

Autumn 2022



# Regional Water Resources Plan – Eastern and Midlands

Strategic Environmental Assessment  
Non-Technical Summary



Tionscadal Éireann  
Project Ireland  
**2040**

Data disclaimer: This document uses best available data at time of writing. Some sources may have been updated in the interim period. As data relating to population forecasts and trends are based on information gathered before the Covid 19 Pandemic, monitoring and feedback will be used to capture any updates. The National Water Resources Plan will also align to relevant updates in applicable policy documentation.

Baseline data included in the RWRP-EM has been incorporated from numerous sources including but not limited to; National Planning Framework, Central Statistics Office, Regional Spatial and Economic Strategies, Local Authority data sets, Regional Assembly data sets and Irish Water data sets. Data sources are detailed in the relevant sections of the RWRP-EM. 2019 was selected as the base year to align with the planning period (2019-2025) of the NWRP.

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# 1 Introduction and Background

On the 1st of January 2014, through the Water Services Act (No. 1) 2013, Irish Water assumed statutory responsibility for the provision of public water services and management of water and wastewater investment. Irish Water’s role is to provide public water and wastewater services throughout the country.

Irish Water is the custodian with the responsibility to manage the precious water resource and, with Local Authority partners, secure it for future generations. It is Irish Water’s responsibility to ensure that all their customers receive a safe and secure supply of drinking water and have their wastewater collected, appropriately treated and returned to the environment. Irish Water support Ireland’s social and economic growth in a sustainable manner through appropriate investment in water services.

## 1.1 What is the National Water Resources Plan?

Effective water services, including the delivery of a sustainable and reliable clean water supply and safe disposal of wastewater, are essential for a modern country. Being able to understand and estimate how much water is required, where it is required, and the variability of requirements over the course of the year or over time, is essential to plan appropriately for the future of the public water supply.

A Water Resources Plan is a strategic plan used to identify deficiencies and need across a water supply and to develop Plan level solutions to address these issues.

Irish Water’s National Water Resources Plan (NWRP) will be the first resources plan for the public water supply in the Republic of Ireland. It will allow Irish Water to integrate Government Policy, Legislation and external factors that have the potential to impact Irish Water supplies into the planning and operation of its existing and future supply asset base.

The objective of a NWRP is to manage customer and communities needs while meeting their requirements over the short, medium and long term by ensuring safe, secure, sustainable and reliable water supplies. The NWRP will:

- Enable Irish Water to address needs across our water supplies in the most effective way over time, by identifying and in turn, prioritising what needs to be included in 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; and
- Provide a framework to track outcomes, allowing interventions to be prioritised to bring the water supply up to the required standards in the shortest possible timeframe.

## 1.2 Development of the National Water Resources Plan

As this is Irish Water’s first NWRP it has been split into two distinct stages, summarised in Table NTS 1.1. Irish Water is currently in Phase 2.

Table NTS 1.1 National Water Resources Plan Phases

| NWRP Phases                                      | NWRP Reports                   | Content   |
|--|--------------------------------|---|
| <b>Phase 1:<br/>Framework Plan<br/>Completed</b> | NWRP – draft<br>Framework Plan | Need Identification including the Supply Demand Balance (SDB)<br>Calculations<br>NWRP Objectives<br>Generic Options Types |

| NWRP Phases                                    | NWRP Reports                       | Content  |
|--|------------------------------------|--|
|  |                                    | Options Assessment Methodology<br>Published for consultation with an SEA Environment Report and Natura Impact Statement (NIS).   |
|  | Case Study - Study Area            | Test of the Options Assessment Methodology against Study Area 5 provided as an example with the draft NWRP Framework to demonstrate the methodology. The outcomes were not part of the draft Framework Plan consultation.  |
|  | NWRP - final Framework Plan        | Finalisation of the Framework Plan taking account of consultation comments. Framework Plan adopted and published with an SEA Statement and AA Determination in May 2021  |
| <b>Phase 2:<br/>RWRPs<br/>(Regional Plans)</b> | Draft RWRPs (draft Regional Plans) | Application of Options Assessment Methodology and Identification of the Preferred Approach for the following regions: <ul style="list-style-type: none"> <li>• North West (GA1<sup>1</sup>)</li> <li>• South West (GA2)</li> <li>• South East (GA3)</li> <li>• Eastern and Midlands (GA4)</li> </ul> |
|  | Final RWRPs (final Regional Plans) | Finalise and adopt each RWRP (Regional Plans) once their individual consultations are completed.   |

### 1.3 Regional Water Resource Plan for the Eastern Midlands

The Eastern and Midlands Region was selected as the first regional group to be assessed for the following reasons:

- It includes a representative mix of small rural and large urban WRZ;
- It is the group area with the greatest overall SDB deficit;
- It is the group area with the largest population; and
- There are significant investments proposed in the region as part of the current Revenue Control 3 Investment Cycle.

### 1.4 Strategic Environmental Assessment

#### 1.4.1 This Report

This is the Non-Technical Summary report of the SEA Environmental Report which has been prepared to document the environmental assessment of the Regional Plan. The 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). The SEA Environmental Report, together with its appendices, this NTS and the SEA Statement, are published alongside the Regional Plan and notice given in accordance with Article 16 of the SEA Regulations.

<sup>1</sup> Group Area (GA) is an alternative reference for the regional areas

### 1.4.2 Legislative Requirement

Council Directive 2001/42/EC of the European Parliament and of the Council of 27th June 2001 on the assessment of the effects of certain plans and programmes on the environment (the SEA Directive) established the statutory requirement for SEA as part of the development of certain plans and programmes. The Directive is applicable to the Framework Plan and each of the Regional Plans of the NWRP.

The transposing Irish Regulations are the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. No. 435 of 2004) as amended by the European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011 (S.I. No. 200 of 2011).

### 1.4.3 Strategic Environmental Assessment Process

The purpose of SEA is to enable plan-making authorities such as Irish Water to incorporate environmental considerations into decision-making at an early stage and in an integrated way throughout the plan-making process. The SEA process is undertaken in four (4) stages. The progress for each stage of the SEA process for the Eastern and Midlands Regional Plan is summarised in Table NTS 1.2. The SEA process for Phase 1 of the NWRP, the Framework Plan, has already been completed.

Table NTS 1.2 Stages of SEA for the Eastern and Midlands Regional Plan

| Stage  | Purpose and Requirements  | Progress to Date / Current Status  |
|--|---|--|
| <b>Stage 1: Screening</b>  | Prior to starting the SEA process, a plan or programme undergoes “screening” to determine whether it requires an SEA.   | SEA Screening Statement – Irish Water (as the responsible authority) determined that SEA was required for the NWRP when screening was carried out in August 2017 and was also included with the Regional Plan EM SEA Scoping Report June 2021  |
| <b>Stage 2: Scoping</b>  | 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 – The SEA Scoping Report set the geographical and temporal scope of the Regional Plan and SEA, the baseline environment, and a proposed framework of SEA objectives to inform the Stage 3 assessment. Formal statutory consultation was carried for 6 weeks ending in July 2021 |
| <b>Stage 3: Identification, Prediction, Evaluation and Mitigation of Potential Effects</b> | Within the context and parameters identified at the scoping stage. Identification and evaluation of likely significant effects of the Regional Plan is carried out, including consideration of alternatives and determination of measures to mitigate and monitor potential residual effects. | Environmental Report (SEA of the Regional Plan). Consultation took place alongside the Regional Plan consultation from 14 <sup>th</sup> December 2021 to 8 <sup>th</sup> April 2022.   |

| Stage  | Purpose and Requirements   | Progress to Date / Current Status   |
|--|--|---|
| <b>Stage 4: Consultation, Revision and Post-Adoption</b> | Consultation with statutory consultees and the public. This may require changes to the Regional Plan and SEA Environmental Report in light of responses.<br><br>Implementation of the monitoring plan. | This stage follows on from stage 3 and involves responding to the consultation comments and incorporating into the Regional Plan, finalisation of the plan and publication of the Post-Adoption SEA Statement.<br><br><div style="border: 2px solid red; border-radius: 15px; padding: 10px; text-align: center;"> <b>Current Stage in the SEA Process</b> </div> |

#### 1.4.4 Development of the Regional Plan within the Framework Plan, the SEA and AA

The options development process which Irish Water propose to use to develop the Preferred Approach for all Regional Plans is described within the Framework Plan and was subject to a separate SEA process and finalised in May 2021. The options assessment methodology is outlined in chapter 6, with further detail available within the Framework Plan and the SEA Statement which accompanies the Framework Plan which can both be found at: <https://www.water.ie/projects/strategic-plans/national-water-resources/>

SEA and AA requirements were incorporated into the development of the Framework Plan and have influenced the development of the options assessment methodology for this Regional Plan and future Regional Plans. Figure NTS 1.3 shows how the SEA and AA reporting will align with each other and with development of the Regional Plan.



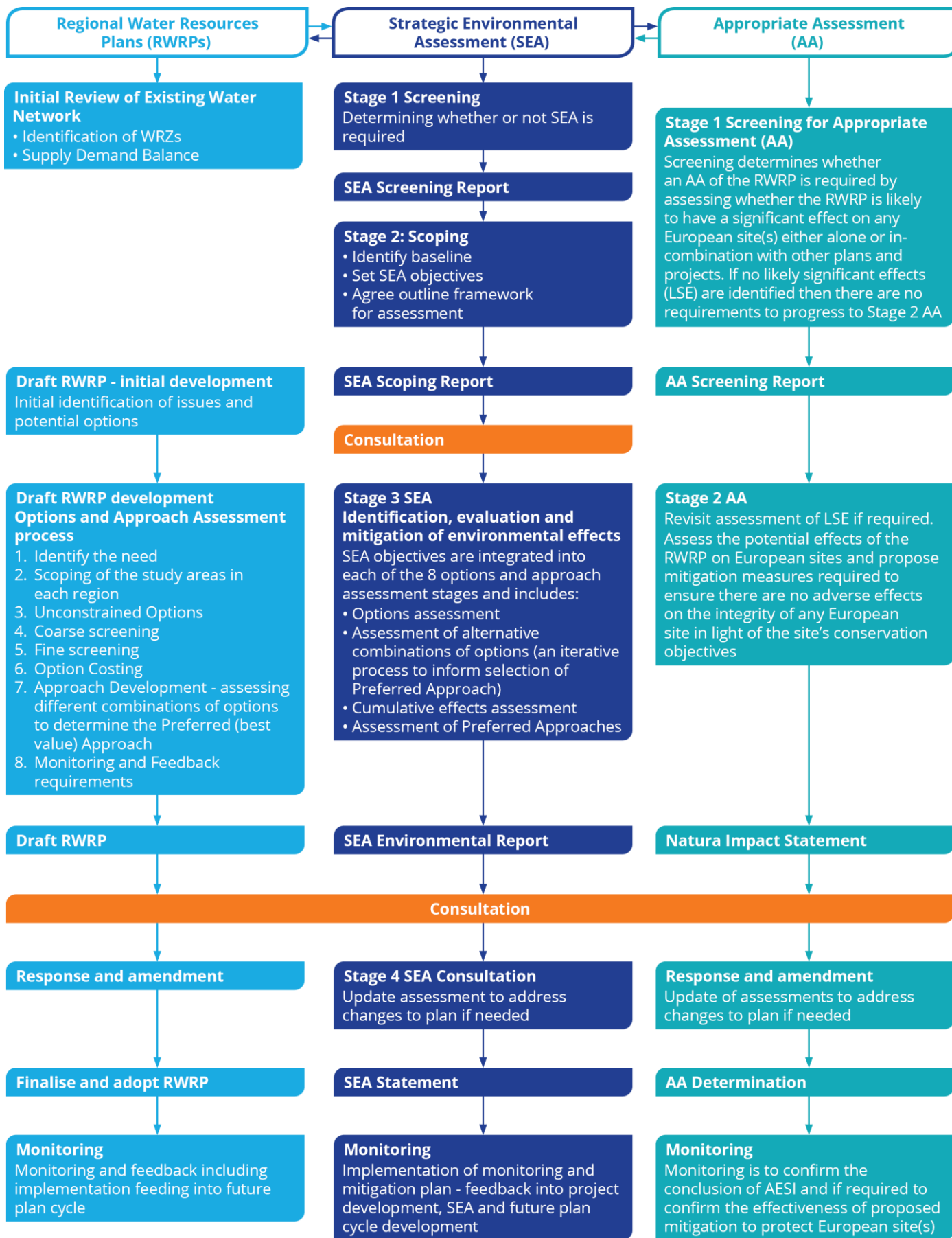


Figure NTS 1.3 Regional Plan and Strategic Environmental Assessment Process

## 2 Overview of Eastern and Midland Region

### 2.1 Eastern Midlands Region

There are 201 Water Treatment Plants (WTPs) in the Eastern and Midlands Region, which collectively serve 2.48 million people or 60% of the population of Ireland, via approximately 19,000 kilometres of distribution network. The size of these WTPs varies, with the largest two in the region producing on average 49% of the water supplied and the remaining producing on average about 51% or 381.5 MI/d of the total supply.

The WTPs feed water into supply areas known as Water Resources Zones (WRZs). Each WRZ is an independent water supply system serving a region, city, town or village and is governed by topography or the extent of the water distribution network in an area. Within a WRZ most customers receive the same Level of Service (LoS), measured as a probability of interruption to services (for example one interruption to the supply in 50 years).

