and wider catchment measures can also provide benefits in retaining water in the catchment depending on the specific measures proposed and their location. Mitigation measures **EAP 1-4 and 6, 7, 10**.
Population, Economy, and Tourism and Recreation	+	++	+	++	+		+	++	Actions contribute to meeting SEA objectives for the provision of reliable good quality water supply and wastewater services for economic and population growth and supporting housing and tourism/recreation. Mitigation Measures **EAP 6**

SEA Topic	Strategic Objective 1 (Strategic Aims 1-3)		Strategic Objective 2 (Strategic Aims 4-6)		Strategic Objective 3 (Strategic Aims 7-9)		Strategic Objective 4 (Strategic Aims 10-14)		Comments on assessment Mitigation and supportive measures are provided in the Environmental Action Plan (EAP) (See Table 9.1)
	Actions 1.1-1.9		Actions 2.1-2.8		Actions 3.1-3.8		Actions 4.1-4.10		
Health and Wellbeing	+	++	+	++	+	++	+	++	Actions contribute to meeting SEA objectives for supporting health and wellbeing in terms of access to reliable good quality water supply and wastewater services and also amenity access provision where appropriate. Mitigation measures **EAP 5**
Climate Change Mitigation	+/-	++	0	+	+/-	++	+/-	++	Actions include those involving investments requiring materials and energy use but also with potential to improve energy efficiency and provide rationalisation. Actions contributing to reduction in carbon emissions include support for use of nature-based solutions and catchment management measures, circular economy approaches, awareness raising on water conservation and the development of the Net Zero Road map will develop further actions for working to meeting the ambition for net zero carbon by 2040. Mitigation measures **EAP 1, 4, 6 , 8 &10**
Climate Change Adaptation	+	++	0	+	+/-	++	+		Most proposed actions support the SEA objective on climate change adaptation both in terms of supply resilience and environmental resilience both are linked, including developing contingency plans and operational resilience, managing risks and engaging with stakeholders on water conservation, supporting Use Less, Loose Less approaches for water supply meeting. Actions supporting planned growth are identified as mixed positive and negative as there will be opportunities for improving sustainable services but also increased demand in some localities. Actions supporting provision of biodiversity net gain, nature-based solutions and catchment management can all contribute to environmental resilience to climate change.

SEA Topic	Strategic Objective 1 (Strategic Aims 1-3)		Strategic Objective 2 (Strategic Aims 4-6)		Strategic Objective 3 (Strategic Aims 7-9)		Strategic Objective 4 (Strategic Aims 10-14)		Comments on assessment Mitigation and supportive measures are provided in the Environmental Action Plan (EAP) (See Table 9.1)
	Actions 1.1-1.9		Actions 2.1-2.8		Actions 3.1-3.8		Actions 4.1-4.10		
									Mitigation measures **- EAP 1, 4 & 6**
Biodiversity	+/-	++	+/-	+	+/-	++	+/-	+	Most actions supporting meeting SEA water environmental objectives for water quality and resources can also benefit aquatic biodiversity. Actions related to implementing contingency plans such as drought and supporting growth, wastewater plans, sludge management could have both positive and negative effects depending on the resources and locations involved and potential for increased pressure for abstraction or on water quality and investment requiring construction The WSSP 2050 includes Actions that address potential negative effects including the commitment to biodiversity net gain, use of nature-based solutions and support for catchment management. Actions to protect and improve source water quality and meet future recast UWWTD requirements can also support the SEA objective for Biodiversity. Mitigation measures **EAP 1-4, 5, 6 & 7, 9**
Fisheries	+	++	+/-	+	+	++	+/-	+	Pressures on water resources from meeting growth and from sludge disposal including land spreading could have positive or negative effects depending on proposals and locations. Most actions support meeting SEA water environmental and biodiversity objectives for water quality and quantity also benefit aquatic biodiversity and fisheries particular the commitment to sustainable abstraction, wastewater treatment and removal of barriers to fish migration, will be supportive to freshwater, estuarine and marine fisheries. Mitigation measures **EAP 1-4, 6 & 7**

SEA Topic	Strategic Objective 1 (Strategic Aims 1-3)		Strategic Objective 2 (Strategic Aims 4-6)		Strategic Objective 3 (Strategic Aims 7-9)		Strategic Objective 4 (Strategic Aims 10-14)		Comments on assessment Mitigation and supportive measures are provided in the Environmental Action Plan (EAP) (See Table 9.1)
	Actions 1.1-1.9		Actions 2.1-2.8		Actions 3.1-3.8		Actions 4.1-4.10		
Material Assets – Resource Use and Waste Management	+/-	++	+		+	++	+	++	Actions involving significant infrastructure investment are associated with resource use and waste generation, some of this investment also provide rationalisation and efficiency improvements. Actions specifically addressing net zero carbon and developing circular economy approaches can help to address potential negative effects. Mitigation measures **EAP 4. 7, 11**
Material Assets – Asset use	+/-	++	+	++	+		+	++	Actions involving significant infrastructure investment include developing new assets, rationalisation and upgrading existing assets and can have mixed beneficial and negative effects. Actions specifically addressing asset management and the net zero road map and circular economy approach will support overall beneficial contribution to SEA objective. Mitigation measures **EAP 4, 11**
Landscape, Townscape and Seascape	+/-	+	+/-	0	+/-	++	0		Actions involving significant infrastructure investment include developing new assets, rationalisation and upgrading existing assets and decommissioning and can have mixed beneficial and negative effects on the SEA landscape objective. There are also potential benefits from actions supporting water source quality protection, nature -based solutions and catchment management and provision of biodiversity net gain. Mitigation measures **EAP 1, 4 and 7**

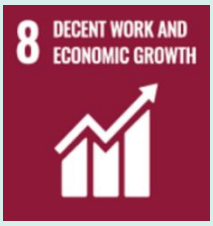
SEA Topic	Strategic Objective 1 (Strategic Aims 1-3)		Strategic Objective 2 (Strategic Aims 4-6)		Strategic Objective 3 (Strategic Aims 7-9)		Strategic Objective 4 (Strategic Aims 10-14)		Comments on assessment Mitigation and supportive measures are provided in the Environmental Action Plan (EAP) (See Table 9.1)
	Actions 1.1-1.9		Actions 2.1-2.8		Actions 3.1-3.8		Actions 4.1-4.10		
Cultural Heritage – Archaeological and Architectural	+/-	0	+/-	0	+/-	+	0		Actions involving significant infrastructure investment include developing new assets, rationalisation and upgrading existing assets can have mixed beneficial and negative effects on cultural heritage and archaeological assets. Mitigation measures **EAP 1 and EAP 4**
Geology and Soils	+/-	+	0		+		+	++	Actions involving significant infrastructure investment include developing new assets, rationalisation and upgrading existing assets can have mixed beneficial and negative effects on soils and geological asset assets. However, actions supporting catchment management, nature-based solutions and treated sludge disposal through land spreading and circular economy approached can support SEA objectives in relation to Mitigation measures **EAP 1, 4 and 7**
Air Quality	0		0		+/-	+	+		Actions involving wastewater treatment can have mixed to positive contribution to the SEA objective in terms of odour. Mitigation measures **EAP 1 and EAP 4**

8.3 Assessment of WSSP 2050 against SDG Goals

Overall assessment of the Strategic Aims against SDG goals is presented in Table 8.5.

