Spring 2023

UISCE ÉIREANN : IRISH WATER

Regional Water Resources Plan–South West

Non-Technical Summary

Irish Water's 25 Year Plan for Our Water Assets

Tionscadal Éireann
Project Ireland
2040

Data disclaimer: This document uses best available data at time of writing. 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 (NWRP) will also align to relevant updates in applicable policy. In December 2022, the Water Services (Amendment) (No. 2) Act, 2022 was signed into law. This act legislates that from the 31 December 2022, Irish Water will only be known as Uisce Éireann. It also provides that, from that date, all references in any enactment, legal proceedings or other document to Irish Water shall be construed as references to Uisce Éireann only. Therefore in this Regional Water Resources Plan for the South West region (RWRP-SW), which was developed prior to the name change, all references to Irish Water shall be construed as Uisce Éireann.

Baseline data included in the RWRP-SW 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 will be detailed in the relevant sections of the RWRP-SW. 2019 was selected as the base year to align with the planning period (2019-2025) of the NWRP.

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1. Regional Water Resources Plan – South West

This is the Non-Technical Summary for the Regional Water Resources Plan for the South West Region (RWRP- SW).

The development of the RWRP-SW will allow Irish Water for the first time to review water supply needs (Needs) collectively for the entire South West Region and across the spectrum of risk including Quality, Quantity, Reliability and Sustainability. It allows us to consider local Options to resolve these Needs and larger Options that can address multiple supplies across a wider area.

Within this document we will summarise how our options assessment methodology was applied to the water supplies within the South West Region, and how this resulted in a Preferred Approach that involves:

- Merging supply systems (known as Water Resource Zones (WRZs)) within the region to form 30 larger interconnected WRZs, reducing the number of WRZs from 174 to 92;
- Constructing 644 kilometres of trunk mains to develop the interconnected WRZs;
- Developing 17 new water treatment plants (WTPs);
- Decommissioning 90 WTPs and discontinuing 91 abstractions;
- Upgrading 137 existing water treatment plants to reduce water quality risks across all WRZs; and
- Reducing leakage to 23% of regional demand through pressure management, active leakage control, and targeted asset replacement.

The outcomes and benefits of this Regional Preferred Approach, if all projects identified within it are delivered, include:

- Improved performance across all of the water supplies in terms of Quality and Quantity;
- Strategic transformation from the existing fragmented supply to a more resilient and sustainable interconnected supply; and
- Ability to support growth and economic development across the South West Region.

1.1 Introduction

Irish Water is developing its first National Water Resources Plan (NWRP). The NWRP is Irish Water's 25-year strategic plan for Ireland's public water supplies. The Plan allows us to move towards a safe, secure, reliable, and sustainable drinking water supply for all Irish Water customers, whilst safeguarding the natural environment.

The preparation of the NWRP provides an opportunity to plan for delivery of water services at a national level. It allows Irish Water to review all public water supplies in a consistent way and to develop a clear approach to address the current and future needs of our supplies. This approach in turn will allow Irish Water to understand and prioritise the required investment in water services over the short, medium and long term.

Water resources planning plays an essential part in ensuring a safe, secure, sustainable, and reliable public water supply that supports Government policy and Irish Water policy.

The NWRP contains a large amount of detailed and technical information. To ensure the Plan is clearly communicated Irish Water is delivering the Plan in two (2) phases:

Figure 1.1. Regional Areas of the NWRP

Phase 1 - NWRP Framework Plan: The Framework Plan sets out the methodology we use to identify Needs across our 539 existing water supplies in a uniform way, and to review Options in order to develop a "Preferred Approach" for addressing Need in each supply or group of supplies. The Framework Plan was adopted in May 2021 following Strategic Environmental Assessment (SEA), Appropriate Assessment (AA) and extensive public consultation. The Framework Plan and supporting documentation are available at https://www.water.ie/projects/strategic-plans/national-water-resources/

Phase 2 – The Regional Water Resources Plans: Phase 2 involves the development of four (4) Regional Water Resources Plans that will apply the methodology in the Framework Plan. Each Regional Plan will summarise the Needs within the water supplies in the applicable region and develop a Preferred Approach to resolve them.

Phase 2 is being delivered as four (4) Regional Plans for the Eastern and Midlands, South West, North West and South East regions (see Figure 1.1). Each Regional Plan will undergo SEA and AA. The delivery of Phase 2 as four (4) Regional Plans is to make the process more manageable and to facilitate public engagement in the consultation process. However, as each Regional Plan is delivered it will include a cumulative assessment of the Plans that have been developed and consulted upon previously.

The first draft Regional Water Resources Plan for the Eastern and Midlands Region (draft RWRP-EM) was issued for consultation on 14 December 2021 and closed on 08 April 2022. Progress on the RWRP-EM is available at: https://www.water.ie/projects/strategic-plans/national-water-resources/rwrp/eastern-midlands/

The RWRP-SW is the second of the four (4) Regional Plans to be delivered, it will be followed closely by the Regional Plans for the North West and South East over the next 12 months.

Once Phase 1 and Phase 2 of the NWRP have been finalised, comprising the Framework Plan and four (4) Regional Water Resources Plans, together they will be treated as a unified Plan and the relevant regional groupings will have no ongoing application.

The structure of the NWRP is set out in Figure 1.2

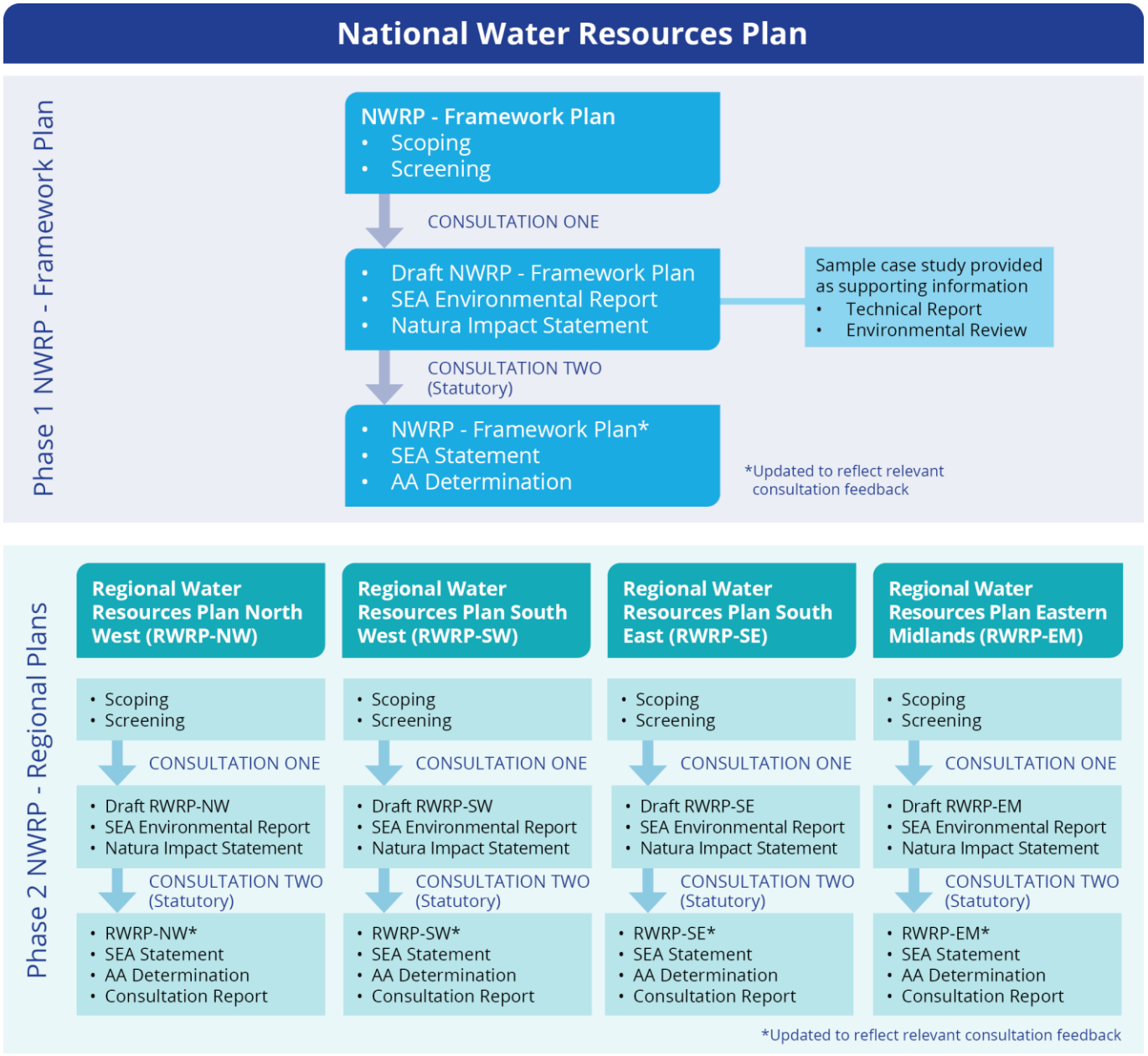


Figure 1.2 Components of the National Water Resources Plan

For more information on the NWRP Framework Plan visit www.water.ie/nwrp.