The Eastern and Midlands Regional Plan (or the RWRP-EM) summarises key issues that impact the quality, sustainability and reliability of our existing water supplies, in this region, including:

- Levels of Service
- Treatment Capacity;
- Water Quality;
- Network Performance;
- Abstractions potentially at risk of exceeding sustainable abstraction thresholds and;
- Constrained Funding.

In addition, Irish Water also face key challenges over the coming years, which have the potential to exacerbate the current problems in the region, including:

- A growing population;
- A changing climate;
- Changes in land use and emerging contaminants;
- Legislative changes; and
- An Environment in Need.

Addressing these challenges as part of the overall NWRP, ensures that future infrastructure development is proportionate to the identified need and is sustainable, reliable and resilient.

### 2.2 Eastern Midlands Study Areas

The Eastern and Midlands Region is further subdivided into nine study areas (SAs) based on Water Framework Directive (WFD) catchment and WRZ boundaries within the region, as shown in Figure NTS 2.1.

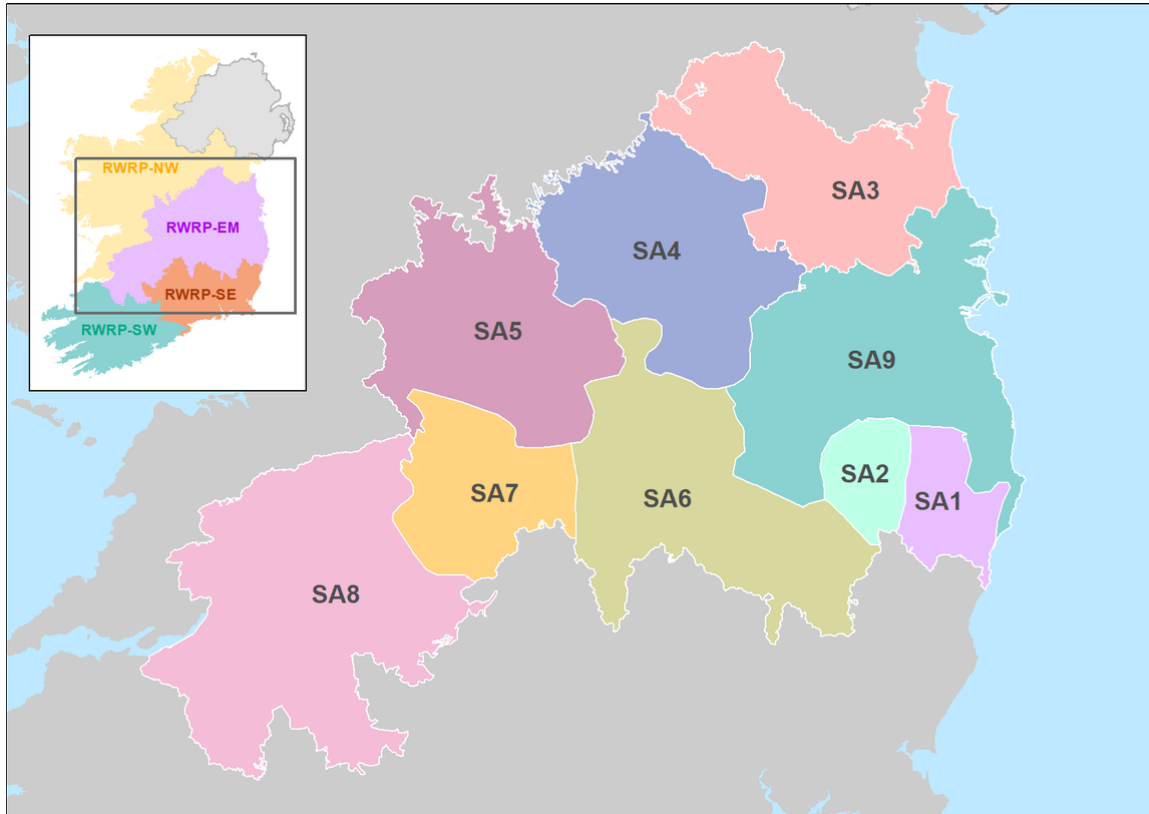


Figure NTS 2.1 Eastern and Midlands Region Study Areas

## 3 Consultation

### 3.1 Purpose of consultation and engagement

Public consultation and stakeholder engagement is a key element in ensuring stakeholders and members of the public have an opportunity to contribute to the development of plans and projects in Ireland. Irish Water is undertaking an accessible, meaningful, and accountable consultation and engagement process with stakeholders and members of the public throughout the development of the NWRP including the Regional Water Resource Plans (RWRPs).

There are two (2) main stages to the engagement and consultation relevant to the Regional Water Resource Plan Eastern and Midlands (RWRP-EM) and the SEA Environmental Report. The overall consultation process for the RWRP-EM is summarised in Figure NTS 3.1 below:

- Framework Plan SEA process and consultation** - including SEA scoping consultation and wider engagement on the developing options and approach assessment methodology and the publication of the draft Framework Plan and SEA Environmental report for consultation which focused on setting out the methodology to be applied through the Regional Plans. The NWRP Framework Plan Consultation adopted in Spring 2021 and it, along with the SEA Statement and AA Determination, are available on <https://www.water.ie/projects/strategic-plans/national-water-resources/>
- RWRP-EM SEA process and consultation** - these apply the methodology from the adopted Framework Plan and as part of the SEA process, scoping consultation has been undertaken and responses have informed the SEA and draftRWRP-EM development.

## RWRP Eastern & Midlands Public Consultation Roadmap

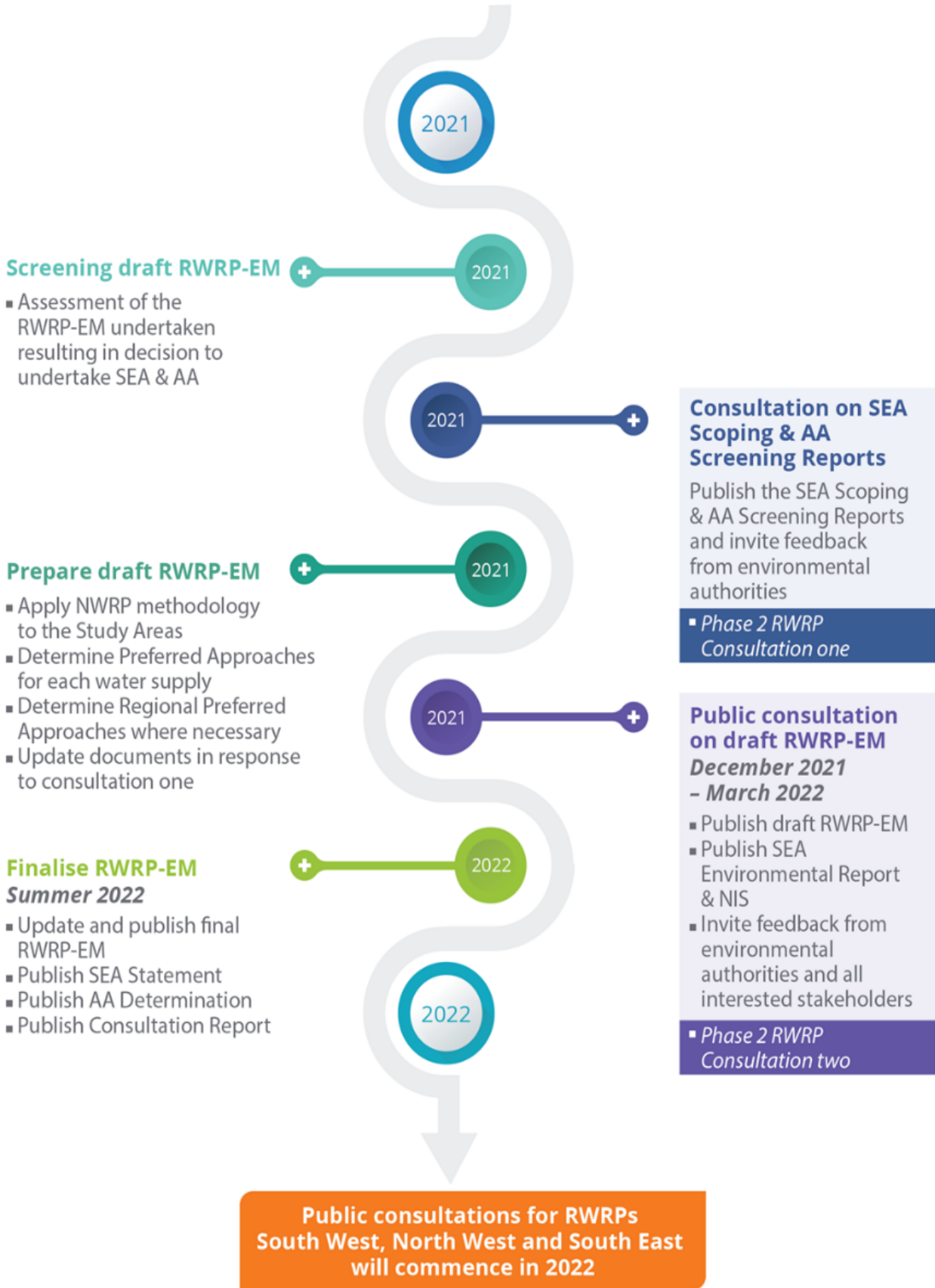


Figure NTS 3.1 Consultation Roadmap

### 3.1.1 Pre-consultation 1 Engagement

The draft RWRP-EM has been developed applying the methodology from the adopted Framework Plan and SEA taking account of the consultation received through that process so is closely linked although a separate formal process is followed for each Regional Plan.

### 3.1.2 Consultation 1 scoping stage

A SEA scoping report was consulted on in line with Article 9 (5) of the SEA Regulations (S.I. No. 435 of 2004), and was issued to the following statutory Environmental Authorities:

- The Environmental Protection Agency (EPA);
- Department of Housing, Local Government and Heritage (DHLGH);
- The Department of Tourism, Culture, Arts, Gaeltacht, Sport and Media (DTACGSM)<sup>2</sup>;
- The Department of Agriculture, Food and the Marine (DAFM);
- Department of the Environment, Climate and Communications (DECC); and
- Department of Agriculture, Environment and Rural Affairs (DAERA).

This SEA Scoping Report is available online at the following website: <https://www.water.ie/nwrp>

The scoping consultation closed on the **23<sup>rd</sup> July 2021** and comments received have been considered. These comments and the responses to them are summarised in the SEA Environmental Report in Appendix G.

## 4 Review of Relevant Plans, Policies and Programmes

This section provides a summary of the plans, policies and programmes that have been identified as potentially important in development of the baseline environment and SEA objectives for the SEA of the Regional Plan for the Eastern and Midlands.

### 4.1 Key Plans Policies and Programmes

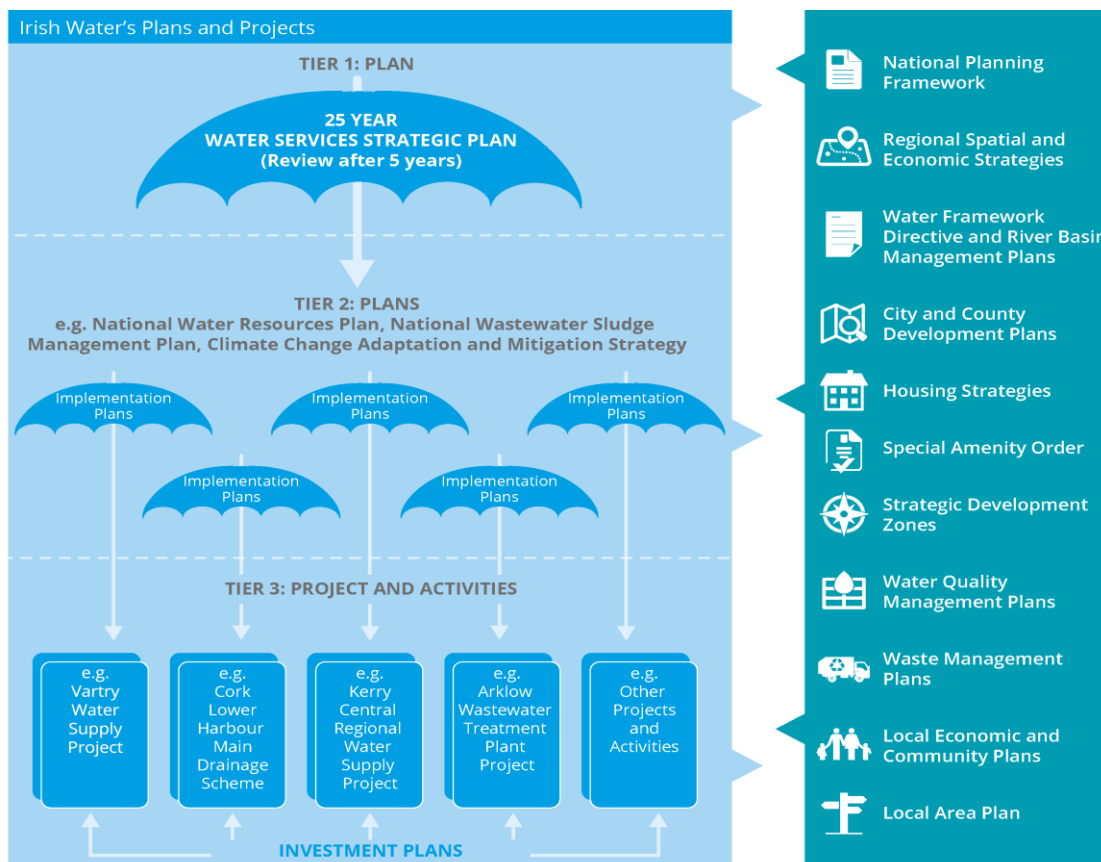
A comprehensive review of relevant national and regional level policies, plans, programmes and legislative framework of relevance to water resource planning, including related Irish Water plans and strategies, has been undertaken and consulted upon within SEA Environmental Report for the Framework Plan available at [www.water.ie/nwrp](http://www.water.ie/nwrp). The identified documents will also be directly relevant to the Regional Plan for the Eastern and Midlands and are provided in Appendix F (section F.1). Key influences identified at the national level which also apply to the Regional Plan include:

- UN Sustainable Development Goals (SDGs);
- 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);
- EU Drinking Water Directive (Directive 2020/2184 of the European Parliament and of the Council on the quality of water intended for human consumption (recast));

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<sup>2</sup> When scoping was undertaken for the Eastern and Midland Regional Plan the Minister for Minister for Tourism, Culture, Arts, Gaeltacht, Sport and Media was the appropriate Minister for the purposes of SEA and AA legislation. These functions has now been transferred to the Minister for Housing, Local Government and Heritage pursuant to the [Heritage \(Transfer of Departmental Administration and Ministerial Functions\) Order 2021](#).