Table 8.5 Assessment of Strategic Aims against SDG goals

SDG	Related Strategic Aim	Assessment: supports/mixed/conflicts
SDG 3 Good health and wellbeing: Ensure healthy lives and promote well-being at all ages. 	**Strategic Aim 1:** Ensuring safe drinking water. **Strategic Aim 2:** Reliable water supplies. **Strategic Aim 5:** Engaging with Communities	WSSP 2050 supports this SDG 3 through proactively managing the safety and quality and reliability of supply to drinking water. Access to safe, clean drinking water is vital to public health and the wellbeing of society. Improving awareness of the value of water and community access to green space and water for recreation and wellbeing is also supportive to SDG 3.
SDG 6 Clean Water and Sanitation: Ensure availability and sustainable management of water and sanitation for all. 	**Strategic Aim 1:** Ensuring safe drinking water. **Strategic Aim 2:** Reliable water supplies. **Strategic Aim 3:** Conserving our precious resources. **Strategic Aim 4:** Delivering for customers **Strategic Aim 6**: Providing for growth **Strategic Aim 7:** Protecting our water environment. **Strategic Aim 8:** Playing our part under the Water Framework Directive. **Strategic Aim 9:** Contributing to positive biodiversity.	WSSP 2050 supports this SDG 6 through improving assets and sources to ensure supplies robust enough to meet the customers' and taking pressure off the resources through leakage reduction and helping customers to conserve water. The plan acknowledges challenges in addressing the needs of the wastewater networks and aims to develop a National Wastewater Strategy Framework to provide an overview of wastewater asset investment needs which is essential to plan sustainably for the long term. Delivering wastewater services improvements needed for anticipated significant population increase over the coming decades will be dependent on investment and resources capacities and will be required over several investment cycles
SDG 7 Affordable and clean energy: Ensure access to affordable, reliable, sustainable and modern energy for all. 	**Strategic Aim 9:** Contributing to positive biodiversity. **Strategic Aim 10:** Achieving net zero carbon. **Strategic Aim 11:** Adopting circular approaches.	WSSP 2050 identifies that Net Zero Road map is currently under development which will support the delivery of ambition of achieving Net Zero by 2040. The roadmap will include initiatives such as energy efficiency, renewable energy generation, greenhouse gas reductions including process emissions management, nature-based solutions and supply chain collaboration which is in support of this SDG. The plan acknowledges advanced technologies and processes considerations for wastewater sludge treatment to extract more value from sludge, potentially creating new products or energy sources. The plan aims to encourage and promote the identification of opportunities for the incorporation of nature-based solutions for water protection and wastewater treatment. Nature-based solutions have

SDG	Related Strategic Aim	Assessment: supports/mixed/conflicts
		many benefits, including a reduction in energy usage and carbon sequestration.
SDG 8 Decent work and economic growth: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. 	**Strategic Aim 5:** Engaging with communities. **Strategic Aim 6**: Providing for growth **Strategic Aim 10:** Achieving net zero carbon. **Strategic Aim 11:** Adopting circular approaches. **Strategic Aim 12:** Managing our assets.	WSSP 2050 aims for Uisce Éireann to engage with communities through communication programmes involving many methods of liaising and building relationships with communities. The plan commits to supporting population and economic growth and planned development. The significant investment in water and waste water services will also support communities and the economy.
SDG 9 Industry, Innovation, and Infrastructure: Build resilient infrastructure, promote inclusive and sustainable industrialisation and foster innovation. 	**Strategic Aim 6**: Providing for growth **Strategic Aim 11:** Adopting circular approaches. **Strategic Aim 12:** Managing our assets. **Strategic Aim 13:** Gaining value from innovation.	WSSP 2050 acknowledges the rapid evolution of the innovation and research sector and commits to driving research and innovation activities that enable a sustainable future and are essential to addressing the many challenges set out in WSSP 2050, which will support sustainable and resilient infrastructure. The plan commits to shifting towards more sustainable and circular practices and implementing approaches that extend beyond traditional make-take-dispose linear models. The plan's ambition is to embed a sustainable circular economy approach avoiding end of life disposal points for products and materials.
SDG 11 Sustainable cities and communities: Make cities and human settlements inclusive, safe, resilient and sustainable. 	**Strategic Aim 6**: Providing for growth **Strategic Aim 7:** Protecting our water environment. **Strategic Aim 10:** Achieving net zero carbon. **Strategic Aim 14:** Securing long-term funding.	WSSP 2050 aims for Uisce Éireann to engage with communities through communication programmes involving many methods of liaising and building relationships with communities. The plan commits to supporting population and economic growth and planned development. The significant investment in water and waste water services will also support communities and the economy.
SDG 12 Responsible consumption and production: Ensure sustainable consumption and production patterns.	**Strategic Aim 3:** Conserving our precious resources. **Strategic Aim 5:** Engaging with communities. **Strategic Aim 7:** Protecting our water environment.	WSSP 2050 supports this SDG through promoting water conservation to help customers reduce their use by developing and implementing an enhanced Water Stewardship Programme and delivering enhanced leakage reduction. The plan aims to apply for abstraction licences under the new abstraction legislation and manage the abstractions ensuring meeting abstraction licencing requirements and sustainable water use.

SDG	Related Strategic Aim	Assessment: supports/mixed/conflicts
		
SDG 13 Climate Action: Take urgent action to combat climate change and its impacts. 	**Strategic Aim 10:** Achieving net zero carbon.	WSSP 2050 aims to develop a Net Zero Roadmap to support delivery of Net Zero by 2040. The plan recognises that Net Zero can only be achieved through development of partnerships, collaboration and stakeholder engagement. Although the plan supports this SDG, it acknowledges that it is an ambitious target that requires a collaborative approach with both internal and external stakeholders.
SDG 14 Life Below Water: Conserve and sustainably use the oceans, seas and marine resources for sustainable development. 	**Strategic Aim 7:** Protecting our water environment. **Strategic Aim 9:** Contributing to positive biodiversity.	WSSP 2050 acknowledges that water infrastructure often interacts directly or indirectly with a range of habitats including estuarine and marine environment through the abstraction of drinking water or the discharge of treated wastewater. The plan refers to implementation of the Biodiversity Action Plan to better manage existing assets and development of a National Wastewater Strategy Framework managing wastewater assets with Plan actions proposed are applicable to fresh, estuarine and marine environments it will be important that Future Tier 2 and 3 plans address conservation of marine environments.
SDG 15 Life On Land: Protect and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss. 	**Strategic Aim 9:** Contributing to positive biodiversity.	WSSP 2050 notes that actions from Biodiversity Action Plan are being implemented to ensure that biodiversity is enhanced across Uisce Éireann's sites and within the surrounding landscapes. The plan commits to ensuring that biodiversity "net gain" is achieved across Uisce Éireann's infrastructure projects by 2030 and that the natural environment is in a measurably better state Future proposed infrastructure developments through lower tier strategies and plans can results in locations specific losses which can be difficult to off set The nature, quality and reversibility of loss will need to be considered as part of addressing this for Tier 2 and 3 plans to ensure Biodiversity net gain can be achieved.
SDG 17 Partnerships for the goals: Strengthen the means of implementation and revitalize the global partnership for sustainable development.	**Strategic Aim 5:** Engaging with communities. **Strategic Aim 7:** Protecting our water environment. **Strategic Aim 10:** Achieving net zero carbon.	WSSP 2050 emphasises the importance of collaboration and engagement across range of actions to understand needs, share resources and data, deliver effectively and raise awareness.

SDG	Related Strategic Aim	Assessment: supports/mixed/conflicts
	**Strategic Aim 13:** Gaining value from innovation. **Strategic Aim 14:** Securing long-term funding.	

8.4 Inter-plan Effects

The interaction between the WSSP2050 is considered against the SEA objectives to identifying potential for inter-plan cumulative effects and is summarised in Table 8.1 for the following national level plans:

- Climate Action Plan 2023 and 2024 (Consultation Draft) (DECC, 2023 and 2024);
- Ag Climatise – A Roadmap towards Climate Neutrality (DAFM, 2020)[37];
- National Adaptation Framework (DECC, 2018);
- Water Quality and Water Services Infrastructure, Climate Change Sectoral Adaptation Plan (DHLGH, 2019);
- National Biodiversity Action Plan 4th 2024 (DHLGH);
- National Development Plan 2021-2030 (DPER, 2021);
- National Planning Framework, Project Ireland 2040 (DHLGH, 2018b) and the National Planning Framework 2024 draft for consultation (DHLGH 2024).
- River Basin Management Plan 2018-2021 (DHLGH, 2018a) and Water Action Plan 2024:River Basin Management Plan 2022-2027) (DHLGH, 2024).
- CFRAM Programme;
- National Marine Planning Framework (DHLGH, 2023;
- National Strategic Plan for Sustainable Aquaculture Development 2030 (DAFM)[38]

Forestry Programme 2023-2027 (DAFM, 2023);

- National Peatlands Strategy (NPWS, 2015)[39]; and
- Waste Action Plan for a Circular Economy (DECC, 2020).