1.2 Regional Water Resources Plan South West

This is the Non-Technical Executive Summary (ES) for the Regional Water Resources Plan South West (RWRP-SW), being delivered as part of the overall NWRP.

The purpose of this ES is to provide a summary of the content and to signpost key areas of the RWRP-SW. This will assist readers to navigate the document pack.

Throughout this ES you will see key signposts, which will point you to where you can find further information within the documents provided. It also gives some guidance to help readers understand the RWRP-SW.

The complete set of documents for this consultation process include:

RWRP-SW

The RWRP-SW presents an overview of the South West Region with respect to population, development and the natural environment and identifies specific challenges within the South West Region. It summarises progress to date, the Options considered, and the Preferred Approach identified at Water Resource Zone (WRZ), Study Area and Regional Scale.

Study Area Technical Reports

To deliver the RWRP-SW, we subdivided the South West Region into smaller units to enable us to manage the process of identifying potential water supply solutions (Options) and the selection of our Preferred Approaches to resolve our water supply and water quality deficits. These smaller units are referred to as Study Areas. The South West Region comprises three Study Areas as shown in Figure 1.3.

A detailed Technical Report is provided for each Study Area describing the solution types at Study Area Level and providing a summary of the detailed Option and Approach Development Process and resulting outcomes for each Study Area. The Study Area Technical Reports are provided as appendices (Appendix 1-3) to the RWRP-SW document.

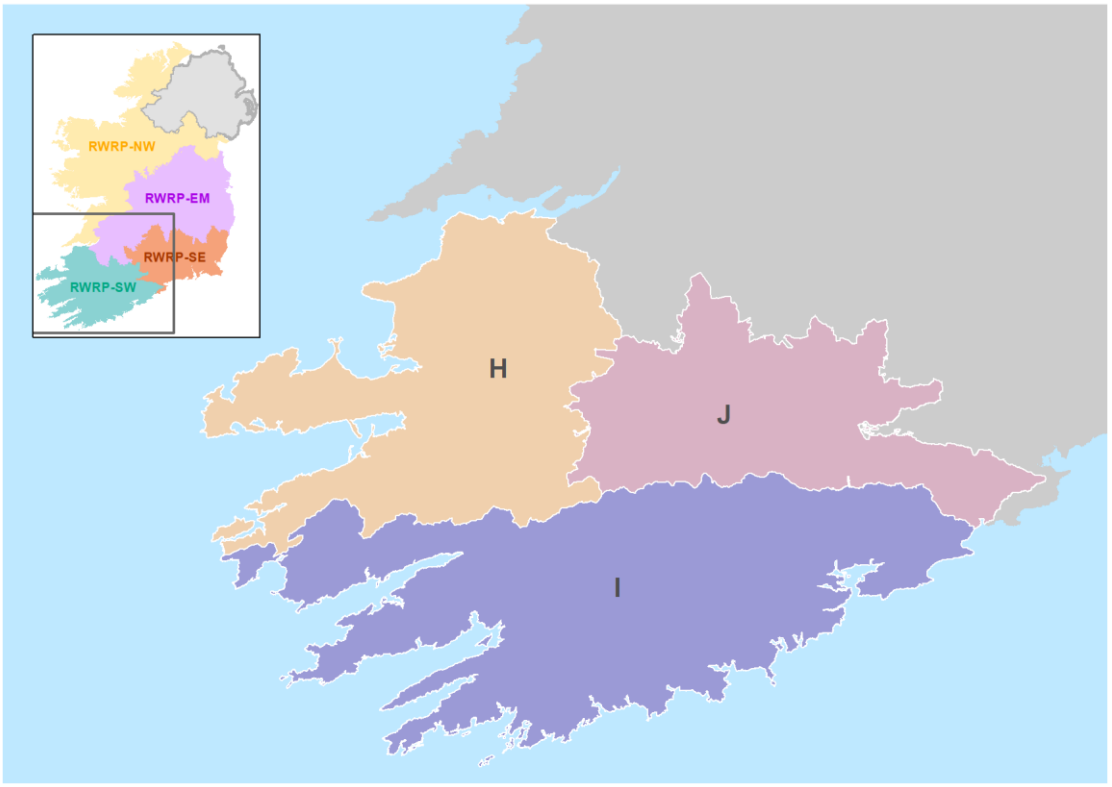


Figure 1.3 Study Areas of the South West Region

SEA Environmental Report

Strategic Environmental Assessment (SEA) is a process that integrates environmental considerations into the preparation and adoption of plans and programmes, with a view to promoting sustainable development. Irish Water has prepared an SEA Environmental Report, in accordance with the requirements of the European Union SEA Directive and associated Irish regulations. The SEA Environmental Report identifies and evaluates likely significant effects of the RWRP-SW and potential mitigation measures. It considers alternatives to the approach for the RWRP-SW and aims to identify potential interactions with other plans and programmes, including the potential for cumulative effects.

The SEA Environmental Report provides the methodology for integrating SEA and AA requirements throughout the development of the RWRP-SW and provides mitigation and implementation recommendations for the RWRP-SW and a monitoring plan.

Study Area Environmental Reviews

The Study Area Environmental Reviews form part of the SEA Environmental Report for the RWRP-SW. The Environmental Reviews apply the SEA objectives and environmental assessment methodology set out in the Framework Plan. The Environmental Reviews summarise the environmental assessment undertaken for each Study Area within the South West Region in relation to the options and approaches considered, as outlined in the Study Area Technical Reports.

Natura Impact Statement

A Natura Impact Statement (NIS) has been prepared to support the Appropriate Assessment (AA) of the RWRP-SW for the purposes of the European Union Habitats Directive and associated Irish regulations. Screening for AA of the RWRP-SW assessed whether, on the basis of objective scientific information, the RWRP-SW individually or in-combination with other Plans or projects, is likely to have a significant effect on a European site. The outcome of that screening process was that the Option types arising from the RWRP-SW had the potential to give rise to likely significant effects on European sites, in view of the sites' conservation objectives. Accordingly, full AA of the RWRP-SW was considered to be required, and an NIS was prepared. The NIS provides relevant information and analysis to inform the AA determination by Irish Water on the RWRP-SW (noting that Irish Water's ultimate AA determination also takes into account wider factors, including feedback received through consultation).

The RWRP-SW includes a full glossary of terms to support readers.

1.3 Public Consultation for the RWRP-SW

Consultation on the Strategic Environmental Assessment (SEA) Scoping Report for the RWRP-SW was held November and December 2021. The SEA Scoping Report was provided to all environmental authorities as specified in the SEA Regulations, for the purposes of initial consultation on the scoping of the SEA for the South West Region. The feedback obtained was considered and reflected in the draft RWRP-SW and associated SEA Environmental Report and the NIS.

Irish Water then undertook public consultation on the draft RWRP-SW and supporting material, between June 2022 and August 2022, which allowed interested parties to provide feedback on the draft RWRP-SW, including SEA and NIS, in the usual way. Feedback from this consultation process was considered and reflected in the final RWRP-SW. The Consultation Report for the RWRP-SW outlines the response to feedback received from interested parties, and includes a summary of any consequent updates to the RWRP-SW and associated documents.