- River Basin Management Plan for Ireland 2018-2021 (the draft 2022-2027 Plan was published for consultation in September 2021);
- General Scheme on Water Environment (Abstractions) Bill 2018;
- National Planning Framework – Project Ireland 2040;
- National Adaptation Framework Sectoral Adaptation Planning;
- Regional Spatial and Economic Strategy (RSES) for the Eastern and Midlands Region, RSES for the Southern Region and RSES for the Northern and Western Regional Assembly; and
- Related Irish Water plans and strategies including the Water Services Strategic Plan (Tier 1 plan), National Wastewater Sludge Management Plan, Lead in Drinking Water Mitigation Plan, Sustainable Energy Strategy - Climate Change Mitigation and Adaptation Strategy, Leakage Reduction Programme and National Disinfection Programme



It should be noted that the listing of the documents on the right of the graphic is not intended to show a hierarchy of plans or an alignment of the plans with the Irish Water Tier 1, Tier 2 and Tier 3 plans/projects.

**Figure 4.1 Interaction between the Planning System and Irish Water's Plans and**

A focussed list of additional local level plans policies and strategies relevant to Regional Plan for the Eastern and Midlands specifically is provided in SEA Environmental Report section F.2 of Appendix F. Regional and local level plans likely to be key for the purposes of the SEA for the Regional Plan fall under five main groups as follows:

- County Development Plans, Local Area Plans and Town Development Plans - Planning Authorities are legally required to make County and City Development Plans which sets an agenda for development to make adequate provision for the scale of population growth projected;
- County Heritage Plans and County Biodiversity Action Plans - these plans help ensure targets for species and habitat conservation in the National Biodiversity and Heritage Plans are effective at a local level;

- County Climate Change Adaptation Strategies and Climate Action Plans - these strategies and plans establish future climate risks at a local level and propose actions to adapt to currently observed and future climatic changes;
- County Landscape Character Assessments - these assessments classify and describe the landscape in a county; and
- Regional Waste Management Plans.

Other relevant plans, policies and strategies considered and listed within Appendix F of the SEA Environmental Report include Conservation Plans, Renewable Energy Strategies, Community Biodiversity Action Plans and Noise Action Plans.

These plans and policies have been taken into account in the development of the SEA objectives as described in the Framework Plan and RWRP-EM SEA Scoping Report and in the assessment criteria used to assess the options and alternatives considered in the development of the RWRP-EM. Figure NTS 4.1 identifies how the NWRP relates to the key national, regional and local level plans, policies and strategies identified above.

## 5 Baseline Environment

This section sets the proposed geographical and temporal scope of the SEA for the Regional Plan, and provides environmental baseline information on key environmental topics including:

- Population, Economy, Tourism and Recreation, and Human Health;
- Water Environment;
- Biodiversity, Flora and Fauna;
- Material Assets;
- Landscape and Visual Amenity;
- Air Quality and Noise;
- Climate Change;
- Cultural Heritage; and
- Geology and Soils.

### 5.1 Scope of the Assessment

#### 5.1.1 SEA Geographical Scope

At this stage of the assessment the core baseline area for the SEA of the Regional Plan for the Eastern and Midlands is the area covered by the nine (9) study areas which comprise the Eastern and Midlands Region (see Figure NTS 5.1) and sites designated for nature conservation that are hydrologically connected to waterbodies in the core baseline area. The assessment process undertaken for the SEA and AA during evolution of the Plan will consider the potential for linkages of this type, and where necessary, the geographic scope of the core baseline area will be extended accordingly.



Figure NTS 5.1 Water Supply Zones and Key Settlements in the Eastern and Midlands Region

### 5.1.2 Transboundary Effects

The RWRP–EM will solely cover Irish Water’s operational area for the Eastern and Midlands which lies approximately 20km from the boundary between the Republic of Ireland and Northern Ireland (see Figure NTS 5.2). Transboundary effects are not expected on the basis that the border with Northern Ireland is at the distance noted, there are no shared groundwater WFD water body units, and the one shared hydrometric area (area 06 Newry, Fane, Glynde and Dee - a small area north of Drogheda)



predominantly discharges to Dundalk Bay. Transboundary policies and plans have been reviewed as listed in Appendix F of the SEA Environmental Report and potential for transboundary effects associated with plan proposals have been considered through the assessment process and findings are included in this Environmental Report. No transboundary effects have been identified through this process. The RWRP-EM, SEA Environmental Report and NIS will be provided to the relevant Northern Ireland agencies as part of the consultation process.

### 5.1.3 SEA Temporal Scope

The proposed temporal scope for the SEA is the 25-year period between 2019 and 2044 that is covered by the Framework Plan and RWRP-EM.

## 5.2 High Level Environmental Trends in the EM Region and Across Ireland

The EPA's latest State of the Environment Report (SOER 2020) (EPA, 2020) 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.

The following areas identified as challenges to address across Ireland within the SOER 2020 are particularly pertinent to development of the RWRP-EM:

- **Climate:** high greenhouse gas (GHG) emissions continue, and the scale and pace of GHG reductions must accelerate to meet 2019 Climate Action Plan targets;
- **Water:** deteriorating water quality trends over the last 20 years, particularly for rivers; and
- **Nature:** 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 and the circular economy and air quality are also areas 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 following sections.

These three key challenges of relevance to the RWRP-EM are directly linked to the following UN Sustainable Development Goals (SDG):

- **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; and
- **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.

Significant population increase is anticipated over the coming two decades, which is an important consideration for water demand, and subsequently for the water environment and compliance with the WFD Directive and SDG 14. Section 3.2.5 of the RWMP-EM sets out the projected demand in this region over the next 25 years versus existing supply, taking into account where reductions in abstraction volumes are known to be required for sustainability reasons.

## 5.3 Baseline Topic Interactions, Issues and Opportunities

### 5.3.1 Interrelationships between SEA topics

In accordance with the SEA Directive, it is a requirement to recognise the interrelationships between environmental topics, as changes to one environmental aspect can directly or indirectly influence others. Table NTS 5.1 below indicates the potential interrelationships between SEA topics demonstrating most topics interact to some level in a range in some circumstances. Key interactions are highlighted.

Table NTS 5.1 Interrelated SEA topics

|  |   |                   |  |                 |                              |                        |                |  |
|--|---|-------------------|--|-----------------|------------------------------|------------------------|----------------|--|
| Water environment  |   |                   |  |                 |                              |                        |                |  |
| Biodiversity, (including flora and fauna)                      |   |                   |  |                 |                              |                        |                |  |
| Material assets  |   |                   |  |                 |                              |                        |                |  |
| Landscape and visual amenity                                   |   |                   |  |                 |                              |                        |                |  |
| Air quality and noise*   |   |                   |  |                 |                              |                        |                |  |
| Climate change   |   |                   |  |                 |                              |                        |                |  |
| Cultural heritage (Including architectural and archaeological) |   |                   |  |                 |                              |                        |                |  |
| Geology and soils  |   |                   |  |                 |                              |                        |                |  |
| SEA topics   | Population, local economy, tourism and recreation, and human health | Water environment | Biodiversity (including flora and fauna) | Material assets | Landscape and visual amenity | Air quality and noise* | Climate change | Cultural heritage (including architectural and archaeological) |
| Key  | Interaction   |                   | Key areas of interaction                 |                 | No interaction               |                        |                |  |

Table NTS 5.2 Key Issues and Opportunities

| SEA Topic   | Issues and opportunities   |
|---|--|
| Population, Economy, Tourism and Recreation, and Human Health | <p>Issues: increasing population and the increased stress of climate change on water quality and water resources could affect health and well-being.</p> <p>Opportunities: Irish Water will put in place plans to assess water quality and put in place measures to address risks as part of the NWRP.</p> <p>Irish Water has ongoing activities to improve the Supply Demand Balance across the Eastern and Midlands Region, including, leakage management and water conservation measures.</p> |

| SEA Topic                     | Issues and opportunities   |
|-------------------------------|--|
|                               | <p>Raising awareness of the importance of water conservation and efficiency measures, and the value of the environment for health and wellbeing, can play an important part in water planning along with valuing water as part of access to environment for recreation.</p>  |
| Water Environment             | <p>Issues: The proposed abstraction licensing, aligned to WFD requirements, will require many current abstractions to be licensed and may limit future abstraction or involve significant conditions at associated sites. Across the Eastern and Midlands Region some of the existing abstractions are potentially unsustainable in the medium term; specifically, during drought periods.</p> <p>Irish Water will need to update their sustainability analysis and impact on their baseline SDB calculations when regulatory assessment for new legislation is undertaken.</p> <p>Groundwater and flood risks and vulnerability are potential issues for water supply and environment but detailed siting and design through the more project development stages is expected to take account although the plan assessment aims to identify strategic level risk.</p> <p>Opportunities: to take account of identified pressure on the water environment in the selection of solutions for individual Study Areas and opportunities for reducing pressures on resource and improving water quality.</p> |
| Biodiversity, Flora and Fauna | <p>Issues: it is considered especially important to avoid the loss of irreplaceable or rare habitats and increasing pressure on vulnerable species; potentially through direct land take or indirect such as through increased abstraction pressure</p> <p>Opportunities: potential for enhancement through reducing pressure on sensitive sites or building in requirements such as habitat enhancement in to schemes and identifying potential for nature-based solutions and catchment management</p>   |
| Material Assets               | <p>Issues: WTP assets and network infrastructure requiring improvement or replacement.</p> <p>Opportunities: improvements to support reliability of access to good quality water</p>   |
| Landscape and Visual Amenity  | <p>Issues: potential for climate change to affect land use and influencing landscape character, quality and amenity</p>  |
| Air Quality and Noise         | <p>No specific issues identified for the baseline for the Eastern and Midlands Region related to the types of options and combinations under consideration for the Regional Plan. Disturbances related to construction impacts are addressed in terms of receptors within the population and health topic.</p>   |
| Climate Change                | <p>Issues: Climate change issues regarding sea level rise, flooding, extreme weather events and changes in seasonal weather patterns. Climate change has been taken into account in supply forecasts and additional risks to infrastructure and operations will need to be taken into account in planning for drought and freeze/thaw events and in detailed scheme design and network operation.</p> <p>Opportunities: additional management to minimise impact on supply and the environment, vulnerability to climate change and drought is required.</p>   |
| Cultural Heritage             | <p>Issues: known cultural heritage and archaeological assets and potential unknown archaeological assets could be affected by construction works or change to setting or</p>   |

| SEA Topic                   | Issues and opportunities  |
|-----------------------------|---|
|                             | access. Potential for hydrological changes to affect heritage and archaeological assets.  |
| Geology and Soils           | Issues – potential loss of soils or pollution from runoff - general need for good soil conservation and retention of nutrients and carbon in soil resources.<br><br>Opportunities to improve soil carbon and retention of nutrients contributing to improving water quality |
| Interactions between topics | Key interactions include links between biodiversity and water resources and climate change and between soils, land management, water quality, biodiversity, flood risk, and climate change  |

Key issues, trends and opportunities, summarised in Table NTS 5.2 above, are addressed in each of the Study Area Environmental Reviews 1-9 (Appendix H).

## 6 Options and Approach Assessment Methodology

### 6.1 SEA Approach Summary

The set of SEA objectives developed at the Phase 1 scoping stage have been refined and finalised following consultation (see Table NTS 6.1). These have been influenced by the plans, policies and programmes review, the baseline trends and pressures identified, and the scope of the assessment as defined in chapter 6 of the SEA Environment Report for the Framework Plan and the SEA Scoping Report for RWRP-EM and consultation comments.