The following Northern Ireland and UK plans are also considered in terms of interaction against the SEA objectives to identify potential for transboundary plan cumulative effects and this is summarised in Table 8.6.

- Draft Environment Strategy for Northern Ireland (DAERA, 2021a)[40];

[37] DAFM. 2020. *A Roadmap towards Climate Neutrality.* Accessed: 23.09.2023. Available from: https://www.gov.ie/en/publication/07fbe-ag-climatise-a-roadmap-towards-climate-neutrality/

[38] DAFM. 2023, National Strategic Plan for Sustainable Aquaculture Development 2030 Accessed 19.04.2024. Available from: https://www.gov.ie/en/publication/ece67-national-strategic-plan-for-sustainable-aquaculture-development-2030/

[39] NPWS. 2015. *National Peatlands Strategy*. Accessed: 23.09.2023. Available from: https://www.npws.ie/sites/default/files/publications/pdf/NationalPeatlandsStrategy2015EnglishVers.pdf

[40] DAERA. 2021a. *Draft Environment Strategy*. Accessed: 24.09.2023. Available from: https://www.daera-ni.gov.uk/consultations/environment-strategy-consultation

- Our Strategy 2021-2046 (Northern Ireland Water, 2021)[41];
- Water Resource and Supply Resilience Plan (Northern Ireland Water, 2020)[42];
- Sustainable Water – A Long term water strategy for Northern Ireland (2015 –2040) (Department for Regional Development, 2014)[43];
- Draft Northern Ireland Flood Risk Management Plan 2021–2027 (Department for Infrastructure, 2021)[44];
- UK Marine Policy Statement (Defra, 2011)[45];
- Marine Plan for Northern Ireland;
- Marine and Coastal Access Act 2009;
- Marine Strategy Regulations 2010;
- Integrated Coastal Zone Management Strategy for Northern Ireland 2006-2026;
- Climate Change Act (Northern Ireland) 2022; and
- Draft 3rd cycle River Basin Management Plan 2021-2027 (DAERA, 2021b)[46].

The inter- plan assessment identifies largely supportive positive interaction between the WSSP 2050 proposals and the plans considered in relation to the SEA objectives. These plans are generally high level aspirational national plans and in many cases are also reliant on lower level plans and programmes for implementation.

Potential for mixed positive and negative interactions are identified for the National Planning Framework and National Development Plan. These are in relation to potential for proposed growth to add pressure in areas where sustainable water and wastewater service provision will be challenging to provide while meeting sustainability commitments. The Forestry programme is also identified has potentially having mixed positive and negative interaction due to potential to increase run off and soil erosion but also potential to support addressing these issues. All these aspects are already specifically included in the WSSP 2050 actions in relation to collaboration with stakeholders on land use planning and use of catchment management measures and Nature Based Solutions and no further mitigation is proposed at this level. The lower level plans implementing the WSSP 2050 will include more detailed cumulative effects analysis based on location, timing, and pathways for effects.

[41] Northern Ireland Water. 2021. *Our Strategy 2021-2046*. Accessed: 23.09.2023. Available from: https://www.niwater.com/ourstrategy/
[42] Northern Ireland Water. 2020. *Water Resource And Supply Resilience Plan*. Accessed: 23.09.2023. Available from: https://www.niwater.com/sitefiles/resources/pdf/2020/wrm/waterresourcesupplyresilienceplan-mainreport.pdf
[43] Department for Regional Development. 2014. *Sustainable Water - A Long Term Water Strategy for Northern Ireland*. Accessed: 27.09.2023. Available from: https://www.infrastructure-ni.gov.uk/consultations/sustainable-water-long-term-water-strategy-northern-ireland
[44] Department for Infrastructure. 2021. *Second Cycle Northern Ireland Flood Risk Management Plan 2021–2027*. Accessed: 23.09.2023. Available from: https://www.infrastructure-ni.gov.uk/publications/second-cycle-northern-ireland-flood-risk-management-plan-2021-2027
[45] Defra. 2011. *UK Marine Policy Statement*. Accessed: 23.09.2023. Available from: https://www.gov.uk/government/publications/uk-marine-policy-statement
[46] DAERA. 2021b. *Draft 3rd Cycle River Basin Management Plan 2021 to 2027*. Accessed: 23.09.2023. Available from: https://www.daera-ni.gov.uk/consultations/consultation-Draft-3rd-cycle-river-basin-management-plan-2021-2027

Table 8.6 Cumulative Assessment for Other Plans against SEA Objectives

Plan/Project	SEA Objectives													
	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Climate Action Plan 2024 draft for consultation (DECC, 2024) The plan implements the carbon budgets and sectoral emissions ceilings and sets a roadmap for taking decisive action to halve emissions by 2030 and reach net zero by no later than 2050.	+				+	+	+	+	+	+				+
Ag Climatise – A Roadmap towards Climate Neutrality (DAFM, 2020) The roadmap is designed to help all stakeholders to work together to tackle climate change and air pollution, by clearly explaining what and when needs to be done achieve it.	+				+	+	+	+	+	+				+
National Adaptation Framework and 2024 draft for consultation (DECC, 2018 and 2024b) The NAF sets out the national strategy to reduce the vulnerability of the country to the negative effects of climate change and to avail of positive impacts.	+	+			+	+	+	+	+	+				+

Plan/Project	SEA Objectives													
	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Water Quality and Water Services Infrastructure, Climate Change Sectoral Adaptation Plan (DHLGH, 2019) The adaptation plan is focused on managing the risks from climate change for water quality and for water services infrastructure and describes the key risks and proposes necessary adaptive measures.	+	+			+	+	+/	+/	+	+				+
National Biodiversity Action Plan 4th 2024 (DHLGH) The plan aims to improve the governance of biodiversity in Ireland to better respond to the biodiversity crisis.	+						+		+					
National Development Plan 2021-2030 (DPER, 2021) Sets out the investment priorities that will underpin the implementation of the National Planning Framework.	+/-		+	+			+/-		+/-	+/-	+/-	+/-	+/-	+/-
National Planning Framework, Project Ireland 2040 and draft for consultation 2024 (DHLGH, 2018b, 2024) Project Ireland 2040 is the long-term overarching strategy to make Ireland a better country and to build a more resilient and sustainable future.	+/-		+	+			+/-		+/-	+/-	+/-	+/-	+/-	+/-

Plan/Project	SEA Objectives													
	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Water Action Plan 2024: River Basin Management Plan 2022-2027 (DHLGH, 2024) The plan is Ireland's approach to water quality management and maps out how to protect and improve water quality nationally and locally. There are requirements for development of Sectoral Work Plans to support the 46 Catchment Management Work Plans and specific actions identified for Uisce Éireann.	+/-	+					+/	+/	+/					
CFRAM Programme The plan was developed to meet the requirements of the EU Floods Directive and national flood policy and aims to reduce and manage the risks that floods pose to human health, the environment, cultural heritage and economic activity.		+					+/-	+/-						
National Marine Planning Framework (DHLGH, 2023) The NMPF brings all marine-based human activities together, outlining the Government's vision, objectives and marine planning policies for each marine activity.							+/-	+				+/-		

Plan/Project	SEA Objectives													
	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
National Strategic Plan for Sustainable Aquaculture Development 2030 The plan is intended to inform investment priorities for aquaculture and to identify measures to reduce the administrative burden on operators, to secure sustainable development and growth of aquaculture through coordinated spatial planning, to enhance the competitiveness of the aquaculture sector and to promote a level playing field for EU operators by exploiting their competitive advantages.	+/-		+				+/-	+	+/-			+/-		
Forestry Programme 2023-2027 (DAFM, 2023) The programme represents Ireland's proposals for 100% State aid funding for a new Forestry.	+/-						+				+/-		+/-	
National Peatlands Strategy (NPWS, 2015) The strategy provides a long-term framework within which all the peatlands within Ireland can be managed responsibly.	+					+	+				+		+	
Waste Action Plan for a Circular Economy (DECC, 2020) The plan sets out a roadmap that aims to ensure that Ireland not only meets the legal targets but also takes full advantage of the opportunities of the circular economy.									+	+				