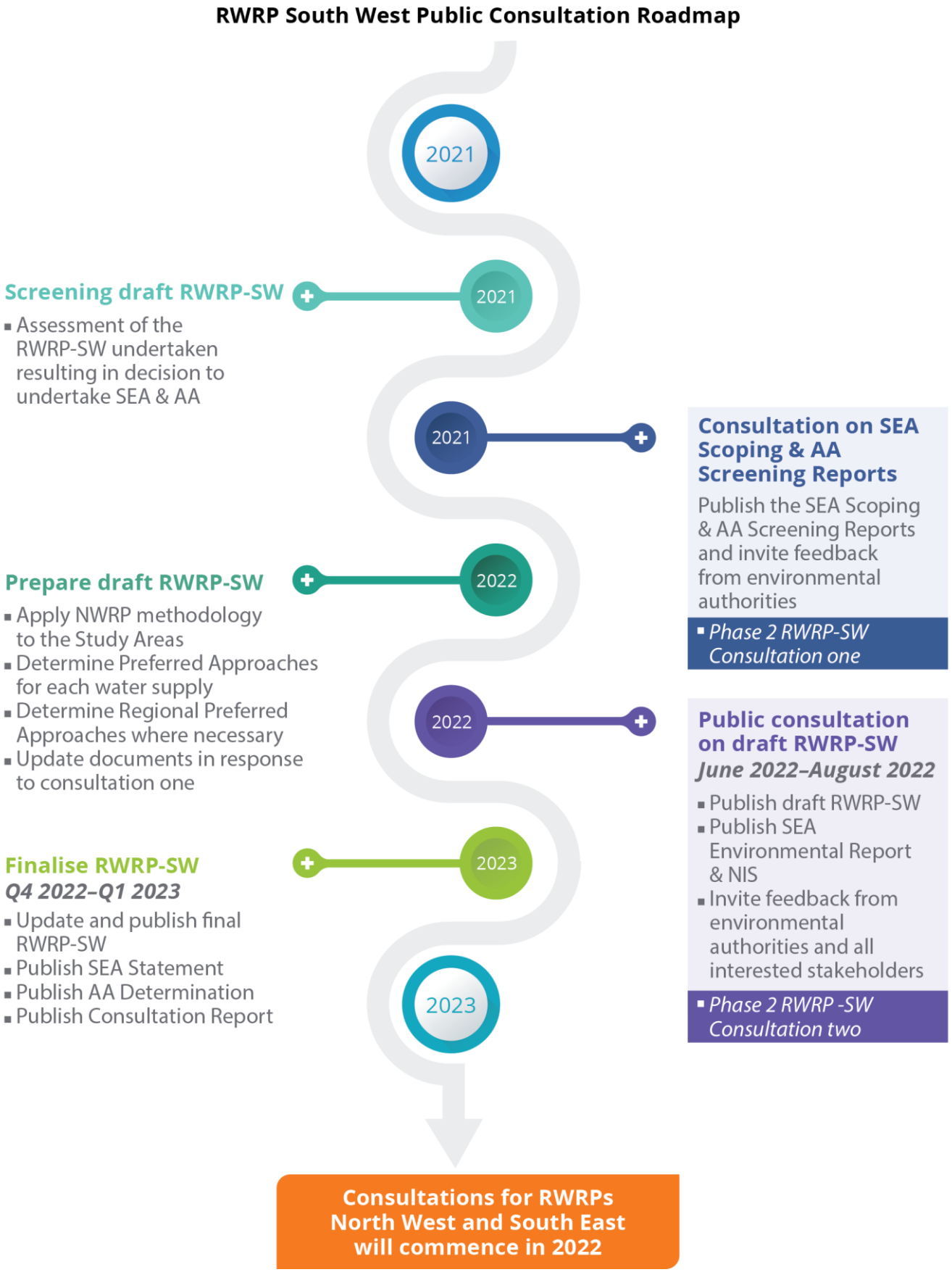


Figure 1.4 RWRP South West Public Consultation Roadmap.

1.4 RWRP South West Regional Plan Overview

The process we use to identify Needs and develop a Preferred Approach is known as the Options Assessment Process and was adopted as part of the NWRP Framework Plan. The RWRP-SW consists of ten Sections. Each of these Sections is aligned with the Options Assessment Process set out in the Framework Plan, as summarised in Figure 1.5.

The Options Assessment Methodology is further detailed in Chapter 8 of the NWRP Framework Plan.

Section 2 & 3 – Identify the baseline conditions and Need across the 174 WRZs in the South West Region

Section 4 & 5 – Considers the current status of infrastructure in the Study Areas and summarises the ongoing activities across our supplies

Section 6 – Option Development presents how we applied our Option Development process to the South West Region. It summarises the extent and scale of the options we reviewed, and the feasible options remaining after we completed our screening processes.

Section 7 & 8 – Approach Development outlines how the Preferred Approach for the three (3) Study Areas, and for the entire region collectively, was identified. It also describes the "Interim Solutions" we have identified to address short-term needs and the Sensitivity of the Preferred Approaches to climate change, abstraction regulation, leakage targets and growth projections.

Section 9 provides an overview of Monitoring and Feedback into the Plan

Section 10 summarises the overall outcomes of the RWRP-SW

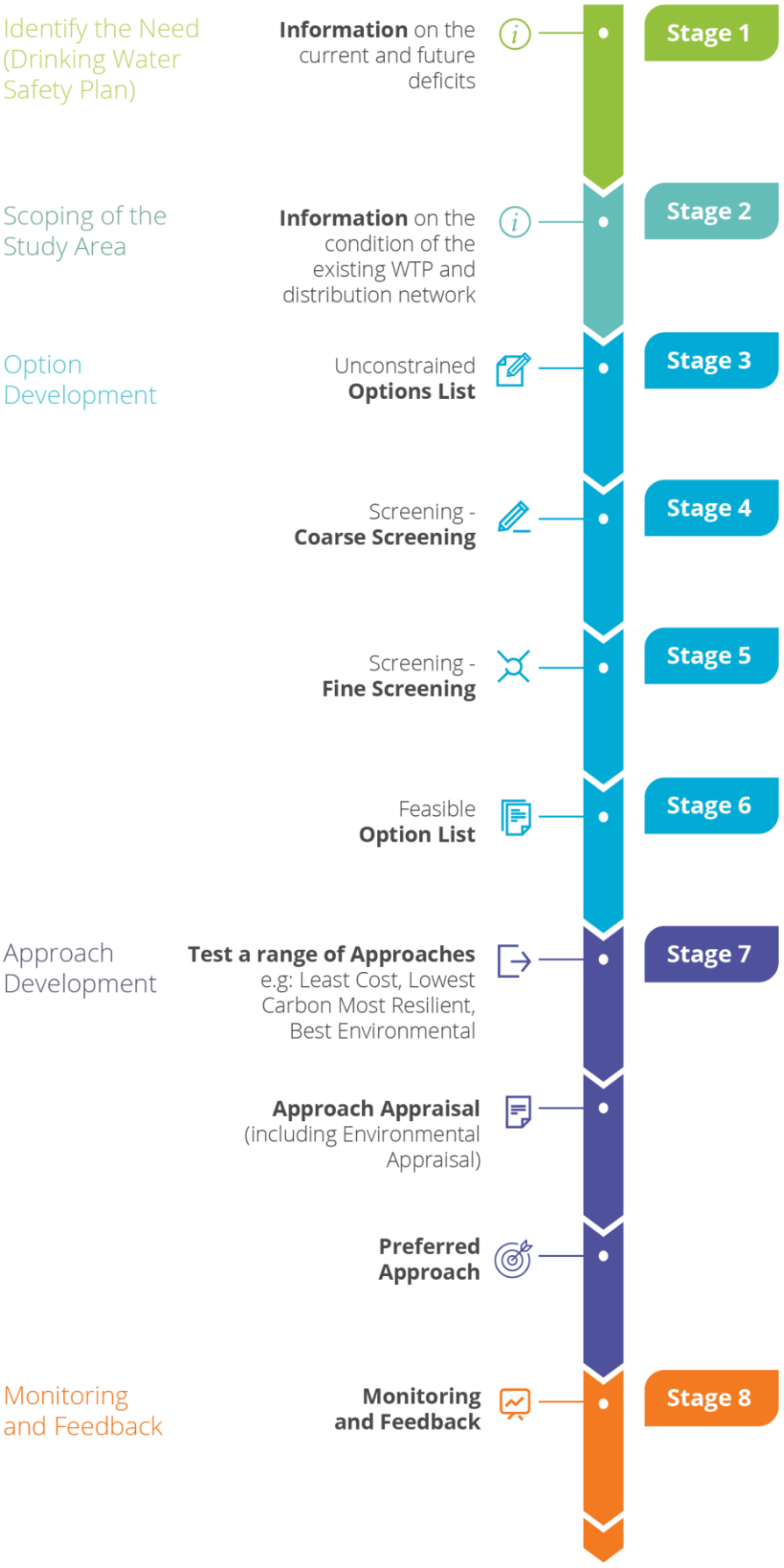


Figure 1.5 Options Assessment Methodology

2. South West Region Key Characteristics

Section 2 of the RWRP-SW outlines the key characteristics of the South West Region, including population, land use and water supply, as summarised in Figure 2.1.