Table NTS 6.1 SEA Objectives

| SEA Theme   | SEA Objectives and Scope of Assessment  |
|---|---|
| Population, economy, tourism and recreation, and human health | Protect and, where possible, contribute to enhance human health and wellbeing and to prevent restrictions to recreation and amenity facilities relate to the provision of water services.   |
| Water Environment   | <u>Water quality and quantity</u><br><br>Prevent deterioration of the WFD status and of waterbodies with regard to quality and quantity due to Irish Water’s activities and contribute towards the “no deterioration” WFD condition and, where possible, to restore and improve waterbody status for rivers, lakes, transitional and coastal waters and groundwater to at least ‘Good’ status related to the provision of water services. |
|   | <u>Flood Risk</u><br><br>Protect and where possible, reduce risk from flooding as a result of Irish Water’s provision of water services   |
| Biodiversity  | Protect and, where possible, enhance terrestrial, aquatic and soil biodiversity; particularly regarding European sites and protected species in providing water services.   |

| SEA Theme                    | SEA Objectives and Scope of Assessment  |
|------------------------------|---|
| Material assets              | <p>Minimise resource use and waste generation from, new or upgraded, existing water services infrastructure and management of residuals from drinking water treatment - to protect human health and the ecological status of waterbodies.</p> <p>Minimise impacts on other material assets and existing as well as future water abstractions.</p> |
| Landscape and visual amenity | Protect and, where possible, enhance designated landscapes in relation to the provision of water services.  |
| Climate Change               | <p><u>Climate change mitigation</u></p> <p>Minimise contributions to climate change emissions to air (including greenhouse gas emissions) as a result to the provision of water services.</p>   |
|                              | <p><u>Climate change adaptation</u></p> <p>Promote the resilience of the environment, water supply and treatment infrastructure to the effects of climate change.</p>   |
| Cultural heritage            | Protect and where possible, enhance cultural heritage resources related to provision of water services.   |
| Geology and soils            | Protect soils and geological heritage sites and, where possible, contribute towards the appropriate management of soil quality and quantity.  |

The methodology for the assessment was developed in accordance with the following EPA guidance:

- Developing and Assessing Alternatives in Strategic Environmental Assessment (SEA);
- Guidance on SEA Statements and Monitoring;
- Integrating Climatic Factors into Strategic Environmental Assessment in Ireland - A Guidance Note; and
- Good practice guidance on Cumulative Effects Assessment in SEA.

## 6.2 Options and Approach Assessment Summary

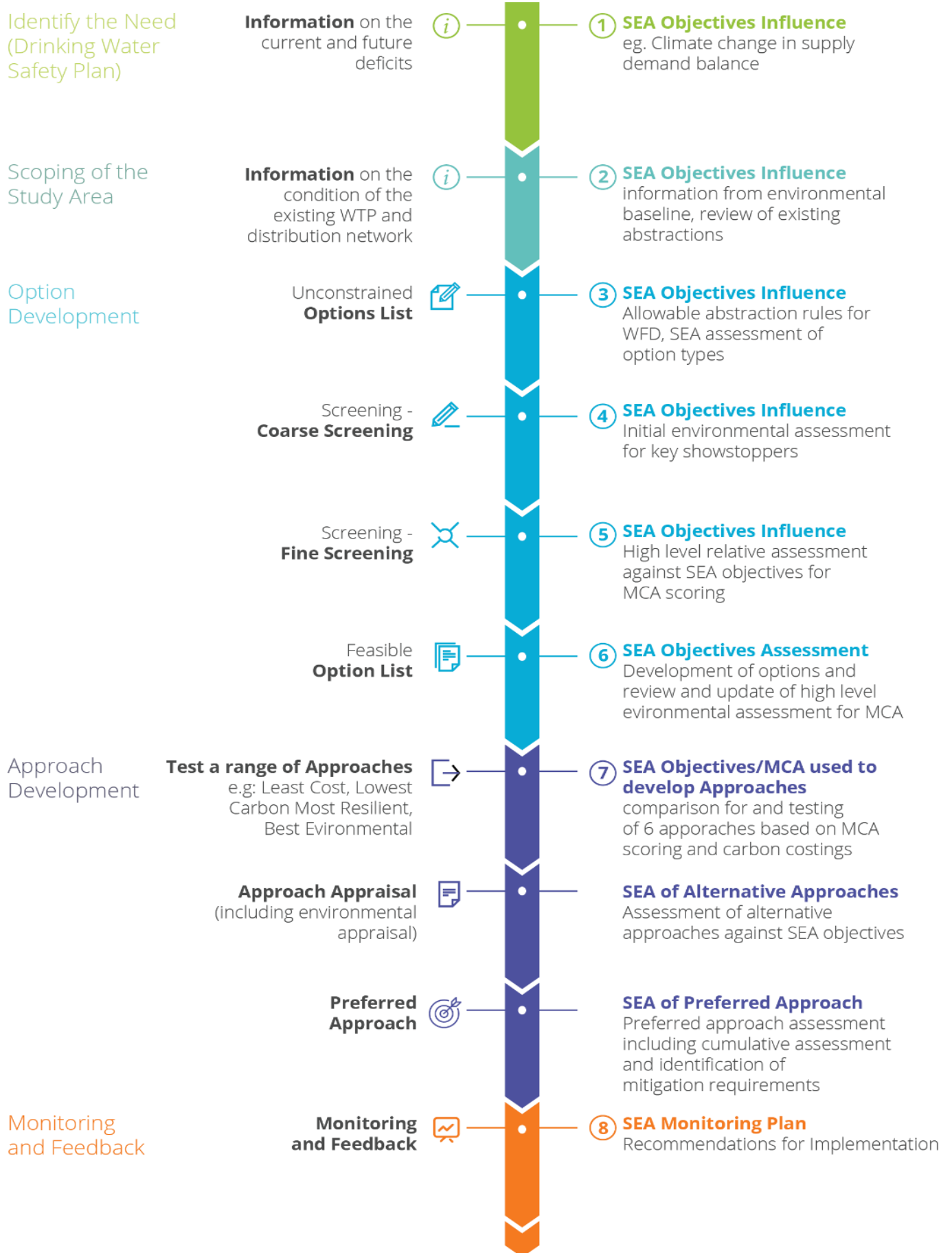
The methodology applied and how the SEA objectives and environmental assessment has been integrated into the application of the methodology, is summarised below.

The methodology is based around an option development process consulted upon and finalised in the Framework Plan. The process aligns with the seven standard steps set out in the Department of Public Expenditure and Reform (2019) guidance document “Public Spending Code: A Guide to Evaluating, Planning and Managing Current Expenditure”. For the NWRP methodology, there are eight key stages to the options assessment methodology which is applied:

- 1) Identifying need - based on Supply Demand Balance (SDB) and/or Drinking Water Safety Plan Barrier Assessment.
- 2) Scoping of the Study Area (WRZs) – understanding the Study Area and the existing conditions of assets, supply and demand issues as well as environmental constraints and opportunities.
- 3) Identifying potential options for consideration relevant to the Study Area.
- 4) Coarse screening – assess the unconstrained options and eliminate any that will not be viable

- 5) Further option definition, information collection and preliminary costing.
- 6) Fine screening – options assessment and scoring against the key criteria with further removal of options identified as unviable and development of feasible options for costing (including environmental and social costs and benefits) and scoring assessment update.
- 7) Approach appraisal – comparison and assessment of combinations of options identified to meet the predicted supply demand deficit at WRZ, Study Area and Regional Group area level using Multi-Criteria Analysis (MCA) to determine the Preferred Approach. Approaches tested include:
  - Least Cost;
  - Best Appropriate Assessment (Best AA);
  - Quickest Delivery;
  - Best Environmental;
  - Most Resilient; and
  - Lowest Carbon.
- 8) Monitoring and Feedback into Plan – a feedback mechanism to ensure that the Framework Plan continuously adapts to changes such as evolving scientific data, understanding, and policy change in relation to the natural environment.

The SEA process has been applied across each of these steps as identified in Figure NTS 6.1 below. The methodology is focused on ensuring that Irish Water promote solutions that are resilient, environmentally and socially sustainable, and flexible to the changing environment and demands.



**Figure NTS 6.1 Options Assessment and Preferred Approach Methodology**

## 6.3 Stages 1, 2 and 3 – Option identification



The SDB and the Barrier Assessment inform the type and scale of options that Irish Water must consider. Key option types are shown in Figure NTS 6.2. Sub-variants of each option type are also considered.

Environmental and social assessment criteria are included at the earliest stages of the screening process. At the outset of the process, some fundamental rules are applied as part of option identification. For example, inter-catchment raw water transfers are excluded due to the high risk of transferring invasive non-native species (INNS) between catchments and potential conflict with WFD objectives.

WFD objectives have also been a key consideration at this stage through a sustainable abstraction risk review. This was a specialist review of groundwater bodies and surface water catchments that was undertaken as part of the option identification stage. UK Technical Advisory Group on the Water Framework Directive (UKTAG) guidance (UKTAG, 2013) on baseflows have been used until Ireland specific standards come into place.

The application of these conservative abstraction standards to new options ensures that any new or increased abstractions from rivers are likely to support conservation objectives for the most sensitive environmental sites. For surface waterbodies, the allowable abstraction standard of 10% of Q95 has been applied, with the exception of waterbodies requiring 'High' status where a higher threshold of 5% of Q95 has been applied. Allowable abstraction standards for lakes are set at 10% or 5% of Q50 in line with this guidance (the NIS sets out the approach in relation to Appropriate Assessment).

In the future, Irish Water are likely to have to reduce or remove their unsustainable existing abstractions. Based on these desk assessments, Irish Water developed an initial list of unconstrained options for new supplies, increases and upgrades to existing supplies. An Unconstrained Options review workshop was held with Irish Water's Local Authority Water Services Partners to identify any additional unconstrained options that might be available based on local knowledge.

### 6.3.1 Option Scale

Options to address the water supply deficits are developed at three different spatial scales:

- **WRZ Options** comprised of single or multiple options that can resolve the water supply deficit of a **single WRZ only**.
- **SA Options (Grouped Options)** comprised of single or multiple options that can resolve the water supply deficit of **more than one WRZ within a single Study Area**.
- **Regional Level - Feasible Options** are assessed at the Regional Area level to see if there are any options [or combination of options] that can be applied across the entire Region.

The approach to developing options at the three different scales is described in further detail in Section 6.1 of the RWRP-EM.



Figure NTS 6.2 Option



## 6.4 Stages 4, 5 and 6 - Option Screening

The Supply Demand Balance (SDB) and Barrier Assessment (outlined in Section 3 of the RWRP-EM) inform the type and scale of options that Irish Water must consider.

Irish Water identified **1132 unconstrained options** for the RWRP-EM.

The unconstrained options list was refined using a coarse screening assessment, which enables Irish Water to rule out any non-viable options. This included removing options that could be identified at this stage as unsustainable or where significant environment impacts were considered likely and unmitigatable. The remaining options known as “Constrained Options” are then carried forward for more detailed Multi Criteria Assessment (MCA) at the Fine Screening stage.

The options were assessed against the SEA objectives and this was used as the basis for the MCA scoring. The fine screening assessment could identify additional showstoppers and reasons for removing options.

Options passing through the fine screening were identified as Feasible Options were taken forward, with the MCA, for further assessment in the Approach Development phase.

## 6.5 Stage 7 Approach Development



The purpose of the Plan is to examine all potential options that could be used to meet the need and then to eliminate those that are not feasible or that have identifiable environmental issues (at a desktop level).

After Fine Screening the Feasible Options are assessed individually or as option combinations forming different potential approaches to identify the preferred option or combination of options to meet the need for each WRZ, Study Area and Regional area.

A defined process has been identified to develop the Preferred Approach at the three spatial scales shown in Figure NTS 6.3.

The final stage is to assess any inter-regional options and potential cumulative or in combination effects and determine if any adjustment is required (this will be addressed sequentially in each of the Regional Plans in turn).

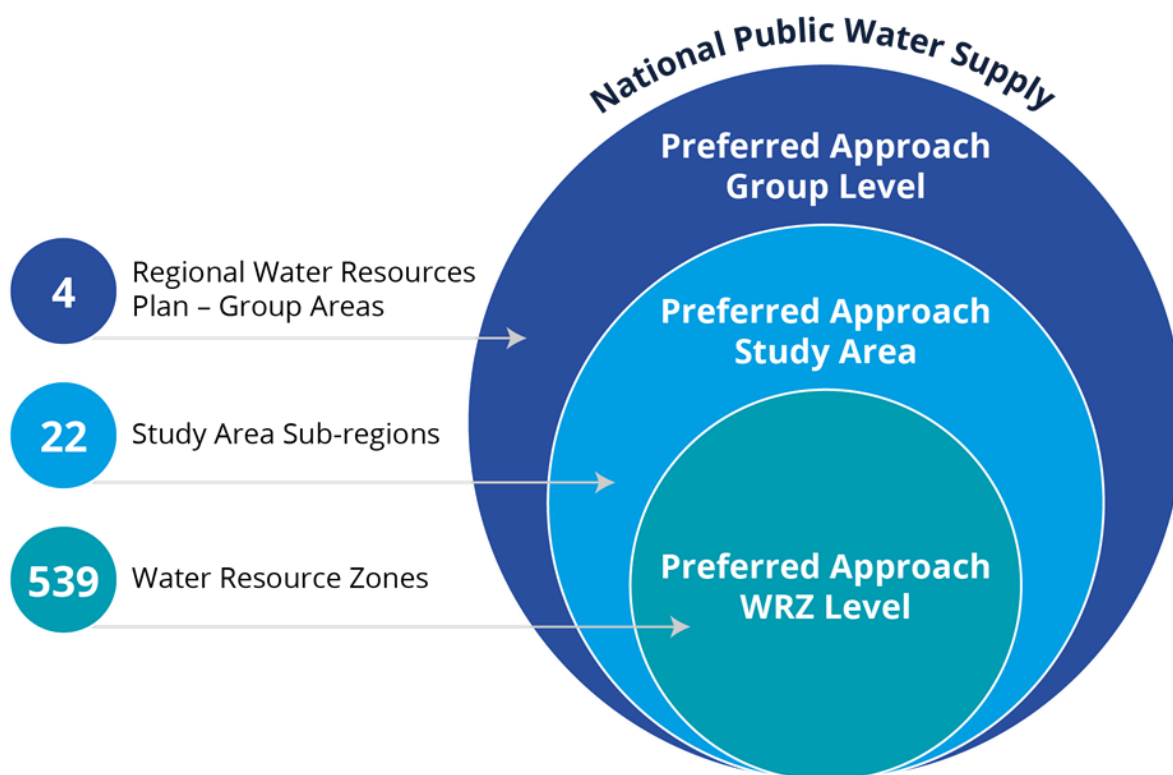


Figure NTS 6.3 National Water Resources Plan Spatial Scale of Assessment

The Feasible Options, individually and in-combination were tested to determine the Preferred Approach to meet the need across the three spatial scales. The options are tested against six Approach Categories which were selected to align the Framework Plan with all relevant Government Policy. The six Approach Categories are summarised in Table NTS 6.2 and discussed in further detail below.