Plan/Project	SEA Objectives													
	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Draft Environment Strategy for Northern Ireland (DAERA, 2021a) The Environment Strategy sets out Northern Ireland's environmental priorities for the coming decades and forms part of the Executive's Green Growth agenda.	+						+	+			+	+	+	
Our Strategy 2021-2046 (Northern Ireland Water, 2021) The strategy provides a longer-term view across the next quarter of a century (2021-2046) taking account of the progress to date, strategic risks and feedback from the customers and other stakeholders.	+	+					+/-	+	+	+				
Water Resource and Supply Resilience Plan (Northern Ireland Water, 2020) and Draft Water Resource and Supply Resilience Plan (Northern Ireland Water, 2024) The plan shows how water resources will be managed and developed to make sure there is enough water to meet future supply needs.	+						+	+	+	+				

Plan/Project	SEA Objectives													
	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Sustainable Water – A Long term water strategy for Northern Ireland (2015 –2040) (Department for Regional Development, 2014) The Strategy presents a clear framework for action which will facilitate implementation of a range of initiatives aimed at delivering the long-term vision to have a sustainable water sector in Northern Ireland.	+	+				+	+	+	+	+				
Draft Northern Ireland Flood Risk Management Plan 2021–2027 (Department for Infrastructure, 2021) The plan identifies the objectives and measures that will be undertaken to manage the risk of flooding and sets out how the relevant authorities will work together with communities to manage flood risks.		+						+/-	+/-					
UK Marine Policy Statement (Defra, 2011) The MPS provides the policy framework for the marine planning system and taking decisions affecting the marine environment.	+						+/-	+/						

Plan/Project	SEA Objectives													
	Water quality and quantity	Flood risk	Population and economy	Health and wellbeing	Climate change mitigation	Climate change adaptation	Biodiversity	Fisheries	Resource use and waste management	Asset use	Landscape, Townscape and Seascape	Cultural heritage – archaeological and architectural	Geology and soils	Air quality
Draft 3rd cycle River Basin Management Plan 2021-2027 (DAERA, 2021b) The plan taken an integrated approach, identifying those water bodies which can be classified as being at 'good or better' status. It also sets the objectives and a programme of measures to help improve those water bodies which are classified as below 'good' status.	+		+				+	+						
Marine Plan for Northern Ireland The Marine Plan, combines the plans for both the inshore and offshore regions into one document and together with other marine policy documents will inform and guide the regulation, management, use and protection of the Northern Ireland marine area. **Marine Strategy Regulations 2010 and Marine and Coastal Access Act 2009**	+		+				+	+						
The Climate Change Act (Northern Ireland) 2022					+	+								
Integrated Coastal Zone Management Strategy for Northern Ireland 2006-2026														

8.4.1 AA In-combination conclusion

The in-combination AA assessment, including with transboundary plans, identified (see NIS) that for four of the plans considered, in-combination effects were conceivable, but it could not be determined how, when or where such effects may occur. For the NI Draft Flood Risk Management Plan 2021-2027 – potential adverse effects on the River Foyle and Tributaries SAC (Northern Ireland) and therefore on the River Finn SAC (Ireland) were identified (the River Finn is a tributary of the River Foyle). A possible in-combination effect with the WSSP 2050 was therefore identified at these sites. However, none of the actions of the WSSP 2050 identify any specific locations where interventions may take place and therefore no precise in-combination effects can be identified.

The conclusion of the NIS for the WSSP 2050 is that the WSSP will have no adverse effects on any European Site(s), either alone or in-combination with other plans and programmes.

This conclusion does not remove the need for any other plans, strategies or projects, or permissions associated with, or arising from the WSSP 2050 to be subject to Screening for AA/AA where appropriate. Furthermore, any project(s) etc. arising from the implementation of the WSSP 2050 will be required to conform to the mitigation measures and key principles for protecting European Sites identified within this NIS.

8.4.2 WFD Summary for the WSSP 2050

The Water Action Plan 2024/RBMP 2022-2027 sets out how Ireland will manage its water resources and catchments between 2022 and 2027. After many years of steady improvement, Ireland is now experiencing a sustained decline in water quality. Stronger measures are now required in response. In addition to improving overall water quality, sustainable water management is important to address and adapt to the impacts of climate change, with many of the required measures having co-benefits for climate mitigation and biodiversity. Protecting and restoring water quality in Ireland will most of all need measures to address the loss of agricultural nutrients to water, continue to improve wastewater treatment and to re-establish natural free-flowing conditions in more rivers. Ireland's water resources and services face challenges on several fronts including a continued need for investment in infrastructure and an ever-increasing demand for water services due to urbanisation, population and economic growth all set against a backdrop of widespread, rapid, and intensifying climate change.

Wastewater Treatment Plants (WWTPs) identified in the RBMP 2022-2027 as causing water quality impacts in the rivers they discharge, are included in Uisce Éireann River Basin Management Plan Enhanced Ambition Programme funded by the European Union under Ireland's National Recovery and Resilience Plan. This will support the objectives of Ireland's River Basin Management Plans and improve water quality in rivers. The programme is aimed at ensuring that Uisce Éireann assets are not impacting on the ability of receiving waters to achieve their water quality objectives.

8.4.3 Summary of SEA assessment of considering cumulative effects

Overall potential for cumulative effects within the are largely positive and supportive of SEA objectives but there is potential for combined mixed positive and negative effects. These can be addressed both cross cutting Actions that are included in the WSSP2050 and also the mitigation measures identified. These are summarised in Table 9.1 and include the implementation of lower tier plans together with the process of monitoring and feedback into future WSSP iterations and SEA as described in section 9.

9 Mitigation and Monitoring Plans

This Section sets out the recommended actions for mitigation and enhancement within an Environmental Action Plan (EAP) and provides a Draft Monitoring Plan which is required to meet SEA regulations. The approach takes account of EPA SEA monitoring guidance and comments at the scoping stage.

9.1 WSSP 2050 Implementation

The WSSP 2050 sets out Uisce Éireann's long-term objectives and the strategic direction of travel in order to achieve them, more detail is provided in the Tier 2 plans how Uisce Éireann aim to achieve these objectives.

These include:

- National Water Resources Plan NWRP which assesses present and future water resource needs and identifies solutions to secure resilient water supplies for a 25-year planning period. This has been produced and is in the process of being implemented as supported by the WSSP 2050 actions; and
- National Wastewater Strategy Framework addressing wastewater needs and identifying and corresponding plans at agglomeration level which are committed to being developed and implemented in WSSP 2050.

In addition to the Tier 2 plans, there are a range of supporting strategies and plans including for example the National Wastewater Sludge Management Plan and the Biodiversity Action Plan. Where required, these strategies and plans will be subjected to Strategic Environmental Assessment (SEA) and Appropriate Assessment, including public consultation. Monitoring Plans where required as part of SEAs, will be implemented for each of the relevant plans. Where appropriate these will reference existing external monitoring sources as well as Uisce Éireann's information. Reporting on monitoring and the process for undertaking remedial action where needed, will be identified for each of these plans.

9.2 Environmental Action Plan

The EAP set out in **Table 9.1** summarises the actions for mitigation, supporting SEA objectives as well as areas of further study as identified in this Environmental Report. The EAP provides a basis for tracking recommendations from the SEA during the WSSP 2050 implementation.