It also identifies a number of specific challenges for the South West Region, which Irish Water must address both now and into the future, including:

- Growth and Development.
- Natural Resources.
- Water Supply.

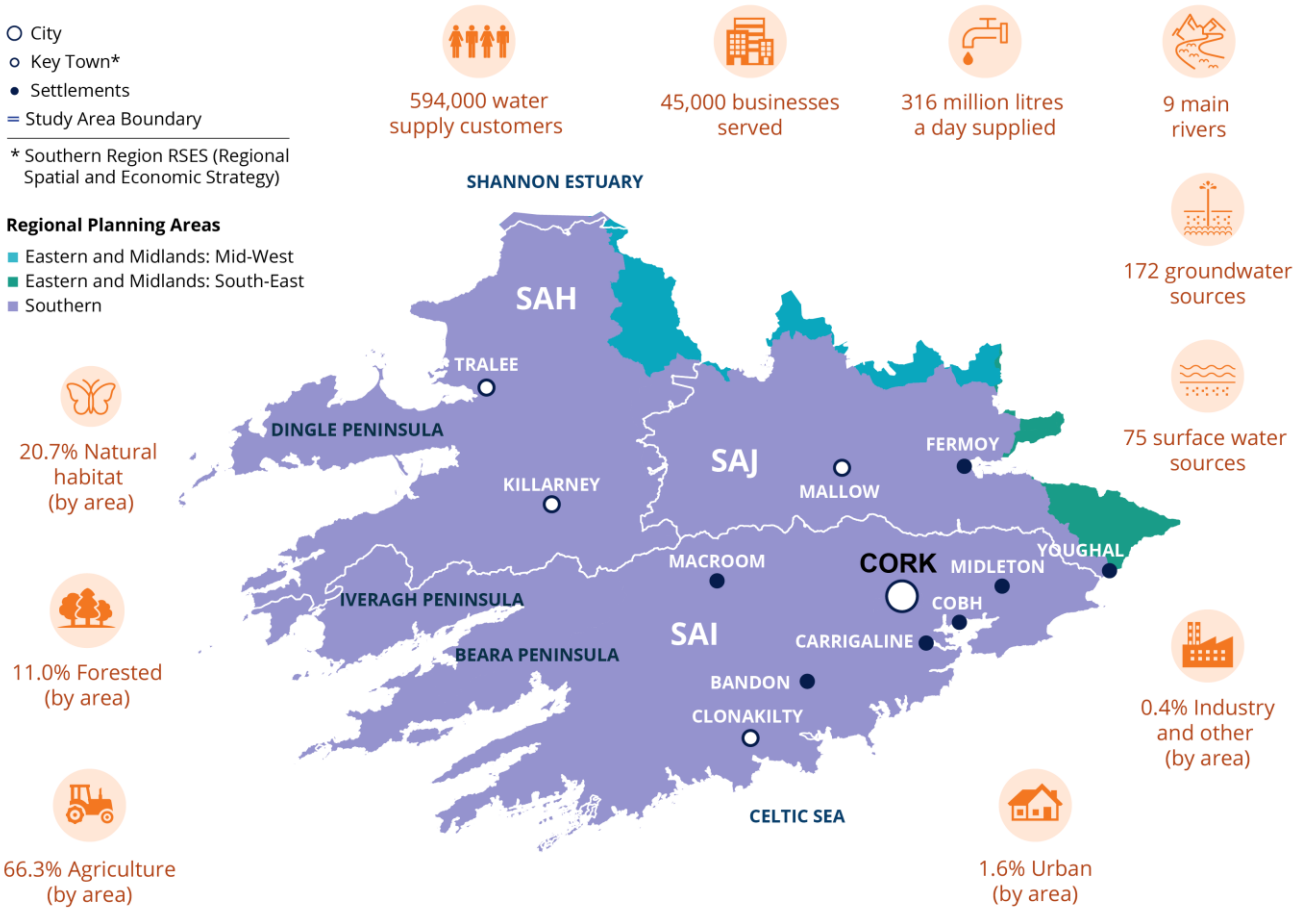


Figure 2.1 Key characteristics of the South West Region

2.1 Growth and Development

The South West Region includes five counties: Cork, Kerry, Limerick, Tipperary and Waterford and is represented by six Local Authorities. Forty-eight (48%) of the regional population and almost one fifth of Ireland's population is located within Cork City in Study Area I (SAI). The South West Region includes four key towns: Tralee, Killarney, Mallow and Clonakilty. Tralee is the largest of the Key Towns with a population of almost 24,000.

The overall regional population is expected to grow by 33% from 2019 to 2044. All Study Areas in the South West Region have a projected growth rate that exceeds the 12% national rate observed in the 10-year period from 2006 to 2016. Study Area I which contains Cork and South Kerry has the highest

projected growth rate at 40%, which is driven by the Cork City forecast growth of 54% by 2040. Population growth across the water supply systems is presented in Figure 2.2.