Table NTS 6.2 The Six Approach Categories

| Approaches Tested                          | Description  | Policy Driver   |
|--|--|---|
| Least Cost (LCo)                           | Lowest Net Present Value (NPV) cost in terms of Capital, Operational, Environmental and Social, and Carbon Costs   | Public Spending Code  |
| Best Appropriate Assessment (Best AA) (BA) | Lowest score against the European Sites (Biodiversity) sub criteria question based on assessing the option as having either no LSEs, LSEs that can be addressed with general/standard mitigation measures or LSEs that may be more difficult to mitigate. For options scoring -3, potential alternative higher scoring options are sought where possible.                    | Habitats Directive  |
| Quickest Delivery (QD)                     | Based on an estimate of the time taken to bring an option into operation (including typical feasibility, consent, construction and commissioning durations) as identified at Fine Screening. This is particularly relevant where an option might be required to address an urgent Public Health issue (potential benefit for SEA Objective on population and public health). | Statutory Obligations under the Water Supply Act and Drinking Water Regulations |

| Approaches Tested       | Description  | Policy Driver   |
|-------------------------|--|---|
| Best Environmental (BE) | This is the option or combination of options with the highest total score across the 19 SEA objective criteria MCA questions. In addition, high risk -3 issues are considered against individual criteria focusing on long term operational effects. | SEA Directive and WFD                                 |
| Most Resilient (MR)     | This is the option or combination of options with the highest total score against the resilience criteria. (Link to SEA Objective for climate change adaptation for environment)   | National Adaptation Framework and Climate Action Plan |
| Lowest Carbon (LC)      | This is the option or combination of options with the lowest embodied and operational carbon cost  | Climate Action Plan                                   |

### 6.5.1 Approach Assessment Ranking

The EBSD (Economics of Balancing Supply and Demand) method is applied to rank the options in order of lowest to highest NPV cost and with regard to their applicable MCA scores for the six Approach Categories. This, along with the method outlined in section 7.2.1 of the RWRP-EM, is used to identify the “best” performing option / combination in each category.

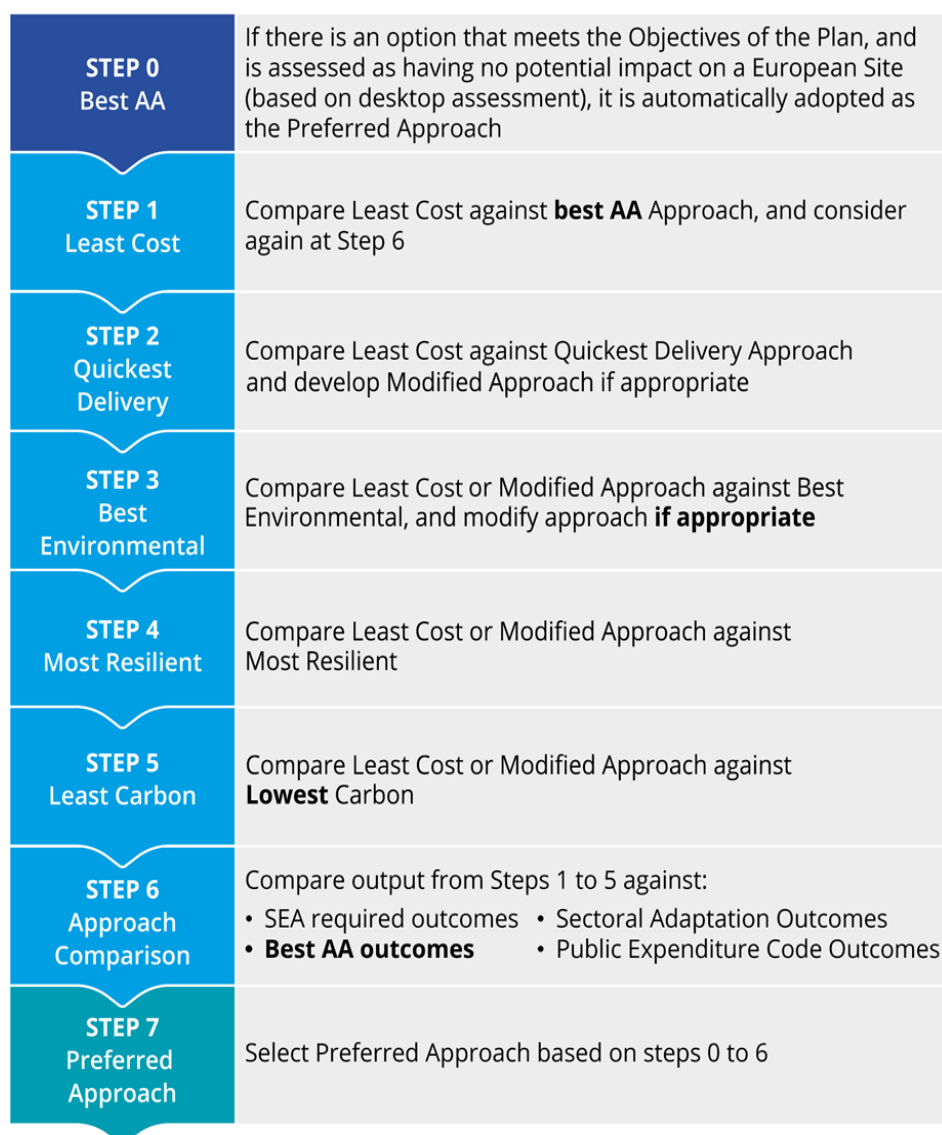


Figure NTS 6.3 The 7 Step Process

Following identification of the best performing approaches against the six assessment categories, a 7-step process is used to identify the best overall approach as outlined in Figure NTS 6.3. The Approach development process is designed to determine the Best Value approach to meet the need and this is then identified as the Preferred Approach. Best value is identified as the approach that provides the best performance overall, balancing across the range of NWRP and SEA objectives.

## 7 Study Area Assessment Summaries

This section provides a summary of the assessment for each of the Study Area. The individual assessments are provided in the Study Area Environmental Reviews provided as appendices to the SEA Environmental Report (Appendix H: SA Environmental Reviews 1-9).

Table NTS 7.1 gives an overview for each Study Area of how options numbers were reduced from the unconstrained long list to the feasible options list through the screening process. The table also sets out the number of potential combinations that were identified that could meet the study area need for supply and water quality over the plan period. The combinations included a WRZ Option only combination (i.e. looking at all of the WRZ Options required to meet the overall need in the Study Area) and also different combinations of WRZ Options with Study Area Options (Grouped options) that could address need in more than one WRZ. The MCA scoring and cost information was used to test the combinations against each of the six categories (including the best environmental, lowest carbon and best AA categories) to identify the best performing approaches. Some combinations performed best across more than one category, hence the number of approaches identified for each Study Area is less than six. The approaches were compared through the 7-step process applied through a workshop to identify the overall best value approach identified as the Preferred Approach. This used the MCA scoring and cost information and took account of how significant the differences were between approaches.

For all the Study Areas, except Study Area 5, the Preferred Approach included options that relied on transfers from a Regional Option and, therefore, an additional assessment was undertaken for alternative approaches for each Study Area that would not require these transfers. For the Study Area 9 Environment Review, while only two approaches were identified as best performing against the six categories, an additional assessment was included for the next best approach that was not reliant on the New Shannon Source for the purposes of considering alternatives for the SEA.

**Table NTS 7.1 Study Area Alternative Assessment Overview**

| Study Area | Unconstrained Options | Rejected Options |                | Feasible |              | Approaches (best performing against six categories) | Additional Alternative Approach (without SA9 Regional option) |
|------------|-----------------------|------------------|----------------|----------|--------------|---|---|
|            |                       | Coarse Screening | Fine Screening | Options  | Combinations |   |   |
| SA1        | 109                   | 55               | 0              | 54       | 20           | 3   | ✓   |
| SA2        | 50                    | 33               | 0              | 17       | 2            | 2   | ✓   |
| SA3        | 101                   | 24               | 0              | 77       | 14           | 4   | ✓   |
| SA4        | 113                   | 32               | 7              | 74       | 9            | 2   | ✓   |

| Study Area | Unconstrained Options | Rejected Options |                | Feasible |              | Approaches (best performing against six categories) | Additional Alternative Approach (without SA9 Regional option) |
|------------|-----------------------|------------------|----------------|----------|--------------|---|---|
|            |                       | Coarse Screening | Fine Screening | Options  | Combinations |   |   |
| SA5        | 103                   | 40               | 5              | 58       | 14           | 5   | -   |
| SA6        | 254                   | 144              | 0              | 110      | 18           | 5   | ✓   |
| SA7        | 82                    | 48               | 2              | 32       | 5            | 3   | ✓   |
| SA8        | 214                   | 93               | 0              | 121      | 20           | 4   | ✓   |
| SA9        | 106                   | 46               | 9              | 51       | 12           | 2   | ✓*  |

\*additional approach comparison for a 'without New Shannon Source' approach

## 7.1 Preferred Approach Selection and Assessment

In addition to the options-based MCA comparison for the Preferred Approach selection the approaches were compared against the SEA objectives in terms of the overall approach taking account of the scale of the combined option components and potential impacts. The Preferred Approach was subject to further assessment including cumulative assessment considering interaction between options and also with other projects and the identification of mitigation measures to address potential significant effects. A summary of the assessment is provided in Table NTS 7.2 below which set out the range of assessments for the individual options within each Study Area Preferred Approach for the construction phase and operational phase separately.

Table NTS 7.2 SA Preferred Approach Assessment against SEA objectives

| Preferred Approach Assessment |               |                  |               |         |                  |                     |                  |
|-------------------------------|---------------|------------------|---------------|---------|------------------|---------------------|------------------|
| Potential Construction Impact |               |                  |               |         |                  |                     |                  |
|                               | Major Adverse | Moderate Adverse | Minor Adverse | Neutral | Minor Beneficial | Moderate Beneficial | Major Beneficial |
| Public Health                 |               |                  |               |         |                  |                     |                  |
|                               |               |                  |               |         |                  |                     |                  |
|                               |               |                  |               |         |                  |                     |                  |
|                               |               |                  |               |         |                  |                     |                  |
|                               |               |                  |               |         |                  |                     |                  |
|                               |               |                  |               |         |                  |                     |                  |
|                               |               |                  |               |         |                  |                     |                  |
|                               |               |                  |               |         |                  |                     |                  |
|                               |               |                  |               |         |                  |                     |                  |
| Biodiversity                  |               |                  |               |         |                  |                     |                  |
|                               |               |                  |               |         |                  |                     |                  |
|                               |               |                  |               |         |                  |                     |                  |

Preferred Approach Assessment

Potential Construction Impact

|                           | Major Adverse        | Moderate Adverse | Minor Adverse | Neutral | Minor Beneficial | Moderate Beneficial | Major Beneficial |  |
|---------------------------|----------------------|------------------|---------------|---------|------------------|---------------------|------------------|--|
|                           |                      |                  |               | SA4     |                  |                     |                  |  |
|                           |                      |                  |               | SA5     |                  |                     |                  |  |
|                           |                      |                  |               | SA6     |                  |                     |                  |  |
|                           |                      |                  |               | SA7     |                  |                     |                  |  |
|                           |                      |                  |               | SA8     |                  |                     |                  |  |
|                           |                      |                  |               | SA9     |                  |                     |                  |  |
|                           | Landscape and visual |                  |               |         | SA1              |                     |                  |  |
|                           |                      |                  |               |         | SA2              |                     |                  |  |
|                           |                      |                  |               |         | SA3              |                     |                  |  |
|                           |                      |                  |               | SA4     |                  |                     |                  |  |
|                           |                      |                  |               | SA5     |                  |                     |                  |  |
|                           |                      |                  |               | SA6     |                  |                     |                  |  |
|                           |                      |                  |               | SA7     |                  |                     |                  |  |
|                           |                      |                  |               | SA8     |                  |                     |                  |  |
|                           |                      |                  |               | SA9     |                  |                     |                  |  |
| Materials                 |                      |                  |               | SA1     |                  |                     |                  |  |
|                           |                      |                  |               | SA2     |                  |                     |                  |  |
|                           |                      |                  |               | SA3     |                  |                     |                  |  |
|                           |                      |                  |               | SA4     |                  |                     |                  |  |
|                           |                      |                  |               | SA5     |                  |                     |                  |  |
|                           |                      |                  |               | SA6     |                  |                     |                  |  |
|                           |                      |                  |               | SA7     |                  |                     |                  |  |
|                           |                      |                  |               | SA8     |                  |                     |                  |  |
|                           |                      |                  |               | SA9     |                  |                     |                  |  |
| Greenhouse Gas            |                      |                  |               | SA1     |                  |                     |                  |  |
|                           |                      |                  |               | SA2     |                  |                     |                  |  |
|                           |                      |                  |               | SA3     |                  |                     |                  |  |
|                           |                      |                  |               | SA4     |                  |                     |                  |  |
|                           |                      |                  |               | SA5     |                  |                     |                  |  |
|                           |                      |                  |               | SA6     |                  |                     |                  |  |
|                           |                      |                  |               | SA7     |                  |                     |                  |  |
|                           |                      |                  |               | SA8     |                  |                     |                  |  |
|                           |                      |                  |               | SA9     |                  |                     |                  |  |
| Climate Change Resilience |                      |                  |               | SA1     |                  |                     |                  |  |
|                           |                      |                  |               | SA2     |                  |                     |                  |  |
|                           |                      |                  |               | SA3     |                  |                     |                  |  |
|                           |                      |                  |               | SA4     |                  |                     |                  |  |
|                           |                      |                  |               | SA5     |                  |                     |                  |  |
|                           |                      |                  |               | SA6     |                  |                     |                  |  |
|                           |                      |                  |               | SA7     |                  |                     |                  |  |
|                           |                      |                  |               | SA8     |                  |                     |                  |  |
|                           |                      |                  |               | SA9     |                  |                     |                  |  |
|                           |                      |                  | SA1           |         |                  |                     |                  |  |