Table 9.1 Environmental Mitigation Action Plan

Ref no.	Recommended Action for Mitigation/Further Study	Progress Not started N In progress P Completed C
EAP1	Ensure mitigation hierarchy, enhancement aims and sustainability targets are included in approaches for developing lower tier plans. (Actions 3.1, 3.2, 3.3, 4.3)	

Ref no.	Recommended Action for Mitigation/Further Study	Progress Not started N In progress P Completed C
EAP2	Source protection - embed processes to consider environmental baseline and quality objectives in assessment of risk to sources and assets Develop guidance and processes for identifying risk solutions to consider relevant stakeholder engagement, wider catchment management measures and nature-based solutions where appropriate (Actions 1,1, 1.3, 1.7 and 3.4},	
EAP3	Contingency planning - develop procedures to ensure drought and contingency planning including for extreme weather events, flood risk and freeze thaw) and operation resilience measures take account of environmental constraints and objectives. Implementation and prioritisation of Site Spill risk assessments and incident response planning (Actions 1,4 1.5, 1.6, 3.1, 3.2, 3.3, 3.6),	
EAP 4	Monitoring and review of lower tier plans- implementation progress and environmental effects including: • NWRP (including WTP Residuals Strategy} EAP/monitor plan implementation (Action 1.4) • IWSMP monitoring plan for updated plan (once developed) (Action 4.3) • Wastewater framework monitoring plan (once developed) Action 3.1) • Integrated Urban Wastewater Management Plans (once developed) (Action 3.2)	
EAP 5	As part of assessment of suitability for amenity use consider environmental and social impacts including European sites, biodiversity, transboundary effects, cultural heritage and landscape impacts (Action 2.5)	
EAP 6	Consider strengthening collaboration and analysis on land use and economic planning to encourage balanced growth avoiding either unsustainable water and wastewater provision or additional cost and infrastructure requirements to address this, including Water Conservation (Action 1.7) and Sustainable Development (Action 2.6 & 2.7)_	
EAP 7	Catchment Management and Nature Based solutions, including: • Develop guidance and processes to consider relevant stakeholder engagement, wider catchment management measures and nature-based solutions where appropriate (Action 3.8) • Potential link to Biodiversity Net Gain (Action 3.7)	

Ref no.	Recommended Action for Mitigation/Further Study	Progress Not started N In progress P Completed C
EAP 8	Net Zero Road Map - ensure Net Zero road map is linked across investment plans, programmes and projects (Action 4.1)	
EAP 9	Development of environmental valuation/quantification approaches to support existing qualitative assessments, for example,. natural capital and ecosystems services and carbon calculation tools and use of automated and map based digital tools - to support systems based approaches and actions decision making (Action 4.6 & 4.9), including potentially supporting :Biodiversity Net Gain (Action 3.7 and Nature Based Solutions (Action 3.8) and Net Zero (Action 4.1)	
EAP 10	Transboundary- consideration of potential for additional collaboration on innovation and research with relevant Northern Ireland bodies, especially in relation to shared challenges monitoring and sharing data sets. (Action 4.7)	
EAP 11	Adaptive planning - use information generated from monitoring plan reporting and the review and updating process for the WSSP 2050 and lower tier plans to support adaptive planning	

9.3 Implementation progress tracking and monitoring

Uisce Éireann is subject to rigorous monitoring and measurement to assess performance and ensure accountability to customers and stakeholders. The Department of Housing, Local Government and Heritage monitors performance in the water sector generally including Uisce Éireann's performance.

Uisce Éireann is regulated by two regulators.

- The Commission for Regulation of Utilities (CRU) as the economic regulator oversees operational expenditure and capital investment.
- The Environmental Protection Agency (EPA) is the environmental regulator.

As part of the regulatory process Uisce Éireann reports regularly to the CRU on key metrics across several categories such as Customer Service, Environmental Performance, Water Supply Quality, Security of Water Supply and others. Uisce Éireann's proposed Capital Investment Plan is subject to a statutory stakeholder engagement process undertaken by Uisce Éireann and a public consultation process undertaken by the CRU. Uisce Éireann also reports progress on its Capital Investment Plan throughout each regulatory cycle across a range of metrics, which in turn, the CRU publishes reports on in its assessment of Uisce Éireann's performance.

The EPA as the environmental regulator, monitors compliance with drinking water and wastewater standards as appropriate. Uisce Éireann engages and provides reports to the EPA on a regular basis. The EPA publishes an annual report on "Drinking Water Quality in Public Supplies" and the Remedial Action List which is a register of public water supplies that are in need of corrective action. The EPA also publishes an annual report on "Urban Waste Water

Treatment" and a list of the Priority Urban Areas which is a list of priority areas where wastewater treatment must be improved to resolve national environmental priorities.

In addition to regulatory reporting, Uisce Éireann's performance is documented in its annual report. This report provides insights into the organisation's performance against established metrics. In 2026, this will include the first reporting under the Corporate Sustainability Directive (EU 2022/2464) (CSRD), for the financial year 2025. The CSRD requires companies to provide information on how sustainability matters affect the company and the impact of the company's activities on the environment and people.

The SEA draft Monitoring Plan for WSSP 2050, outlined in section 9.4 below, draws on the existing monitoring sources and reporting where applicable to avoid duplication of effort.

9.4 Monitoring Plan

A monitoring plan is required under the SEA regulations to provide a basis for identifying significant environmental effects during the implementation of the plan. This is required to review the predicted impacts of the WSSP 2050, and the adequacy of the mitigation measures recommended. This allows additional mitigation to be applied where required.

The monitoring plan covers the integration of environmental and sustainability considerations throughout implementation of the WSSP 2050. As this plan is implemented through investment or cross cutting subject plans more detailed monitoring actions are included in those plans and are not repeated here. The Monitoring Plan for the WSSP 2050 is provided in **Table 9.2**Monitoring Plans provide a means to demonstrate the effectiveness of the adopted plan/programme approach using environmental and sustainability objectives, targets and indicators. They also permit the early identification of emerging significant effects to enable corrective actions to be taken during Plan implementation. Monitoring can also identify how a plan is supporting positive outcomes and contributing to meeting its objectives.

Recent EPA Guidance on SEA Statements and Monitoring (EPA, 2023b) covering monitoring plans identifies that monitoring can help evaluate whether SEA is fulfilling its core objective of providing for a high level of protection of the environment and the promotion of sustainable development (Article 1 of the SEA Directive) and notes the following benefits:

- Potential to demonstrate the effects of implementing a plan/programme - the plan's environmental performance.
- Identifying knowledge gaps and collecting new data over time and thereby reduce uncertainties in the assessment – so that data gaps can be addressed.
- Measuring indicators over time can identify long-term positive or negative changes and trends in the environment.
- Identifying unforeseen effects or impacts that may not have been identified during the assessment.
- Identify the need for additional mitigation measures or for appropriate remedial action to be undertaken where issues are identified, as well as to inform project level assessments.
- Providing the basis to inform the review and preparation of subsequent iterations of plans/programmes.

- Supporting streamlining of future SEA processes by changing the starting point in the baseline.

The EPA guidance recommendations for monitoring include that:

- Actions are appropriately targeted and focused and relevant to the potential significant effects.
- Makes use of any existing monitoring to avoid unnecessary duplication of effort.
- Environmental monitoring is integrated into the plan implementation monitoring and review process.
- Regular reporting on monitoring and implementation is provided.

Future plan iterations take account of monitoring findings.

The SEA monitoring is integrated into the WSSP 2050's overall monitoring framework to ensure that environmental considerations are evaluated alongside other key performance measures. This process will involve assessing the environmental impacts of the plan's implementation, with a focus on the sustainability of water services and the protection of ecosystems, shellfish, and bathing waters from wastewater discharges. The findings from SEA monitoring will contribute to the five-yearly reviews of the WSSP, as well as the annual sustainability reporting obligations under the Corporate Sustainability Reporting Directive (CSRD) reported in the Annual Report. This will ensure that the plan remains responsive to environmental legislation and our commitment to environmental protection and climate change mitigation and adaptation.

9.4.1 Review and update and remedial action

The WSSP will undergo regular reviews, at least every five years, as required by legislation. These reviews will allow adaptation to changing circumstances and evolving needs. Updates to the WSSP will be informed by changes in legislation and government policy related to water services and better information, especially on asset performance, demographics, and climate change. The SEA monitoring plan reporting will feed into this process on environmental performance.