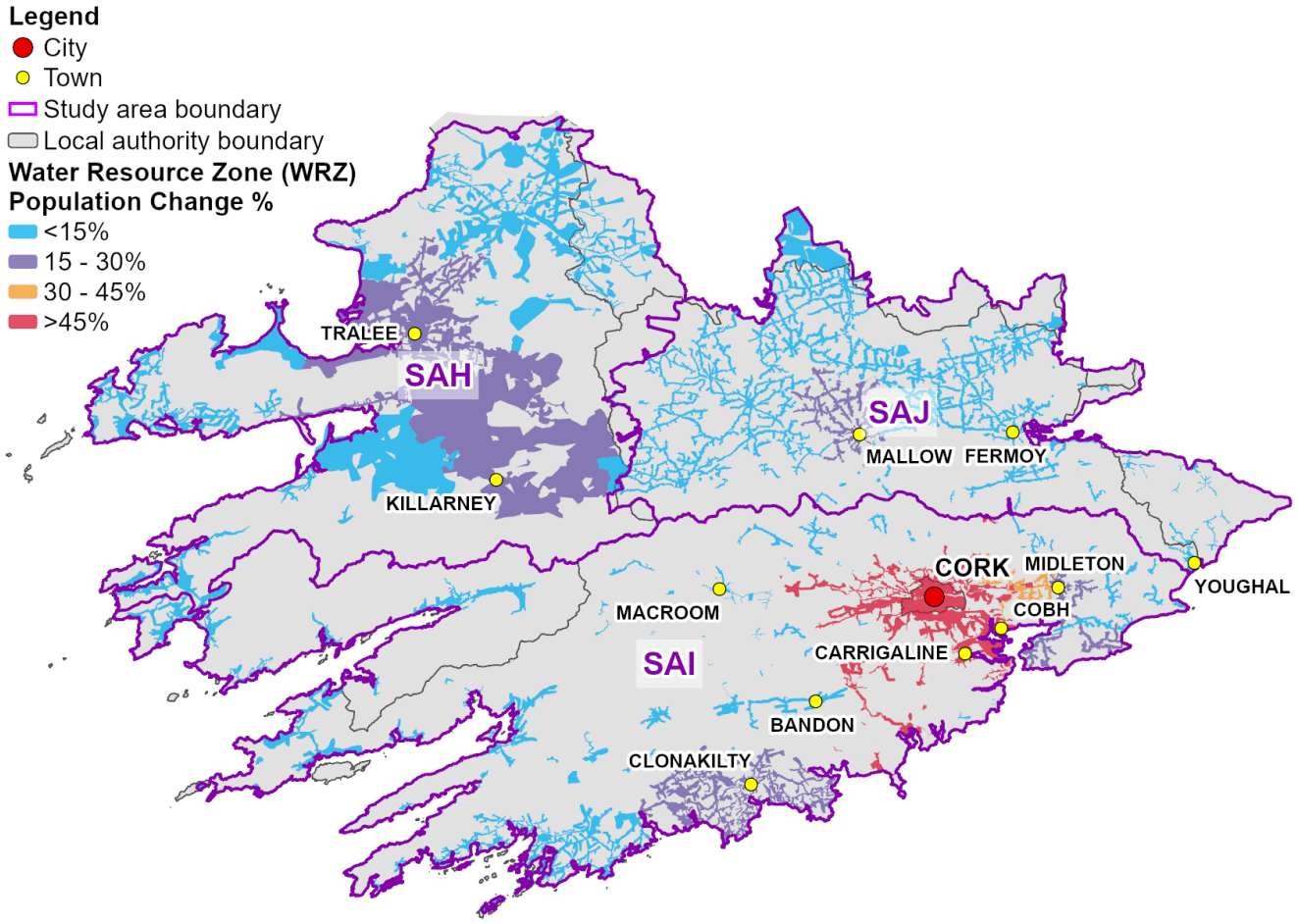


Figure 2.2 Regional Overview

2.2 Natural Resources and Water Supply

In the South West Region, Irish Water currently abstracts from 247 different water sources and has 227 Water Treatment Plants (WTPs), all of which need to be maintained and operated in a sustainable way.

Surface water abstractions make up 81% of the water delivered to customers from rivers or lakes, with the remaining 19% coming from groundwater sources. The available natural resources and the interaction between surface water and groundwater are important considerations when assessing the baseline of our existing water sources, identifying options to support increased water demands, and managing the quality of the water we supply.

Most of the South West Region experiences average annual rainfall between 1,400 and 1,600 mm per year. In comparison, Counties Dublin and Kildare (located in the Eastern and Midlands Region of the NWRP) experience the driest weather across the country with average annual rainfall of less than 800 mm. The high elevation areas on the Iveragh and Dingle Peninsulas, where the Carrantuohill and Brandon Mountains are located respectively, experience an average annual rainfall of up to 3,600 mm. The lower rainfall areas, averaging between 1,000 mm and 1,200 mm, occur in the south east (including Cork City and surrounding suburbs) and north east of the Study Area.

Water supply quality and reliability is impacted by adverse weather conditions including storms, cold weather and dry periods. Up to 33% of supplies in the South West Region are currently at risk of failure

during a dry year, and drought conditions are expected to become more frequent due to the impact of climate change.

Other challenges in the South West Region include:

- Ensuring that our water supply activities support Ireland as a country in meeting its obligations under the European Union Water Framework Directive (WFD).
- Ensuring that the RWRP-SW proactively considers and protects the 288 nationally and internationally designated European sites protected under the Habitats Directive in the South West Region.

Further information regarding our drought management approach is available in Appendix E of the NWRP - Framework Plan.

Section 2 of the RWRP-SW describes the baseline conditions for the water supply in the South West region.

3. South West Region – Needs

This section describes the current and future water supply 'Needs' of the South West Region, in terms of Quality, Quantity, Reliability and Sustainability.

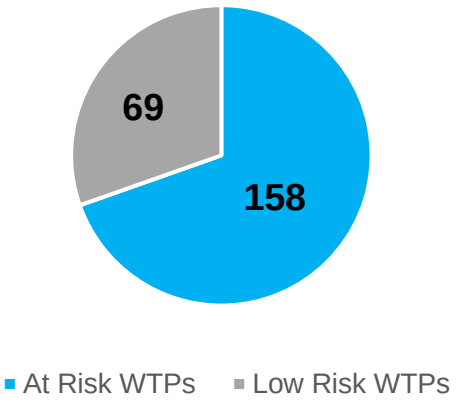
3.1 Quality

At present there are 227 individual water treatment plants (WTPs) in the South West Region. Our water supplies perform well in terms of compliance with drinking water quality standards, with >99% of all samples taken in 2020 fully compliant with the limits set out in Ireland's Drinking Water Regulations[1].

However, Irish Water take a risk-based approach to managing our drinking water supplies. As set out in our Framework Plan, we use the Drinking Water Safety Plan hazard assessment and interim "barrier assessments" to quantify the "risks" across our water supplies.

These assessments provide an indicator of the need to invest in areas of our assets (or how we manage them), to ensure that we can address potential risks or emerging risks to our supplies. These risks usually manifest themselves as precautionary boil water notices after heavy rainfall or during unplanned disruptions to the operation of our water treatment plants.

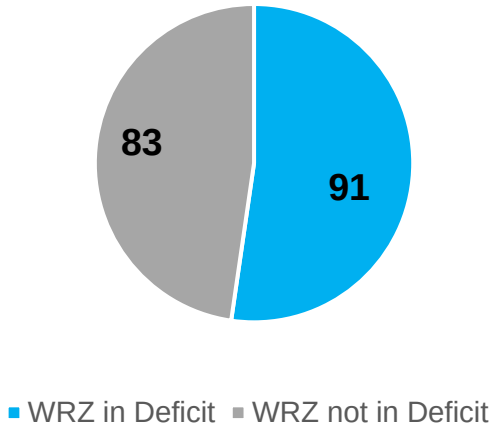
When applied to the South West Region, our barrier assessments show that 158 of the 227 WTPs in the South West Region need some form of investment in order to reduce risk. This assessment does not necessarily indicate non-compliance with the Drinking Water Regulations[1], but instead is an internal Irish Water process to indicate where works are required.



3.2 Quantity

It is necessary to assess public water supply requirements to identify whether there is likely to be a Surplus or shortfall (Deficit) of available water.

We carry out this assessment known as the Supply Demand Balance (SDB) calculation over a 25-year timeframe (2019-2044). The SDB considers water availability in the natural environment, infrastructure and operational constraints, and Demand for water. Our forecast of Demand over the 25-year planning period uses projected population growth forecasts provided in the National Planning Framework (NPF)[2] and updated information from the Regional Spatial and Economic Strategies (RSES) and Local Authority Plans where available.



There are 174 individual Water Resource Zones (WRZs) in the South West Region. Fifty-two percent (52%) of these have an SDB Deficit, even in normal weather conditions. Our existing supplies do not meet current or future needs in terms of source availability, water treatment plant capacity or demand growth requirements. This means that customers can experience interruptions to supply, particularly during extreme weather events. It also means that Irish Water will have difficulty supporting projected growth and economic development in these areas. At present, in most areas we are facilitating capacity

for growth through network improvements and proactive leakage reduction. However, these measures alone will not resolve the issues with our supplies over the medium-to-long term.

Chapter 3 of the NWRP Framework Plan describes the methods used to calculate the current (2019) and forecast Water Available for Use (WAFU), including the potential impacts of climate change and pending abstraction legislation changes; while Chapter 4 describes the method used to calculate the current (2019) demand and forecast demand using estimates of growth.

3.3 Reliability

In this NWRP, we have assessed the reliability of our supplies in terms of Level of Service (LOS) to our customers. Level Of Service is the potential for an interruption to water supply (a customer receiving a reduced or restricted supply of water at their tap), due to insufficient water being available in supply or high demands for water exceeding available supply.

As described in Chapter 2 of the NWRP Framework Plan, we review LOS across different weather conditions, including:

- Normal Year Annual Average (NYAA)- typical weather conditions in Ireland.
- Dry Year Critical Period (DYCP)- drought events.

As can be seen in Figure 3.1 and 3.2, the LOS across our supplies varies significantly, with many WRZs providing insufficient LOS, particularly during drought conditions. In most European countries, water utilities strive to achieve a 1 in 100-year LOS. This means that at any given time, there is a 1% probability of having an interruption to customer supply. As this is our first NWRP and we need to incrementally transform all of our water supplies, we have set an initial target of LOS of 1 in 50 year, or a 2% probability of supply interruption.