Preferred Approach Assessment

Potential Construction Impact

|                               | Major Adverse | Moderate Adverse | Minor Adverse | Neutral | Minor Beneficial | Moderate Beneficial | Major Beneficial |
|-------------------------------|---------------|------------------|---------------|---------|------------------|---------------------|------------------|
| Surface Water/<br>Groundwater |               |                  |               | SA2     |                  |                     |                  |
|                               |               |                  |               | SA3     |                  |                     |                  |
|                               |               |                  |               | SA4     |                  |                     |                  |
|                               |               |                  |               | SA5     |                  |                     |                  |
|                               |               |                  |               | SA6     |                  |                     |                  |
|                               |               |                  |               | SA7     |                  |                     |                  |
|                               |               |                  |               | SA8     |                  |                     |                  |
|                               |               |                  |               | SA9     |                  |                     |                  |
|                               | Flood Risk    |                  |               |         | SA1              |                     |                  |
|                               |               |                  |               | SA2     |                  |                     |                  |
|                               |               |                  |               | SA3     |                  |                     |                  |
|                               |               |                  |               | SA4     |                  |                     |                  |
|                               |               |                  |               | SA5     |                  |                     |                  |
|                               |               |                  |               | SA6     |                  |                     |                  |
|                               |               |                  |               | SA7     |                  |                     |                  |
|                               |               |                  |               | SA8     |                  |                     |                  |
|                               |               |                  |               | SA9     |                  |                     |                  |
| Cultural Heritage             |               |                  |               | SA1     |                  |                     |                  |
|                               |               |                  |               | SA2     |                  |                     |                  |
|                               |               |                  |               | SA3     |                  |                     |                  |
|                               |               |                  |               | SA4     |                  |                     |                  |
|                               |               |                  |               | SA5     |                  |                     |                  |
|                               |               |                  |               | SA6     |                  |                     |                  |
|                               |               |                  |               | SA7     |                  |                     |                  |
|                               |               |                  |               | SA8     |                  |                     |                  |
|                               |               |                  |               | SA9     |                  |                     |                  |
| Geology and Soils             |               |                  |               | SA1     |                  |                     |                  |
|                               |               |                  |               | SA2     |                  |                     |                  |
|                               |               |                  |               | SA3     |                  |                     |                  |
|                               |               |                  |               | SA4     |                  |                     |                  |
|                               |               |                  |               | SA5     |                  |                     |                  |
|                               |               |                  |               | SA6     |                  |                     |                  |
|                               |               |                  |               | SA7     |                  |                     |                  |
|                               |               |                  |               | SA8     |                  |                     |                  |
|                               |               |                  |               | SA9     |                  |                     |                  |

# Preferred Approach Assessment

## Potential Operation Impact

|                      | Major Adverse | Moderate Adverse | Minor Adverse | Neutral | Minor Beneficial | Moderate Beneficial | Major Beneficial |
|----------------------|---------------|------------------|---------------|---------|------------------|---------------------|------------------|
| Public Health        |               |                  |               | SA1     |                  |                     |                  |
|                      |               |                  |               | SA2     |                  |                     |                  |
|                      |               |                  |               | SA3     |                  |                     |                  |
|                      |               |                  |               | SA4     |                  |                     |                  |
|                      |               |                  |               | SA5     |                  |                     |                  |
|                      |               |                  |               | SA6     |                  |                     |                  |
|                      |               |                  |               | SA7     |                  |                     |                  |
|                      |               |                  |               | SA8     |                  |                     |                  |
|                      |               |                  |               | SA9     |                  |                     |                  |
| Biodiversity         |               |                  |               | SA1     |                  |                     |                  |
|                      |               |                  |               | SA2     |                  |                     |                  |
|                      |               |                  |               | SA3     |                  |                     |                  |
|                      |               |                  |               | SA4     |                  |                     |                  |
|                      |               |                  |               | SA5     |                  |                     |                  |
|                      |               |                  |               | SA6     |                  |                     |                  |
|                      |               |                  |               | SA7     |                  |                     |                  |
|                      |               |                  |               | SA8     |                  |                     |                  |
|                      |               |                  |               | SA9     |                  |                     |                  |
| Landscape and visual |               |                  |               | SA1     |                  |                     |                  |
|                      |               |                  |               | SA2     |                  |                     |                  |
|                      |               |                  |               | SA3     |                  |                     |                  |
|                      |               |                  |               | SA4     |                  |                     |                  |
|                      |               |                  |               | SA5     |                  |                     |                  |
|                      |               |                  |               | SA6     |                  |                     |                  |
|                      |               |                  |               | SA7     |                  |                     |                  |
|                      |               |                  |               | SA8     |                  |                     |                  |
|                      |               |                  |               | SA9     |                  |                     |                  |
| Materials            |               |                  |               | SA1     |                  |                     |                  |
|                      |               |                  |               | SA2     |                  |                     |                  |
|                      |               |                  |               | SA3     |                  |                     |                  |
|                      |               |                  |               | SA4     |                  |                     |                  |
|                      |               |                  |               | SA5     |                  |                     |                  |
|                      |               |                  |               | SA6     |                  |                     |                  |
|                      |               |                  |               | SA7     |                  |                     |                  |
|                      |               |                  |               | SA8     |                  |                     |                  |
|                      |               |                  |               | SA9     |                  |                     |                  |
| Greenhouse Gas       |               |                  |               | SA1     |                  |                     |                  |
|                      |               |                  |               | SA2     |                  |                     |                  |
|                      |               |                  |               | SA3     |                  |                     |                  |
|                      |               |                  |               | SA4     |                  |                     |                  |
|                      |               |                  |               | SA5     |                  |                     |                  |
|                      |               |                  |               | SA6     |                  |                     |                  |



# Preferred Approach Assessment

## Potential Operation Impact

|                            | Major Adverse    | Moderate Adverse | Minor Adverse | Neutral | Minor Beneficial | Moderate Beneficial | Major Beneficial |
|----------------------------|------------------|------------------|---------------|---------|------------------|---------------------|------------------|
|                            | Major Adverse    | Moderate Adverse | Minor Adverse | SA7     |                  |                     |                  |
|                            | Major Adverse    | Moderate Adverse | Minor Adverse | SA8     | Minor Beneficial |                     |                  |
|                            |                  |                  |               | SA9     |                  |                     |                  |
| Climate Change Resilience  |                  | Moderate Adverse | Minor Adverse | SA1     | Minor Beneficial | Moderate Beneficial |                  |
|                            |                  | Moderate Adverse | Minor Adverse | SA2     | Minor Beneficial | Moderate Beneficial |                  |
|                            | Major Adverse    | Moderate Adverse | Minor Adverse | SA3     | Minor Beneficial | Moderate Beneficial |                  |
|                            |                  |                  |               | SA4     | Minor Beneficial | Moderate Beneficial |                  |
|                            |                  | Moderate Adverse | Minor Adverse | SA5     |                  |                     |                  |
|                            |                  | Moderate Adverse | Minor Adverse | SA6     | Minor Beneficial | Moderate Beneficial |                  |
|                            |                  | Moderate Adverse | Minor Adverse | SA7     | Minor Beneficial | Moderate Beneficial |                  |
|                            |                  | Moderate Adverse | Minor Adverse | SA8     | Minor Beneficial | Moderate Beneficial |                  |
| Surface Water/ Groundwater |                  |                  | Minor Adverse | SA9     |                  |                     |                  |
|                            |                  |                  | Minor Adverse | SA1     |                  |                     |                  |
|                            |                  |                  | Minor Adverse | SA2     |                  |                     |                  |
|                            | Major Adverse    | Moderate Adverse | Minor Adverse | SA3     |                  |                     |                  |
|                            |                  |                  |               | SA4     |                  |                     |                  |
|                            |                  |                  | Minor Adverse | SA5     |                  |                     |                  |
|                            | Major Adverse    | Moderate Adverse | Minor Adverse | SA6     |                  |                     |                  |
|                            |                  |                  | Minor Adverse | SA7     |                  |                     |                  |
| Major Adverse              | Moderate Adverse | Minor Adverse    | SA8           |         |                  |                     |                  |
| Flood Risk                 |                  |                  |               | SA9     |                  |                     |                  |
|                            |                  |                  |               | SA1     |                  |                     |                  |
|                            |                  |                  |               | SA2     |                  |                     |                  |
|                            |                  |                  | Minor Adverse | SA3     |                  |                     |                  |
|                            |                  |                  |               | SA4     |                  |                     |                  |
|                            |                  |                  |               | SA5     |                  |                     |                  |
|                            |                  |                  |               | SA6     |                  |                     |                  |
|                            |                  |                  | Minor Adverse | SA7     |                  |                     |                  |
|                            |                  | Minor Adverse    | SA8           |         |                  |                     |                  |
| Cultural Heritage          |                  |                  |               | SA9     |                  |                     |                  |
|                            |                  |                  |               | SA1     |                  |                     |                  |
|                            |                  |                  |               | SA2     |                  |                     |                  |
|                            |                  |                  |               | SA3     |                  |                     |                  |
|                            |                  |                  |               | SA4     |                  |                     |                  |
|                            |                  |                  |               | SA5     |                  |                     |                  |
|                            |                  |                  |               | SA6     |                  |                     |                  |
|                            |                  |                  |               | SA7     |                  |                     |                  |
|                            |                  |                  |               | SA8     |                  |                     |                  |
| Geology and Soils          |                  |                  |               | SA9     |                  |                     |                  |
|                            |                  |                  |               | SA1     |                  |                     |                  |
|                            |                  |                  |               | SA2     |                  |                     |                  |

## Preferred Approach Assessment

### Potential Operation Impact

|  | Major Adverse | Moderate Adverse | Minor Adverse | Neutral | Minor Beneficial | Moderate Beneficial | Major Beneficial |
|--|---------------|------------------|---------------|---------|------------------|---------------------|------------------|
|  |               |                  |               | SA4     |                  |                     |                  |
|  |               |                  |               | SA5     |                  |                     |                  |
|  |               |                  |               | SA6     |                  |                     |                  |
|  |               |                  |               | SA7     |                  |                     |                  |
|  |               |                  |               | SA8     |                  |                     |                  |
|  |               |                  |               | SA9     |                  |                     |                  |

## 8 SEA Regional Level Assessment

### 8.1 Regional Level Alternatives

For the Regional Level assessment, the potential Preferred Approach has been reviewed further to consider how alternative combinations perform in the round at this level. Only one Regional Option has been identified for the Eastern and Midland Region. This consists of a transfer from the Shannon River, referred to as the New Shannon Source (NSS), which has the potential to supply multiple Study Areas. No other source with as large a potential, both in terms of quantity and distribution of supply, was identified.

For the purposes of the RWRP-EM, the combined Study Area 1-9 Approaches including the modification to SA9 Preferred Approach to support the Study Area transfers has been considered alongside two alternative regional approaches that do not involve cross Study Area transfers. The Combinations considered are listed below together with the 'do minimum' or 'without RWRP-EM' alternative as part of the SEA.

For the Regional Level assessment, the Regional Approach is compared with potential alternatives for the whole region as set out below:

- Combination 1: Regional Approach with Transfer - a combination of the Preferred Approach for all Study Areas taking into account the additional capacity NSS option to support the transfers to Study Areas outside SA9. This Approach is detailed further in Section 8.2 of the RWRP-EM.
- Combination 2: Regional Approach One without Transfers - This approach retains the NSS as the Preferred Approach for SA9; however, it utilises local options instead of Study Area transfers. These local options are identified in each of the Technical Appendices for Study Areas 1-8. This Approach is detailed further in Section 8.3 of the RWRP-EM.
- Combination 3: Regional Approach Two without Transfers - This approach considers a scenario where the Preferred Approach for SA9 does not progress and an alternative option, which comprises a Desalination option, is considered for SA9. This approach does not support regional transfers, Study Areas 1-8 are supplied by local options. This Approach is detailed further in Section 8.3 of the RWRP-EM.
- Do minimum approach - continuation of the current programme without new investment identified in the RWRP-EM. Assumes SA1-9 interim measures would be implemented.