The five-yearly assessment will be used to check that progress is being made towards meeting the WSSP 2050 objectives through implementation. If the five-yearly assessment finds that the WSSP 2050 objectives may not be achieved and/or a new approach is needed to meet secure, safe and reliable water and wastewater services for Ireland, actions in the strategy will be updated as needed.

SEA monitoring against SEA targets will also inform the identification of changes to the plan where remedial action is identified. The Monitoring Plan will also be reviewed and updated to ensure flexibility to meet changing requirements and data availability.

When a change to the WSSP 2050 is needed, this will be evaluated for environmental impact according to SEA and AA regulations. Consultations with the EPA and government departments are part of this process, as mandated by EU regulations. If the change is deemed to have a significant environmental impact, a Strategic Environmental Assessment (SEA) will be conducted. Additionally, an Appropriate Assessment (AA) will be performed if the change could significantly affect European sites, unless essential for site management and significant effects can be scientifically ruled out.

Table 9.2 Monitoring plan: indicators and targets

SEA Topics	Strategic Environmental Objectives	SEA Indicators	SEA Targets	Source information/ organisation	Reporting and timescale
Cross topics	*All objectives*	Progress implementing WSSP 2050 actions, SEA EAP and monitoring plan	See below	See below	Uisce Éireann Summary of performance against SEA indicators /targets to be reported in the WSSP 2050 5 year review. Tier 2 Plans - NWRP and National Wastewater Framework and related plans and other Tier 2 plan reviews and monitoring reporting
Water Environment	*Water quality and quantity* Restore and improve rivers, lakes, transitional and coastal waters, and groundwater to meet, WFD, MSFD and RBMP objectives where possible, and prevent status deterioration, in relation to the provision of water and wastewater services.	River Basin Management Plan (RBMP) Significant Pressures - Categories Urban Wastewater, Abstraction & Water Treatment Number of Site Spill risk assessments completed for existing assets for sensitive sites.	Implementation of Measures identified for Uisce Éireann in the RBMP and sectoral action plans Implementation of Site Spill risk assessments for all sensitive sites.	Significant pressures lists in the EPA WFD Application on EDEN EPA WFD https://gis.epa.ie/GetData/Download DWSPs prepared by Uisce Éireann Sectoral action plans within the 46 Catchment Management Plans (sub plans of the RBMP, yet to be developed)	Environmental Protection Agency (EPA) WFD Application - annual reports against KPIs (yet to be developed) DWSP relates reporting to EPA

SEA Topics	Strategic Environmental Objectives	SEA Indicators	SEA Targets	Source information/ organisation	Reporting and timescale
	Flood risk Protect and, where possible, reduce risk from flooding as a result of provision of water and wastewater services	See Tier 2/3 Plans programmes & projects (location specific information) National Water Resources Plan (NWRP) & National Wastewater Strategy Framework	See Tier 2/3 Plans programmes & projects (location specific information) NWRP & National Wastewater Strategy Framework Implementation (to be confirmed)	Uisce Éireann	See Uisce Éireann Tier 2/3 Plans programmes & projects (location specific information) NWRP & National Wastewater Strategy Framework Monitoring reporting – to be confirmed
Population, Economy, and Tourism and Recreation (including angling)	Protect and support sustainable economic and population growth, including housing provision and recreation, through the provision of reliable good quality water supply and wastewater services.	Performance assessment metrics reported to CRU NWRP & National Wastewater Strategy Framework	Performance assessment metric targets Implementation of NWRP & National Wastewater Strategy Framework (to be confirmed)	Commission for Regulation of Utilities (CRU) performance assessment report EPA annual report Drinking Water Quality in Public Supplies EPA annual report Urban Wastewater	CRU performance assessment report EPA annual Drinking Water Quality in Public Supplies report EPA annual Urban Wastewater report NWRP & National Wastewater Strategy Framework Monitoring reporting (to be confirmed)
Health and Wellbeing	Improve access to reliable good quality water supply and to wastewater services including to protect bathing waters	Drinking water and wastewater regulation compliance NWRP & National Wastewater Strategy Framework	Compliance with Drinking Water & wastewater regulations WWDA Bathing waters requirements compliance	EPA Remedial Action List Uisce Éireann WWDA Annual Environmental report	CRU Performance Assessment Report WWDA Annual Environmental Reports EPA Annual drinking water report

SEA Topics	Strategic Environmental Objectives	SEA Indicators	SEA Targets	Source information/ organisation	Reporting and timescale
		Wastewater Discharge Authorisation (WWDA) Bathing water requirements		Uisce Éireann Drinking water & wastewater annual returns Uisce Éireann Sectoral action plans within the 46 Catchment management plans.	EPA Annual urban wastewater treatment report EPA WFD Application - annual reports against KPIs (yet to be developed)
Climate Change	*Climate change mitigation* Minimise contributions to greenhouse gas emissions through energy efficiency and measures contributing to meeting carbon reduction targets, related to the provision of water and wastewater services.	CSRD metrics CRU performance assessment metrics	Net zero carbon ambition for 2040 CSRD targets CRU Performance metric targets	CRU Performance assessment report Uisce Éireann - Annual report: CSRD metrics	Uisce Éireann - Annual Report - Corporate Sustainability Reporting Directive (CSRD) metric reporting (to be confirmed) Uisce Éireann Annual report CRU- Performance assessment report
	Climate change adaptation Promote measures supportive of climate change resilience for the environment and resilience for the provision of water and wastewater services.	NWRP/ National Wastewater Strategy Framework CSRD metrics (to be confirmed) CRU performance assessment metrics	NWRP & National Wastewater Strategy Framework (to be confirmed) CSRD targets CRU Performance Targets	CRU Performance assessment report Uisce Éireann Annual report: CSRD metrics	NWRP & National Wastewater Strategy (to be confirmed)

SEA Topics	Strategic Environmental Objectives	SEA Indicators	SEA Targets	Source information/ organisation	Reporting and timescale
Biodiversity	Protect and enhance terrestrial, aquatic and soil biodiversity and habitat connectivity; particularly European sites and national sites (including proposed and candidate sites), and for protected species and the achievement of national and Uisce Éireann Biodiversity Action Plan (BAP) commitments, related to the provision of water and wastewater services.	Biodiversity net gain metrics CSRD metrics (to be confirmed) Biodiversity conservation incorporated into decision making	Biodiversity net gain targets Compliance with the requirements for biodiversity conservation under Wildlife (Amendment) Act 2023	Uisce Éireann monitoring for BAP Uisce Éireann Annual Report	Uisce Éireann Annual Report and–CSRD metrics (to be confirmed)
Fisheries	Protect marine and freshwater fisheries including shellfish waters, related livelihoods and safety for human consumption and support measures contributing to restoring or improving fisheries and fish/eel passage in relation to provision of water and wastewater services.	Wastewater Discharge Authorisation (WWDA) Shellfish water requirements RBMP Significant Pressures - Categories Urban Wastewater, Abstraction & Water Treatment	(WWDA Shellfish Water requirements compliance Implementation of Measures identified for Uisce Éireann in the RBMP and sectoral action plans	Uisce Éireann WWDA Annual environmental Reports Significant pressures lists in the EPA WFD Application on EDEN EPA WFD https://gis.epa.ie/GetData/Download Sectoral action plans within the 46 Catchment Management Plans (sub plans of the RBMP, yet to be developed)	Uisce Éireann WWDA Annual Environmental Reports EPA Urban wastewater annual report EPA WFD app annual reports against KPIs (yet to be developed)

SEA Topics	Strategic Environmental Objectives	SEA Indicators	SEA Targets	Source information/ organisation	Reporting and timescale
Material Assets	*Resource use and waste management* Seek to apply circular economy principles across lifecycle decision making for resources and wastes including minimising resource use and waste generation from provision of water and wastewater services including management of sludge and residuals.	CSRD metrics (in development)	CSRD targets	Uisce Éireann CSRD Metrics (to be confirmed)	Uisce Éireann Annual Report CSRD metric reporting (to be confirmed)
	Asset use Minimise impacts on other material assets and infrastructure, optimise use of existing assets and support capacity and upgrades of existing sites and assets in relation to provision of water and wastewater services.	Good practise Asset Management	ISO 55000 compliance	Certification of approval	Certification of approval Uisce Éireann Annual Report (to be confirmed)
Landscape, Townscape and Seascape	Protect and, where possible, contribute to enhancing designated and valued landscapes, townscapes and seascapes and visual amenity in relation to the provision of	See Tier 2/3 Plans programmes & projects (location specific information)	See Tier 2/3 Plans programmes & projects (location specific information)	Uisce Éireann	See Tier 2/3 Plans programmes & projects (location specific information)