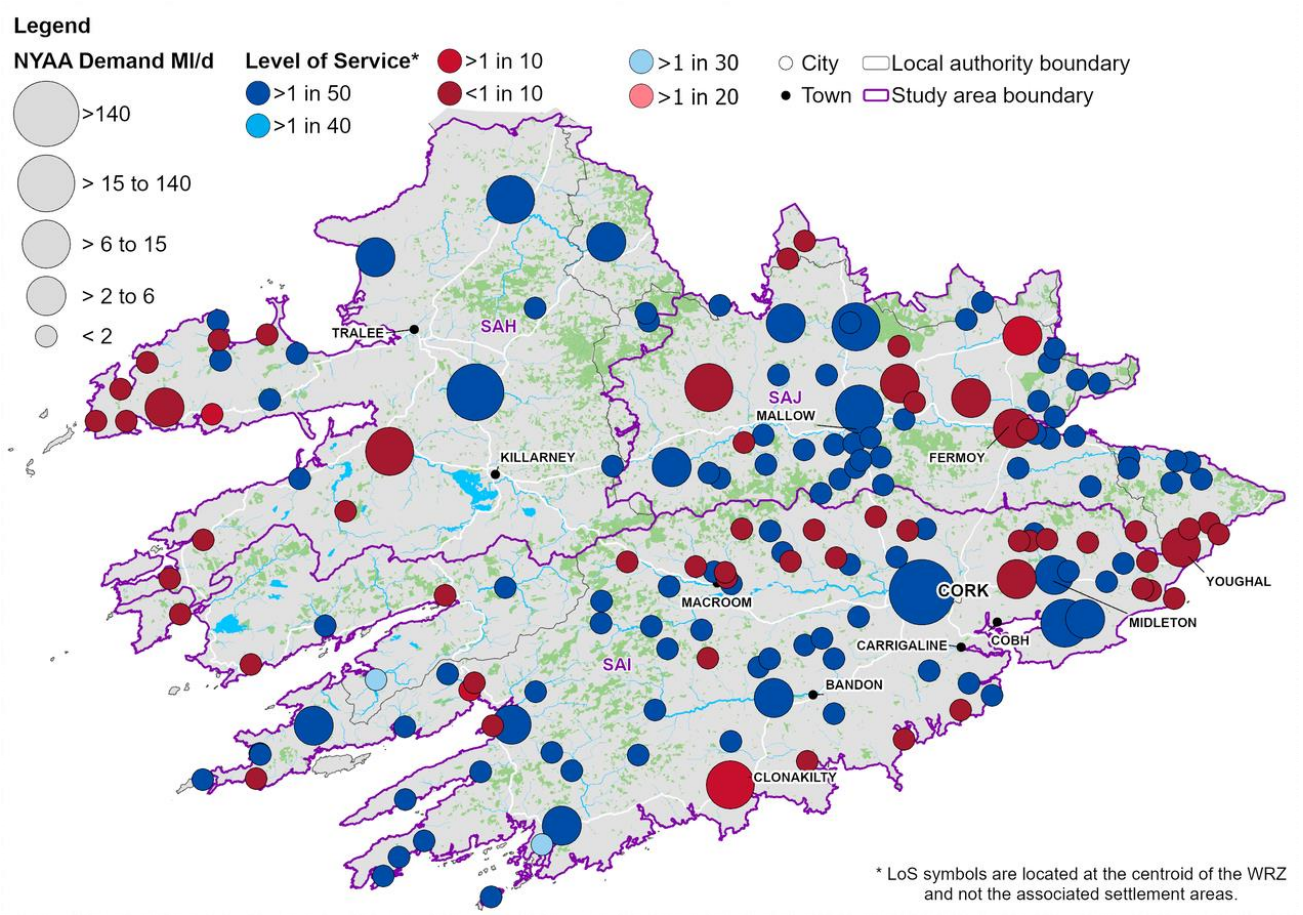


Figure 3.1 Level of Service Normal Year Annual Average (NYAA)

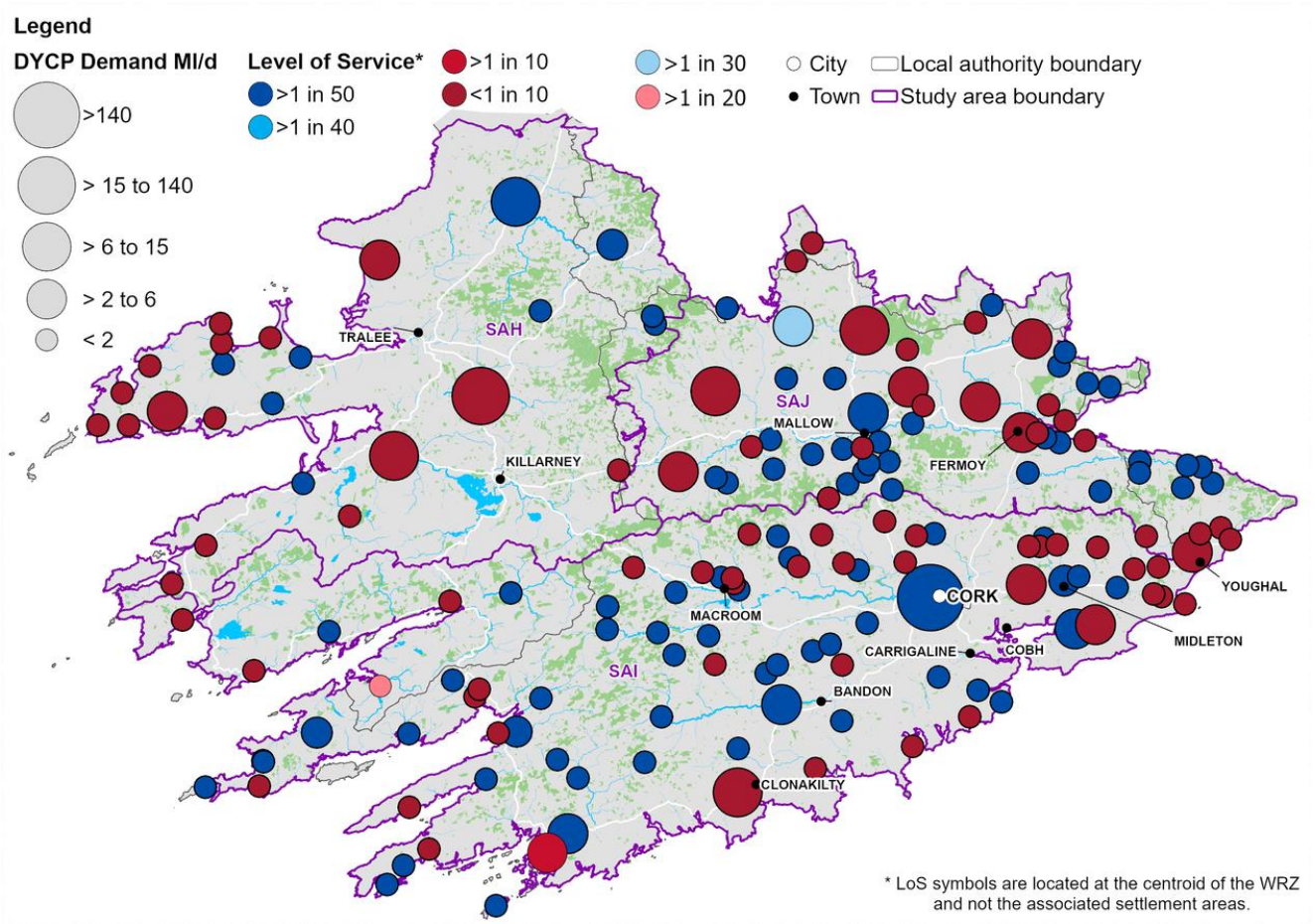


Figure 3.2 Level of Service Dry Year Critical Period (DYCP)

3.4 Sustainability

At present Irish Water abstracts water from 172 groundwater and 75 surface water sources within the South West Region. Many of these abstractions were developed before the introduction of legislation which affects abstraction, including the Water Framework Directive and the Habitats Directive.