The Regional Approaches that can meet the regional wide deficit are compared based on the MCA scores and NPV financial and carbon costs and are also assessed in terms of comparative performance against each SEA objective. This assessment focuses on the differences between the approaches.

The overall Preferred Approach for the Eastern and Midlands Region is then compared with a ‘do minimum’ based on the evolution of the baseline without the RWRP-EM investment.

## 8.2 SEA Assessment of Regional Level Alternatives

The three approaches are compared in terms of their performance against the six approach categories in Table NTS 8.1 and Table NTS 8.2 below.

**Table NTS 8.1 Best Performing Combination for each Approach Category**

| Approach Categories     | Best Performing Combination                             |
|-------------------------|---|
| Least Cost (LCo)        | Regional Approach with Transfers (Combination 1)        |
| Best Environmental (BE) | Regional Approach with Transfers (Combination 1)        |
| Quickest Delivery (QD)  | Regional Approach One without Transfers (Combination 2) |
| Most Resilient (MR)     | Regional Approach with Transfers (Combination 1)        |
| Lowest Carbon (LC)      | Regional Approach One without Transfers (Combination 2) |
| Best AA (BA)            | Regional Approach with Transfers (Combination 1)        |

Regional Approach Two does not perform best against any category and is not taken forward in the RWRP-EM but is included for further comparison for the purposes of the SEA to consider the best without NSS alternative.

**Table NTS 8.2 Comparison of the Alternative Regional Approaches against MCA scores**

|                         | Regional Approach with Transfer | Regional Approach One without Transfers | Regional Approach Two without Transfers |
|-------------------------|---------------------------------|---|---|
| Least cost (LCo)        | Best*                           |   | Worst                                   |
| Quickest Delivery (QD)  | Worst                           | Best                                    |   |
| Best AA (BA)            | Two -3 Biodiversity Scores      | Four -3 Biodiversity Scores             | Seven -3 Biodiversity Scores            |
| Lowest Carbon (LC)      | Best                            |   | Worst                                   |
| Most Resilient (MR)     | Best                            |   | Worst                                   |
| Best Environmental (BE) | Best                            |   | Worst                                   |

\*The three approaches were within 5% of each other on cost so further comparison was undertaken to select the best least cost

The environmental assessment included consideration of the scale and infrastructure components, the types of abstractions, the environmental assessment in the MCA, and comparing likely level of impacts or risk against each SEA objective. A summary comparison of the new and upgraded abstractions as well as the decommissioned abstractions, is outlined in Table NTS 8.3. This summary covers the options are that different between the Approaches and not the options they have in common.

**Table NTS 8.3 Comparison of Regional Approaches**

|                                   | Combination 1<br>Regional Approach with<br>Transfers  | Combination 2<br>Regional Approach One<br>without Transfers   | Combination 3<br>Regional Approach Two<br>without Transfers   |
|-----------------------------------|---|---|---|
| Abstractions<br>Decommissioned    | 33 GW abstractions<br><br>14 SW abstractions<br>including 6 SW<br>abstractions where the<br>abstraction is potentially<br>greater than the<br>estimated sustainable<br>abstraction. | 4 GW abstractions<br><br>2 SW abstractions where<br>the abstraction is<br>potentially greater than<br>the estimated sustainable<br>abstraction. | 4 GW abstractions<br><br>2 SW abstractions where<br>the abstraction is<br>potentially greater than the<br>estimated sustainable<br>abstraction.   |
| Abstractions<br>Maintained        | 4 GW abstractions<br><br>4 SW abstractions  | 32 GW abstractions<br><br>16 SW abstractions  | 32 GW abstractions<br><br>16 SW abstractions  |
| Increase Existing<br>Abstractions | -   | 12 GW abstractions<br><br>7 SW abstractions   | 12 GW abstractions<br><br>7 SW abstractions   |
| New Abstractions                  | 1 SW abstraction from<br>the River Shannon  | 9 GW abstractions<br><br>5 SW abstractions<br>including new abstraction<br>from the River Shannon   | 12 GW abstractions<br><br>11 SW abstractions<br>including new abstraction<br>from the River Shannon.<br><br>1 abstraction from the Irish<br>Sea for desalination via a<br>sea intake and with a brine<br>effluent outfall |

As part of the Preferred Approach, a number of sources and WTPs are proposed to be decommissioned as part of the rationalisation. Some of these closures will provide an environmental benefit where pressures are removed especially from waterbodies identified as exceeding the potential sustainable abstraction thresholds by Irish Water. For example, the removal of the Lough Owel abstraction will remove the conflict with the simultaneous need for water for navigation purposes. Rationalisation also provides opportunities for improved efficiency in terms of energy use and waste management and associated reduced carbon emissions for the supply provided. Figure NTS 8.1 shows the surface water abstraction sites that will benefit from proposed decommissioning.



archaeological assets or from combined impacts resulting in additional changes to water levels affecting archaeological resources; and

- Climate change – combined carbon emissions for the approach as a whole have been considered through the approach selection process and are reported here also to identify potential requirements for mitigation. Combined effects on climate change adaptation are also considered.

## 9.1 Cumulative Effects ‘Within Plan’

The Preferred Approaches across the nine (9) Study Areas are shown in relation to environmental constraints in Figure NTS 9.1. This identifies option locations and transfer routes.

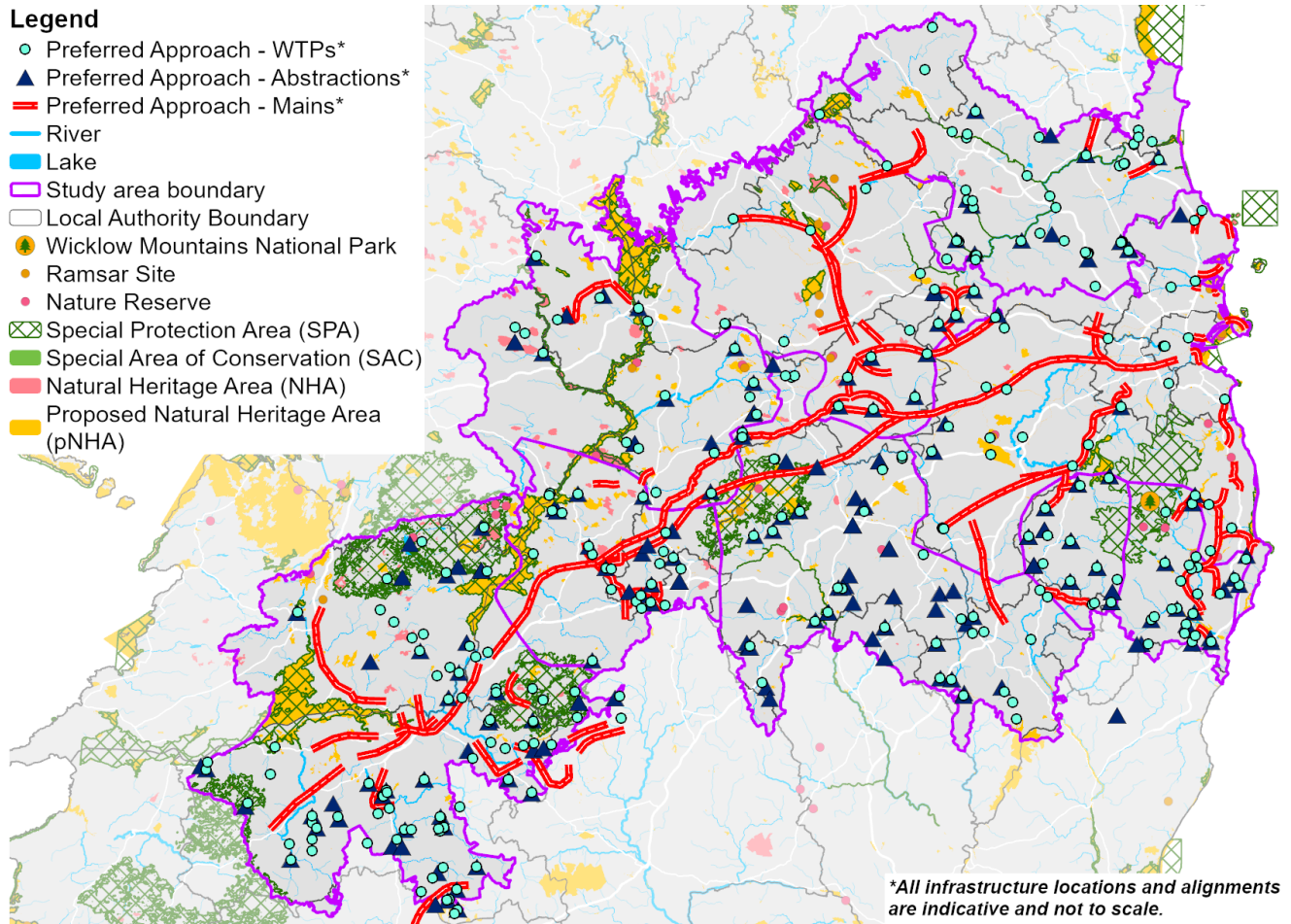


Figure NTS 9.2 Environmental Designations for the Eastern and Midlands Region

The Preferred Approaches most likely to lead to within-plan cumulative effects are construction of pipelines and associated works, such as new WTPs and pumping stations. The most significant cumulative effects identified in relation to each SEA topic are:

- **Population, Economy, Tourism and Recreation, and Human Health** – cumulative disruption to traffic during construction with potential secondary impacts on local business and tourism. Potential positive cumulative effect on access to water quality and benefits to well-being and human health.
- **Water Environment** - cumulative construction works activities could affect water quality through increasing surface water runoff or increasing the risk of pollution (accidental spillage) during works but application of standard mitigations measures should minimise risk. The rationalisation of abstraction and WTPs is in some cases likely to result in a positive cumulative effect on water

quantity and reduce pressure on some sources. The cumulative effects on groundwater and water body quantity status from abstraction are expected to meet WFD objectives for water quality and water resource quantity. However, the interaction between groundwater and surface water cannot be taken into account at this level as more detailed studies would be required where risks are identified.

- **Biodiversity, Flora and Fauna** - construction of new infrastructure could have impacts on water quality and hence aquatic biodiversity and SACs. Operational impacts from groundwater abstraction may occur to groundwater dependent habitats, such as peat bogs. Operational impacts of surface water abstraction may occur on aquatic habitats such as SAC designated rivers. Across the Eastern and Midlands Region, there are approximately 126,778 hectares of peat bog (6% of all land use), 34,074 ha of waterbodies and 1,607 ha of water courses. No cumulative effects are identified for Invasive Non-Native Species (INNS) transfer during scheme operation. Mitigation measures for managing INNS risk during construction will avoid cumulative effects for spreading INNS. Some cumulative benefits to water quantity, with associated benefits to water quality and water-dependent biodiversity with rationalisation of network.
- **Climate Change** - potential cumulative effects on greenhouse gas emissions across the Eastern and Midlands Region's Preferred Approaches for the construction and operational periods (whole life carbon). However, there is considerable scope to reduce carbon emissions especially associated with energy use from sustainable sources and also potential for contribution to carbon off setting initiatives with biodiversity and soil nutrient, flood risk reduction and raw water quality benefits.
- **Landscape** - potential cumulative effects on landscape and visual amenity during the construction phase if groups of Preferred Approach options are constructed concurrently. However, these are unlikely to be significant cumulative effects as they are likely to be spatially and temporally separate. The proposed large water transfer from the GDA could however represent a significant cumulative effect on landscape and visual amenity during the pipeline construction phase depending on the phasing of the works. Site surveys would be required to inform specific mitigation measures for this option, including appropriate route alignment and construction approach and management.
- **Cultural Heritage** - potential cumulative effects on the visual setting of cultural heritage assets (such as heritage buildings) during the construction phase if clusters of Preferred Approach options are constructed concurrently. Like above, these are unlikely to be significant cumulative effects as they are likely to be spatially and temporally separate. The proposed large water transfer from the GDA could represent a significant cumulative effect on cultural heritage during the pipeline construction phase, particularly from impacts on archaeological assets. Appropriate consultation with heritage bodies, including the Department of Culture, Heritage and the Gaeltacht, will be required in order to avoid and mitigate any such impacts.

## 9.2 Cumulative Effects with Other Plans and Programmes

There are a range of plans and programmes that apply to the Eastern and Midlands spatial area. The ones that set a framework for future development projects could potentially have cumulative effects with this Plan. However, this is only likely to occur if they are developed at the same time (e.g. construction impacts) or affect the same local area and have similar effects on environmental receptors. The routes and locations of the Eastern and Midlands Region's options have not been determined in most cases as yet and it is therefore not possible to determine cumulative construction-related effects with other plans

and programmes. Possible significant effects (positive and negative) with other strategic plans and programmes are considered in the SEA Environmental Report.

There are no additional mitigation measures were identified from the assessment of interactions with other plans. The requirement to review and take account of relevant plans and policies in the implementation and future iterations of the RWRP-EM, is built into the monitoring and feedback step and embedded in the SEA Environmental Action Plan (see section 10).

### 9.3 SEA Summary for the Regional Preferred Approach

An overall assessment summary of the Preferred approach compared to the do minimum against SEA objectives is provided in Table NTS 9.1 below.