SEA Topics	Strategic Environmental Objectives	SEA Indicators	SEA Targets	Source information/ organisation	Reporting and timescale
	water and wastewater services.				
Cultural Heritage – Archaeological and Architectural	Protect cultural heritage assets in terms of their condition, settings or access - including for designated sites, undesignated heritage and archaeological interest (including terrestrial and underwater heritage) related to the provision of water and wastewater services.	See Tier 2/3 Plans programmes & projects (location specific information)	See Tier 2/3 Plans programmes & projects (location specific information)	Uisce Éireann	See Tier 2/3 Plans programmes & projects (location specific information)
Geology and Soils	Protect soils and geological heritage sites and contribute towards improved management of soil resources related to the provision of water and wastewater services.	See Tier 2/3 Plans programmes & projects (location specific information)	See Tier 2/3 Plans programmes & projects (location specific information)	Uisce Éireann	See Tier 2/3 Plans programmes & projects (location specific information)
Air Quality	Improve performance on odour emissions, where possible, in relation to the provision of wastewater services.	No. of upgraded wastewater treatment and new plants meeting odour standards See Tier 2/3 Plans programmes & projects (location specific information)	Wastewater treatment measures and new plants meeting required odour standards See Tier 2/3 Plans programmes & projects (location specific information)	Uisce Éireann reporting requirements under SI No. 787 2005 See Tier 2/3 Plans programmes & projects (location specific information)	Uisce Éireann annual submission as required by SI. No. 787 of 2005 See Tier 2/3 Plans programmes & projects (location specific information)

10 Next Steps

Following the completion of the consultation and finalisation and adoption of the WSSP 2050, this updated SEA Environmental Report (including the SEA appendices), along with the SEA Statement, NIS, AA Determination and WSSP 2050 are published with the Consultation Report online at the following website: www.water.ie/wssp ,

The next stage is Stage 5 the implementation of the plan including the Environmental Mitigation Action Plan and the Monitoring Plan and the review and feedback process to inform internal reviews and a 5 yearly Iteration of the WSSP,

References

Communication From The Commission To The European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions *Eu Soil Strategy For 2030 Reaping The Benefits Of Healthy Soils For People, Food, Nature And Climate, Com (2021) 699, final*. Accessed: 26.07.2023. Available from: Http://Eur-Lex.Europa.Eu/

CSO. 2021. *Ireland's UN SDGs 2019 - Report on Indicators for Goal 6 Clean Water and Sanitation*. Accessed: 25.07.2023. Available from: https://www.cso.ie/en/releasesandpublications/ep/p-sdg6/irelandsunsdgs2019-reportonindicatorsforgoal6cleanwaterandsanitation/

DAERA. 2021a. *Draft Environment Strategy*. Accessed: 22.03.2024. Available from: https://www.daera-ni.gov.uk/consultations/environment-strategy-consultation

DAERA. 2021b. *Draft 3rd Cycle River Basin Management Plan 2021 to 2027*. Accessed: 23.09.2023. Available from: https://www.daera-ni.gov.uk/consultations/consultation-Draft-3rd-cycle-river-basin-management-plan-2021-2027

DAFM. 2020. *A Roadmap towards Climate Neutrality.* Accessed: 22.03.2024. Available from: https://www.gov.ie/en/publication/07fbe-ag-climatise-a-roadmap-towards-climate-neutrality/

DAFM. 2023. *Forest Strategy Implementation Plan including the Forestry Programme 2023-2027*. Accessed: 22.03.2024Available from: https://www.gov.ie/en/publication/1f6c6-forest-strategy-implementation-plan-including-the-forestry-programme-2023-2027/

DAFM. 2023, National Strategic Plan for Sustainable Aquaculture Development 2030 Accessed 19.04.2024. Available from: https://www.gov.ie/en/publication/ece67-national-strategic-plan-for-sustainable-aquaculture-development-2030/

DECC. 2013. *National Climate Change Adaptation Framework*. Accessed: 22.03.2024. Available from: https://www.gov.ie/en/publication/df8e2-national-climate-change-adaptation-framework/

DECC. 2018. *National Adaptation Framework*. Accessed: 22.03.2024. Available from: https://www.gov.ie/en/publication/fbe331-national-adaptation-framework/

DECC. 2020. *Waste Action Plan for a Circular Economy*. Accessed: 22.03.2024. Available from: https://www.gov.ie/en/publication/4221c-waste-action-plan-for-a-circular-economy/

DECC. 2021. *Whole of Government Circular Economy Strategy 2022 – 2023 'Living More, Using Less'*. Accessed: 22.03.2024. Available from: https://www.gov.ie/en/publication/b542d-whole-of-government-circular-economy-strategy-2022-2023-living-more-using-less/

DECC. 2024a. *Climate Action Plan 2024 (Consultation Draft)*. Accessed: 22.03.2024. Available from: https://www.gov.ie/en/publication/79659-climate-action-plan-2024/#:~:text=The%20Plan%20provides%20a%20roadmap,Development%20(Amendment)%20Act%202021

DECC. 2024b. *National Adaptation Framework (consultation draft)*. Accessed: 19.04.2024. Available from https://www.gov.ie/pdf/?file=https://assets.gov.ie/281278/ac892520-3f2a-4964-8c8a-7406c931d287.pdf#page=null

Defra. 2011. *UK Marine Policy Statement*. Accessed: 22.03.2024. Available from: https://www.gov.uk/government/publications/uk-marine-policy-statement

Department for Infrastructure. 2021. *Second Cycle Northern Ireland Flood Risk Management Plan 2021–2027*. Accessed: 22.03.2024. Available from: https://www.infrastructure-ni.gov.uk/publications/second-cycle-northern-ireland-flood-risk-management-plan-2021-2027

Department for Regional Development. 2014. *Sustainable Water - A Long Term Water Strategy for Northern Ireland*. Accessed: 22.03.2024. Available from: https://www.infrastructure-ni.gov.uk/consultations/sustainable-water-long-term-water-strategy-northern-ireland

Department of Culture, Heritage and the Gaeltacht. 2017. *National Biodiversity Action Plan 2017-2021*. Accessed: 22.03.2024. Available from: https://www.npws.ie/legislation/national-biodiversity-plan

Department of Health. 2019. *Healthy Ireland Framework 2019-2025*. Accessed: 22.03.2024. Available from: https://www.gov.ie/en/publication/e8f9b1-healthy-ireland-framework-2019-2025/

Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media. 2019. *People, Place and Policy - Growing Tourism to 2025*. Accessed: 22.03.2024. Available from: https://www.gov.ie/en/publication/7e58d7-people-place-and-policy-growing-tourism-to-2025/

DHLGH. 2018a. *River Basin Management Plan 2018 - 2021*. Accessed: 22.03.2024. Available from: https://www.gov.ie/en/publication/429a79-river-basin-management-plan-2018-2021/

DHLGH. 2018b. *National Planning Framework.* Accessed: 22.03.2024. Available from: https://www.npf.ie/project-ireland-2040-national-planning-framework/

DHLGH. 2019. *Water Quality and Water Services Infrastructure - Climate Change Sectoral Adaptation Plan*. Accessed: 22.03.2024Available from: https://www.gov.ie/en/publication/f5710-water-quality-and-water-services-infrastructure-climate-change-sectoral-adaptation-plan/

DHLGH. 2020. *Water Services Policy Statement 2018-2025*. Accessed: 22.03.2024. Available from: https://www.gov.ie/en/publication/49364-water-services-policy-statement-2018-2025/#:~:text=The%20Statement%20outlines%20four%20principles,quality%20outcomes%20across%20the%20sector