At present the Irish Government is developing new legislation and regulations on water abstraction, to align all water abstraction activities with the Water Framework Directive. This new regime may result in Irish Water having to make some modifications to our surface water and groundwater abstractions. A key objective of the NWRP is to improve the sustainability of the national water supply from its current baseline. This will include consideration of sustainable abstraction limits.

Although we do not yet have detail on the final legislation as it will be adopted or implemented, when we assess our abstractions using UKTAG guidelines[3] on sustainable flow, we estimated that we may need to reduce the quantity of abstraction from existing sources in the South West Region by approximately 84 Ml/d.

4. South West Region – Current Status of Infrastructure

Section 4 of the RWRP-SW details Stage 2 of the Options Assessment Methodology (see Figure 1.5).

Within this section we "scope" or review the baseline conditions of the water supplies in each Study Area. This allows us to consider within our Plan:

- Existing infrastructure deficiencies, including known problems with our existing water treatment plants (WTPs) and the reliability of the distribution network; and
- 62 critical infrastructure projects that have already been completed or are underway (inflight). This includes:
  - Construction of 11 new WTPs and the upgrade of 36 WTPs in the South West Region between 2014 and 2019;
  - Programmes to address water quality risk, including the Disinfection Programme and the THM (trihalomethane) reduction programme;
  - Capital maintenance programmes, including WTPs upgrades, reservoir cleaning programmes and network cleaning; and
  - Irish Water's National Leakage Reduction Programme.

As part of the scoping exercise for the South West Region, Irish Water conducted workshops with our Local Authority partners and stakeholders, to ensure a full and comprehensive understanding of Need and the existing condition of assets across the Study Areas. The identified infrastructure improvement works are summarised in the Option descriptions within the Study Area Technical Reports (Appendices 1-3) and Study Area Environmental Reviews that accompany the RWRP-SW.

The Needs assessments completed for each Study Area are presented in the Study Area Technical Reports as Appendices 1 to 3.

Section 3 of the RWRP-SW and each of the Study Area Technical Reports (Appendices 1-3) outline the need in terms of water quality, quantity, sustainability and resilience across the region and in each of the Study Areas.

5. Solutions – Irish Water Approach.

The types of solutions that Irish Water uses to address the identified Needs across our water supplies can be categorised under three “Pillars”; Lose Less, Use Less and Supply Smarter as set out in the Framework Plan.

Figure 5.1 Three Pillars to Address the Key Challenges

These pillars encompass water conservation, leakage reduction and transformation of our water supply sources and treatment plants. They are the foundations of the NWRP and resolving the identified Needs within our Water Resource Zones (WRZs), involves activities across all pillars. This means that for all WRZs our Preferred Approach includes Use Less and Lose Less activities in addition to the Supply Smarter Options we set out in the RWRP-SW.

The Use Less and Lose Less activities are already underway, and in Section 5 of the RWRP-SW we summarise the relevant activities under these headings.

Lose Less: Irish Water's National Leakage Reduction Programme includes measures such as pressure management, active leakage control and targeted water mains replacement across the South West Region.

We recognise that current leakage levels are too high, and under this programme we aim to reduce leakage nationally by 213 Ml/d by 2034 in order to meet the Sustainable Economic Level of Leakage (SELL). In addition to this we have set targets to reduce leakage levels to 21% of demand in WRZs where the demand is greater than 1,500 m^3/day (cities, towns and large villages) by 2034. In the South West Region this represents a further 39 Ml/d of leakage reductions.

Details of the Sustainable Economic Level of Leakage (SELL) assessment process can be found in Appendix H of the NWRP - Framework Plan.

The Use Less pillar focuses on activities to help understand water use habits, influence behaviour, encourage change and to promote the use of water efficient devices and appliances. Irish Water is actively promoting water conservation in schools, business, and communities through various activities. These include our partnership with An Taisce’s Green-Schools Programme, our Water Stewardship Programme and ongoing water conservation campaigns. We also provide advice on reducing water usage in homes and businesses on our website https://www.water.ie/conservation/.

6. The Option Development Process

In Section 6 of the RWRP-SW we apply the Option Screening Process, which encompasses Stages 3 - 6 of the Options Assessment Methodology (see Figure 1.5).

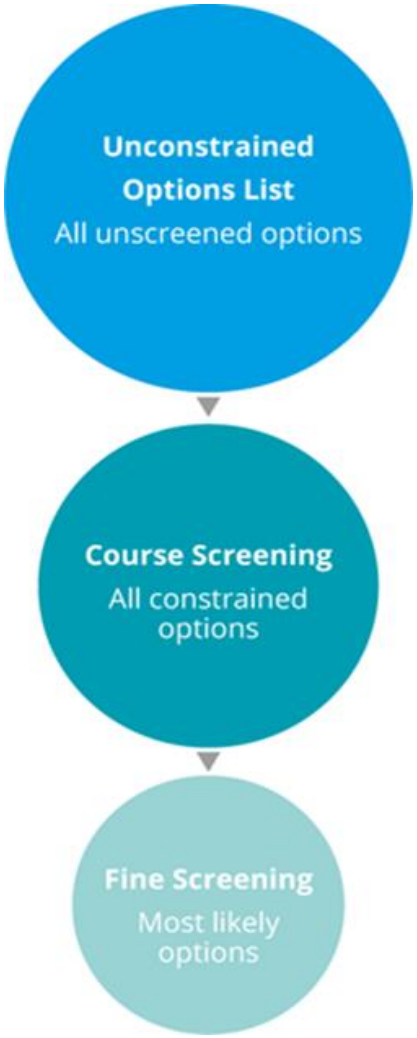


Figure 6.1 Options Screening Process

The purpose of the Option Screening Process is to, in the first instance, identify all of the potential Options (**Unconstrained Options**) we might use to address Needs within the region, and to then screen out Options that are not Feasible, environmentally Sustainable, or Resilient. At the end of the process, we are left with a list of **Feasible Options**, which can address the Needs of individual Water Resource Zones (WRZs), or across groups of WRZs within the region, depending on the size and scale of the Option.

The screening process involves Coarse Screening and Fine Screening which are described in detail in Chapter 8.3 of the NWRP Framework Plan.

6.1 Unconstrained Options

At the start of the Option Screening Process, all Options are considered, and our team of experts including hydrologists, hydrogeologists, environmental scientists, ecologists, and engineers, reviews a range of natural resources such as rivers, lakes and groundwater aquifers that might have potential for water supply. We then conduct workshops with the Local Authorities and other stakeholders, to ensure that we have included local knowledge, and appropriately take into account any other Options that may have been considered previously. This initial list is known as the "Unconstrained Option List".

During the development of the RWRP-SW, we identified 1,677 Unconstrained Options for the Region. These Options covered a broad range of solution types, including groundwater sources, surface water sources and water treatment plant upgrades, as summarised in Figure 6.2.