Table NTS 9.1 Regional Preferred Approach and Do Minimum Comparison

| Population, economy, tourism and recreation and human health  | Water environment (quality and resources) | Water environment (flood risk) | Biodiversity | Material assets | Landscape and visual amenity | Climate change (mitigation) | Climate change (adaptation) | Cultural heritage | Geology and soils |
|---|---|--------------------------------|--------------|-----------------|------------------------------|-----------------------------|-----------------------------|-------------------|-------------------|
| -   | -   | 0                              | -            | -               | 0/-                          | 0/-                         | -                           | 0/-               | 0                 |
| <b>Do Minimum Approach</b>  |   |                                |              |                 |                              |                             |                             |                   |                   |
| <ul style="list-style-type: none"> <li>The 'Do Minimum' approach is the 'without plan' approach, meaning that this is the approach that would occur without the RWRP-EM. As a result, the 'Do Minimum' approach would only include reactive, unplanned interim measures to address likely failures in infrastructure.</li> <li>Ongoing reliability issues with the supplies and the situation is expected to further deteriorate due to climate change driven reductions in water resources and increased demand growth within the area.</li> <li>While there would not be major construction works there would likely to be increased pressure on existing abstractions including abstractions likely to be currently above sustainable levels and increasing issues with unreliable or inefficient network infrastructure.</li> </ul> |   |                                |              |                 |                              |                             |                             |                   |                   |
| Population, economy, tourism and recreation and human health  | Water environment (quality and resources) | Water environment (flood risk) | Biodiversity | Material assets | Landscape and visual amenity | Climate change (mitigation) | Climate change (adaptation) | Cultural heritage | Geology and soils |
| +   | +/-                                       | 0/+                            | +/-          | 0/-             | +/-                          | -                           | +                           | 0/-               | 0/-               |
| <b>Regional Preferred Approach</b>  |   |                                |              |                 |                              |                             |                             |                   |                   |
| <ul style="list-style-type: none"> <li>Focus on three pillars of using less, losing less, and supplying smarter and a planned rather than a reactive approach and a resilient system with more reliable sources</li> </ul>  |   |                                |              |                 |                              |                             |                             |                   |                   |



- Implementation of the Regional Preferred Approach including the Study Area Preferred Approaches 1-9 (including the amendment to the SA9 Preferred approach NSS option to support the transfers) with the mitigation identified in the SEA Environmental Report Appendix D Environmental Action Plan and the Monitoring Plan and the Study Area Environmental Reviews SAs 1-9.
- Construction impacts from large scale pipeline and associated infrastructure, but reinstatement of land uses and mitigation and enhancement to minimise long term landscape, land use and biodiversity effects.
- Network improvements adding flexibility and resilience.
- Decommissioning of inefficient infrastructure and abstractions including from sources at risk.
- Improving Irish Water’s understanding of future risks, including climate change and efficient water use.
- Increasing routine monitoring and operational planning allowing Irish Water to proactively manage and forecast resourcing and operational trends.

### Justification

The RWRP-EM Regional Preferred Approach includes a commitment to work to a 1:50 year level of service across all locations and actions in place to achieve this target. The RWRP-EM Regional Preferred Approach will provide the basis for developing an investment programme providing greater security of supply and a more resilient supply since options will address the SDB over extreme weather planning scenarios.

The Preferred Approach identifies strategic inter-study area, regional and local WRZ schemes which can have both positive and negative potential effects on the water environment, biodiversity, and landscape and visual amenity. Therefore, mitigation measures and a monitoring framework will be developed alongside recommended developments.

In the long-term, the plan will bring benefits in terms of greater security of water supply to the population, tourism industry and recreational amenities, human health and the local economy. Additionally, the newer, or upgraded, more reliable assets within the system will result in it being more adaptable to the impacts of climate change; with benefits from replacement of abstractions identified as potentially unsustainable for meeting WFD or protected area obligations and greater flexibility to respond to future sustainability reductions.

The SEA and AA embeds environmental considerations into the plan making process and set a framework for identifying mitigation and monitoring so that these can be part of decision-making and can inform option design and costing as schemes developed and studied further prior to consenting and licencing. Further consideration of alternative options and variants to options is expected to be part of the process of taking options forward.

### Key

|   |          |   |     |
|---|----------|---|-----|
| Likely to have a positive effect        | +        | Likely to have a mixed positive and negative effect | +/- |
| Likely to have a negative effect        | -        | Likely to have mixed neutral and negative effect    | 0/- |
| Effects are uncertain or not applicable | ? or N/A | Likely to have mixed neutral and positive effect    | 0/+ |
| Likely to have a neutral effect         | 0        |   |     |

## 9.4 AA Summary for the Eastern and Midlands Region

The conclusion of the NIS for the RWRP-EM is that, based on a plan-level assessment, and with implementation of appropriate mitigation for protecting European sites, there will be no adverse effects on the integrity of any European site(s), either alone or in-combination with other plans or projects as a result of progressing Preferred Approach options within the RWRP-EM.

## 9.5 WFD Summary for the Eastern and Midlands Region

Application of estimated allowable abstraction constraints on new options means that only options that are expected to meet sustainability requirements are considered. Individual options within the Regional

Preferred Approach have been assessed and are expected to be sustainable, based on Plan Level desk-based assessment, in terms of avoiding deterioration of WFD status or avoiding conflict with meeting WFD objectives.

All surface water abstractions proposed within Preferred Approaches are within the expected sustainable abstraction limits of 10% or 5% of Q95 for good and high WFD river waterbody status sources and 10% or 5% of Q50 for good and high WFD lake waterbody sources respectively. Abstraction impacts on groundwater bodies have been assessed through a separate technical study which considered cumulative effects on WFD ground water quantitative status. Based on the available information this concluded that there is no indication of cumulative impact or impact on WFD quantitative status of the groundwater bodies (Irish Water, 2022b).

However, cumulative effects also need to be considered, in terms of both sustainability for connected surface waterbodies and groundwater dependent habitats and protected areas. Further studies are identified in the Study Area Environmental Reviews for specific options where risks are identified.

## 9.6 Transboundary effects for the Regional Preferred Approach

The types of options and their location, proximity and pathways for environmental effects have been considered through the process in relation to possible environmental effects for the Northern Ireland environment including any shared groundwater and river catchments and the marine environment. For the combination of options included in the Regional Preferred Approach, no potential transboundary adverse environmental effects have been identified at the Study Area level or the Regional level for the RWRP-EM.

## 10 Mitigation and Monitoring Plans

The Mitigation and Monitoring Plans for the RWRP-EM are based on the plan outlined in Section 8.3.8 of the Framework Plan and include three elements:

- Mitigation Measures including recommendations to incorporate into project development as options are taken forward through feasibility assessments, design, consenting and implementation (these are identified in the SEA Environmental Report in Appendix D and Appendix H for each Study Area)
- Environmental Action Plan identifying actions to be taken to integrate environmental requirements into process and related areas so that mitigation recommendations are implemented. These actions are listed as EAP1-12 in the SEA Environmental Report section 10.
- Monitoring Plan identifying the targets and indicators to be measured or recorded to determine progress to meeting SEA objectives with timescales and responsibilities identified. These are listed in the SEA Environmental Report section 10 and are summarised below (Table NTS 10.1) for the monitoring performance indicators only. The monitoring plan is provided in two parts, a plan level monitoring and a monitoring framework for project level implementation.

Commitment to implementing the Environmental Action Plan and the Monitoring Plan is provided in Section 9 of the RWRP-EM which also sets out the wider context and process for monitoring and feedback to inform the implementation of the plan and future cycles of review and updating.

**Table 10.1 Monitoring Plan (Plan level) - Summary of Indicators**

| SEA topics  | SEA indicators   |
|---|--|
| All topics and objectives                                     | <p><b>RMP AT1</b></p> <p>Application of the options and approach assessment process, as set out in the Framework Plan, to integrate environmental, social and sustainability SEA objectives alongside other criteria in the preparation in the Regional plans</p> <p><b>RMP AT2</b></p> <p>Application of methodology for SEA and AA in the comparison and selection of Preferred Approaches for the preparation in the Regional Plans</p> <p><b>RMP AT3</b></p> <p>Environmental and social valuation methodology developed further as a tool using natural capital /ecosystems services assessment</p> <p><b>RMP AT4</b></p> <p>Transparent documentation of the appraisal and selection process</p> |
| All topics and objectives                                     | <p><b>RMP AT5</b></p> <ul style="list-style-type: none"> <li>• Iterative approach to the identification of appropriate options meeting objectives, and mitigation measures incorporated into project costs or risks, as part of the development of options for the Regional Plans and as a basis for future project costing</li> </ul> <p><b>RMP AT6</b></p> <ul style="list-style-type: none"> <li>• Identification of process for undertaking the relevant options studies and feeding back where potential significant environmental effects are identified including engagement with relevant stakeholders</li> </ul>  |
| All topics and objectives                                     | <p><b>RMP AT7</b></p> <ul style="list-style-type: none"> <li>• Environmental assessment, including AA, for designated international and national sites potentially affected by drought measures</li> </ul> <p><b>RMP AT8</b></p> <ul style="list-style-type: none"> <li>• Communication plan for drought/freeze-thaw period actions</li> </ul>   |
| All topics and objectives                                     | <p><b>RMP AT9</b></p> <ul style="list-style-type: none"> <li>• Monitoring plan data collection implemented (see below for each topic) set up to support baseline information for the next Regional Plan, project level feedback, identification of cumulative effects, and providing the basis for monitoring future implementation</li> <li>• Review of the monitoring plan and update where needed to capture issues or unforeseen effects</li> </ul>  |
| Population, economy, tourism and recreation, and human health | <p><b>RMP PH</b></p> <ol style="list-style-type: none"> <li>1. Level of Service</li> <li>2. Frequency and duration of droughts needing management actions</li> <li>3. Number of days/hours when water supply to people is disrupted due to drought, freeze-thaw or other service/infrastructure issues</li> <li>4. Awareness raising programmes on water conservation</li> <li>5. Reduced water supply restrictions due to water quality risks</li> </ol> <p><b>RMP RT</b></p> <ol style="list-style-type: none"> <li>1. Level of service accommodating seasonal tourism demand</li> </ol>   |
|   | <p><b>RMP WE</b></p>   |

| SEA topics                    | SEA indicators  |
|-------------------------------|---|
| Water environment             | <ol style="list-style-type: none"> <li>1. Number of investigations and area covered by catchment management schemes</li> <li>2. Additional water quality and biological monitoring/data collection in addition to WFD monitoring data where needed</li> <li>3. Number of demand management initiatives supporting water savings</li> <li>4. Compliance with WSSP Strategy Objective to manage water supplies in an efficient and economic manner (WS3). Key indicator – Leakage expressed as a percentage of treated water put into the distribution system</li> <li>5. Number of waterbody sources where WFD good status is not reached due to abstraction pressure</li> <li>6. Number of waterbody sources benefiting from reduced abstraction or cessation in abstraction</li> </ol> <p><b>RMP FI</b></p> <ol style="list-style-type: none"> <li>1. Number of outages due to flood events or power or outages</li> </ol> |
| Biodiversity, flora and fauna | <p><b>RMP Bio</b></p> <ol style="list-style-type: none"> <li>1. Identification of existing abstractions or drinking water treatment residuals with risks to international or national designations</li> <li>2. Aquatic ecology - number of existing abstractions identified by Irish Water as potentially unsustainable in dry weather conditions where abstractions are reduced or abandoned</li> <li>3. Number of waterbodies with improvements benefiting raw water quality/aquatic ecology due reduced or cessation of abstractions, catchment management, nature-based solutions, river enhancement, migration barrier removal</li> <li>4. Number of waterbodies sources where WFD good status is not reached due to abstraction pressure.</li> <li>5. Regional information on net loss/gain of habitats collated from proposed and undertaken projects</li> </ol>   |
| Material assets               | <p><b>RMP MA</b></p> <ol style="list-style-type: none"> <li>1. Tonnes of residuals reused or recycled across region per year</li> <li>2. Tonnes of waste disposed of to landfill for the region per year</li> </ol>   |
| Landscape and visual amenity  | <p><b>RMP LV</b></p> <ol style="list-style-type: none"> <li>1. Total working area of pipelines through protected landscapes, outside protected areas, and urban areas</li> <li>2. Development of protected landscape strategies to guide work in important and valued landscapes</li> </ol>   |
| Climate change                | <p><b>RMP CCM</b></p> <ol style="list-style-type: none"> <li>1. Percentage of energy supply from renewable sources and energy efficient improvement for the region.</li> <li>2. Carbon footprint (total tonnes) per year, predicted over plan period, lifetime of schemes of water resource options (tonnesCO<sub>2</sub>equiv)</li> <li>3. Operational Carbon Intensity kgsCO<sub>2</sub>equiv/ML overall achieved for the region each year</li> <li>4. Total carbon value from any carbon offsetting schemes linked to the Plan</li> </ol>  |

| SEA topics        | SEA indicators  |
|-------------------|---|
|                   | <p><b>RMP CCA</b></p> <ol style="list-style-type: none"> <li>1. Frequency of drought (including freeze thaw) orders requiring change to normal abstractions/compensation releases</li> <li>2. Number of outages due to weather events and power loss</li> </ol> |
| Cultural heritage | See project level monitoring  |
| Geology and soils | See project level monitoring  |

## 11 Next Steps

Consultation responses and how the SEA has been taken into account are reported in the SEA Statement published with the final Regional Plan. The updated SEA Environmental Report and Appendices and this NTS are also provided, and all the documents can be found at the following website:

<https://www.water.ie/projects/strategic-plans/national-water-resources/rwrp/eastern-midlands/>