DHLGH. 2024. *Ireland's 4th National Biodiversity Action Plan.* Accessed: 22.05.2024. Available from: gov.ie - Ireland's 4th National Biodiversity Action Plan 2023–2030

DHLGH. 2024. *Water Action Plan 2024: River Basin Management Plan for Ireland 2022-2027.* Accessed: 22.10.2024. Available from: https://www.gov.ie/en/

DHLGH. 2022b. *Water*. Accessed: 22.03.2024. Available from: https://www.gov.ie/en/policy-information/ace5b-water/#public-drinking-water-and-wastewater-services

DHLGH. 2023. *National Marine Planning Framework*. Accessed: 22.03.2024. Available from: https://www.gov.ie/en/publication/a4a9a-national-marine-planning-framework/

DPER. 2021. *National Development Plan 2021-2030*. Accessed: 22.03.2024. Available from: https://www.gov.ie/en/publication/774e2-national-development-plan-2021-2030/

EPA. 2015. *Developing and Assessing Alternatives in Strategic Environmental Assessment*. Accessed: 22.03.2024Available from: https://www.epa.ie/publications/research/biodiversity/EPA-157_web.pdf

EPA. 2019. *Integrating Climatic Factors into Strategic Environmental Assessment in Ireland - A Guidance Note*. Accessed: 22.03.2024Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/EPA-SEA-Climatic-Factors-Guidance-Note.pdf

EPA. 2020a. I*reland's Environment 2020 - An Assessment – Report.* Accessed: 22.03.2024. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/state-of-the-environment/irelands-environment-2020---an-assessment.php

EPA. 2020b. *Good Practice Guidance on Cumulative Effects Assessment in Strategic Environmental Assessment*. Accessed: 22.03.2024. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/EPA-Good-Practice-Guidelines-SEA.pdf

EPA. 2021a. *SEA Screening Good Practice 2021*. Accessed: 22.03.2024. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/sea-screening-good-practice-2021.php

EPA. 2021b. *SEA Pack*. Accessed: 22.03.2024. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/SEA-Pack-2022.pdf

EPA. 2021c. *Research 391: Tiering of Environmental Assessment – The Influence of Strategic Environmental Assessment on Project-level Environmental Impact Assessment*. Accessed: 22.03.2024. Available from: https://www.epa.ie/publications/research/epa-research-2030-reports/research-391-tiering-of-environmental-assessment--the-influence-of-strategic-environmental-assessment-on-project-level-environmental-impact-assessment.php#:~:text=Improving%20impact%20assessment%20tiering%20involves,revisited%20for%20each%20subsequent%20project.

EPA. 2022a. *Good Practice Guidance Note on SEA in Water Sector*. Accessed: 22.03.2024. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/good-practice-guidance-note-on-sea-in-water-sector.php

EPA. 2022b. *Water Quality in Ireland 2016 – 2021 Summary Report*. Accessed: 22.03.2024. Available from: https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/water-quality-in-ireland-20162021-summary-report.php

EPA. 2022c. *Good Practice Guidance Note on SEA in Water Sector*. Accessed: 22.08.2023. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/good-practice-guidance-note-on-sea-in-water-sector.php

EPA. 2022d. *Catchments*. Accessed: 22.03.2024. Available from: https://gis.epa.ie/GetData/Download

EPA. 2022e. *Air Quality in Ireland Report 2022*. Accessed: 22.03.2024. Available from: https://www.epa.ie/publications/monitoring--assessment/air/air-quality-in-ireland-2022.php

EPA. 2023a. *Guidance on SEA Statements and Monitoring*. Accessed: 22.03.2024. Available from: https://www.epa.ie/publications/monitoring--assessment/assessment/strategic-environmental-assessment/guidance-on-sea-statements-and-monitoring.php

EPA. 2023b. *Ireland's environment.* Accessed: 22.03.2024. Available from: https://www.epa.ie/our-services/monitoring--assessment/assessment/Irelands-environment/

EPA. 2023c. *Water Quality in 2022: An Indicators Report*. Accessed: 22.03.2024. Available from: https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/Water-Quality-2022-Indicator-Report-Web.pdf

EPA. 2023d. *WFD Status Tables (excel) (All Waterbodies) 2016-2021 – Oct 2023.* Accessed: 01.11.2023. Available from: https://gis.epa.ie/GetData/Download

EPA. 2023e. *WFD Risk Data Excel – Uploaded August 2022.* Accessed: 01.11.2023. Available from: https://gis.epa.ie/GetData/Download

EPA. 2023f. *WFD Status Geodatabase (All Waterbodies) 2016-2021 - May 2023*. Accessed: 22.03.2024. Available from: https://gis.epa.ie/GetData/Download

EPA. 2023g. *Ireland's National Water Quality Monitoring Programme 2022–2027*. Accessed: 22.03.2024. Available from: https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/EPA_WFD_MonitoringProgramme_2022_2027.pdf

EPA. 2023h. *Bathing Water Quality in Ireland A report for the year 2022*. Accessed: 22.03.2024. Available from: https://www.epa.ie/publications/monitoring--assessment/freshwater--marine/Bathing-Water-Quality-in-Ireland-2022.pdf

EPA. 2023i. *Bathing water locations and compliance*. Accessed: 22.03.2024. Available from: https://gis.epa.ie/GetData/Download

EPA. 2023j. *Urban Waste Water Treatment in 2022*. Accessed: 21.02.2024. Available from: https://www.epa.ie/publications/monitoring--assessment/waste-water/uww-report-2022.php

Government of Ireland. 2023. *Ireland's Sustainable Development Goals data hub*. Accessed: 22.03.2024. Available from: https://irelandsdg.geohive.ie

GSI. 2023. *Data and Maps*. Accessed: 22.03.2024. Available from: https://www.gsi.ie/en-ie/data-and-maps/Pages/Geoheritage.aspx#Nationwide

IFI. 2023. *Annual Report 2021*. Accessed: 22.03.2024. Available from: https://www.fisheriesireland.ie/publications?f%5B0%5D=categories%3A264

Irish Water. 2016. *National Wastewater Sludge Management Plan*. Accessed: 22.03.2024. Available from: https://www.water.ie/iw-documents/our-projects/Final-NWSMP.pdf

Irish Water. 2017. *Lead Mitigation Plan*. Accessed: 22.03.2024. Available from: https://www.water.ie/projects/strategic-plans/lead-mitigation-plan/

Irish Water. 2019. *Strategic Funding Plan 2019–2024*. Accessed: 22.03.2024. Available from: https://www.water.ie/projects/strategic-plans/irish-water-strategic-fun/#:~:text=The%20Uisce%20%C3%89ireann%20Strategic%20Funding,4.9bn%20in%20operating%20costs

Irish Water. 2021. *Irish Water's Biodiversity Action Plan*. Accessed: 22.03.2024. Available from: https://www.water.ie/docs/21668_Ervia_IrishWaterBiodiversityActionPlan_v7.pdf

Northern Ireland Water. 2020. *Water Resource And Supply Resilience Plan*. Accessed: 22.03.2024. Available from: https://www.niwater.com/sitefiles/resources/pdf/2020/wrm/waterresourcesupplyresilienceplan-mainreport.pdf

Northern Ireland Water. 2021. *Our Strategy 2021-2046*. Accessed: 22.03.2024. Available from: https://www.niwater.com/ourstrategy/

NPWS. 2015. *National Peatlands Strategy*. Accessed: 22.03.2024. Available from: https://www.npws.ie/sites/default/files/publications/pdf/NationalPeatlandsStrategy2015EnglishVers.pdf

OPW. 2018. *Catchment Flood Risk Assessment and Management Programme*. Accessed: 06.01.2023. Available from: https://www.floodinfo.ie/map/floodplans

OPW. 2023. *Flood maps*. Accessed: 22.03.2024. Available from: https://www.floodinfo.ie/

Uisce Éireann. 2023. *National Water Resources Plan*. Accessed: 22.03.2024. Available from: https://www.water.ie/projects/strategic-plans/national-water-resources/