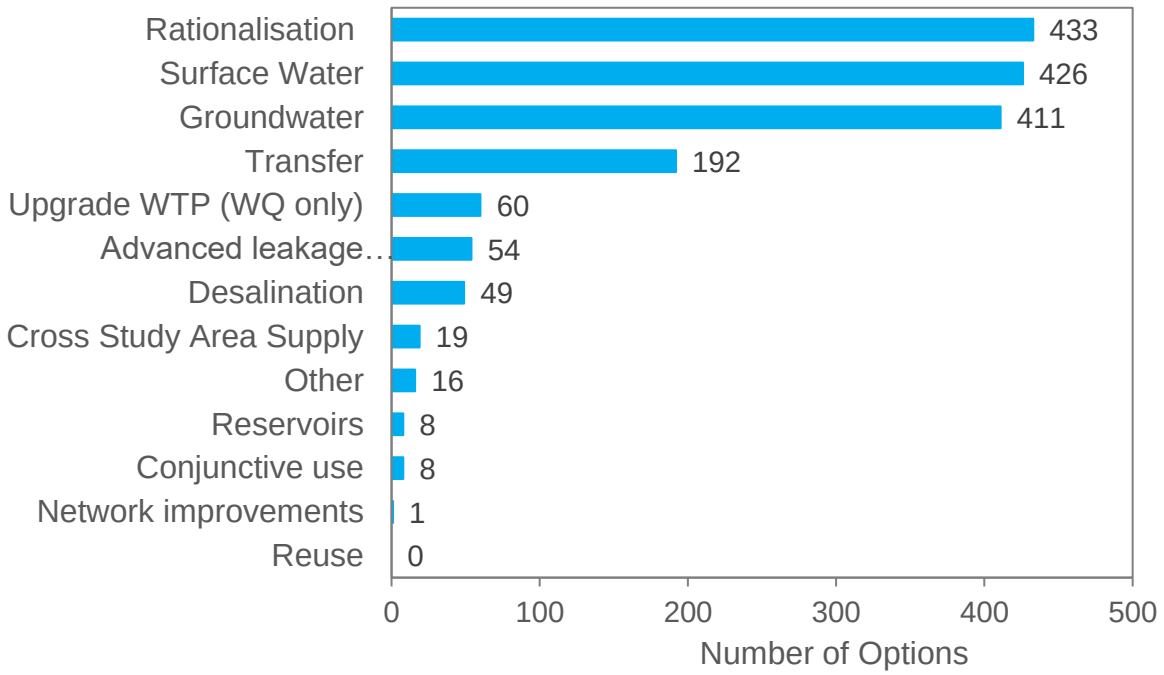


Figure 6.2 Unconstrained Option Types

6.2 Option Screening

Environmental considerations are at the heart of our NWRP, and the Coarse and Fine Screening criteria applied to the Unconstrained Options list, incorporate the objectives from the Strategic Environmental Assessment.

During the Coarse Screening stage for the South West Region, 675 of the Unconstrained Options were eliminated.

During Fine Screening, a further two (2) Options were eliminated, leaving 1,000 Feasible Options.

The Feasible Options are assessed and scored in a uniform way against the 33 criteria set out in our Framework Plan. This scoring information allows us to compare the relative benefits of each of the Options and is used as part of our Multi Criteria Assessment (MCA) at the next stage of our Options Assessment Methodology.

Details of the rejected Options and the justification for their rejection are outlined in Annex B of the Study Area Technical Reports.

6.3 Feasible Options

The 1,000 Feasible Options are made up of 318 WRZ Options, which address Needs within a single WRZ. In most cases these are small, localised Options. The remaining 682 Options are Study Area grouped Options that can resolve Needs across multiple WRZs. The Feasible Option list includes a wide range of Option types as shown in Figure 6.3.

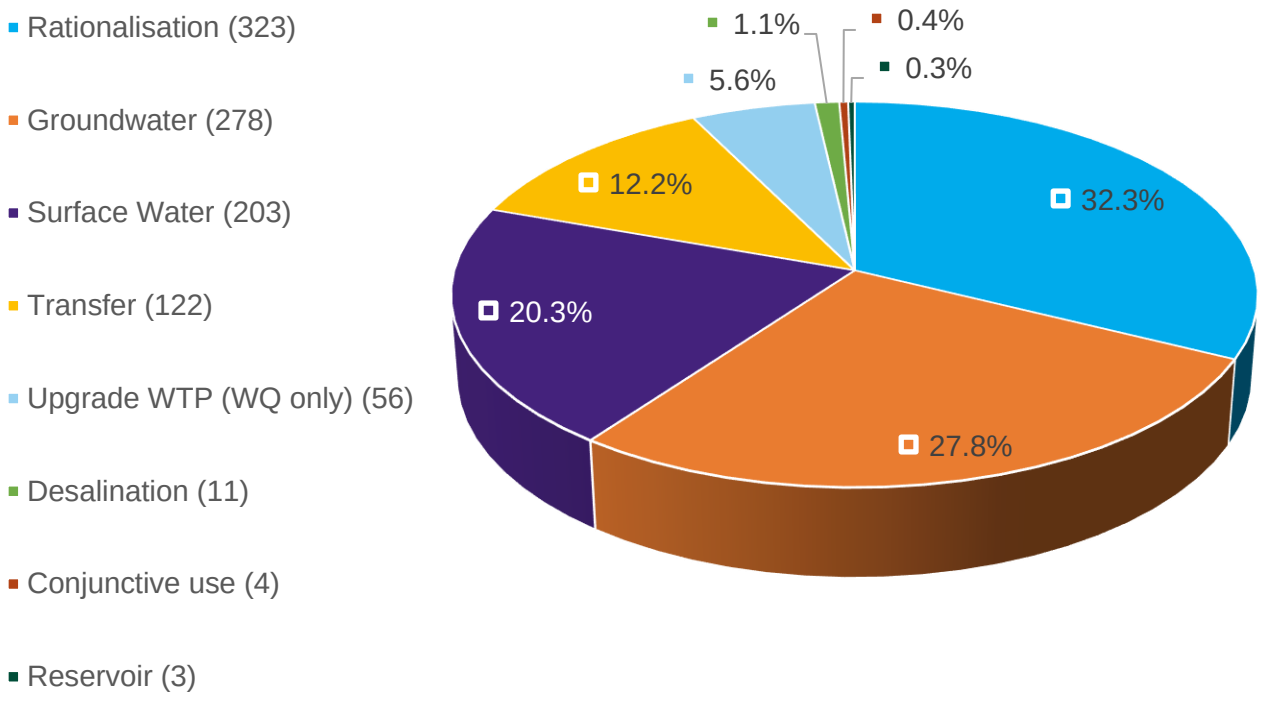


Figure 6.3 Feasible Option Types

At the end of the Option Development Process, an outline design and estimated cost is developed for each Feasible Option. The plan level cost estimate is a whole life cost including:

- Capital costs to deliver the Option
- Operational cost of the Option over its design life, including labour, chemicals, energy and capital replacement
- Embodied carbon and whole life carbon costs
- Environmental and social costs

The use of operational, carbon and environmental criteria within our costing process allows for a broader consideration of whole life costs at a plan level.

Section 6 and the Study Area Technical Reports (Appendices 1-3) of the RWRP-SW summarises our process for developing options to address the Needs in the South West Region.

6.4 Project Level Summary

The Feasible Options are considered at plan level and the assessment of the Options are desktop-based. Any Options that are progressed following the NWRP will be considered in more detail at project level.

The first step prior to the development of any solution will be to carry out a review of the data feeding into the project. The data that is reviewed at project level will include, but will not be limited to: the Supply Demand Balance, to review any change to the volume of water required; water quality data, to review if any further upgrades to infrastructure are required; and the environmental baseline, to determine if there

has been a change in the baseline information - for example a change in Water Framework Directive waterbody status or a new Special Area of Conservation designation that the proposed project could impact. In addition to refining the data feeding into the project, the scope and design of the project will be developed in parallel with a number of feasibility and environmental assessments along with stakeholder engagement. The level of assessments and stakeholder engagement will be dependent on the size and scale of the project. All Options will be developed to ensure all potential opportunities that can be afforded by the solution are realised.

7. Study Area Preferred Approach Development Process for the RWRP-SW

7.1 Approach Development Process

Within Sections 7 and 8 of the RWRP-SW, we evaluate the Feasible Options and identify which combination of these provides the best overall outcome for the 174 Water Resource Zones (WRZs) in the South West Region. This process is called "Approach Development".

This process involves assessing all of the Feasible Options against the six "Approach Categories" identified in the Framework Plan. These Approach Categories allow us to align our decisions with policy drivers and are summarised in Table 7.1.

Table 7.1 Range of Approaches to Test Feasible Options

Approaches Tested	Description	Policy Driver
Least Cost	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)	Lowest score against the European Sites (Biodiversity) sub-criteria question: Score = 0 equates to no likely significant effects (LSEs). If, in our opinion, these 0 scoring options meet the Deficit/plan objectives, they are automatically picked as the Preferred Approach. Score = -1 or -2 equates to LSEs that can be addressed with general/standard mitigation measures. Score = -3 equates to LSEs that may be harder to mitigate or require significant project level assessment.	Habitats Directive
Quickest Delivery	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.	Statutory Obligations under the Water Supply Act 2007 and Drinking Water Regulations

Approaches Tested	Description	Policy Driver
Best SEA Environmental	This is the option or combination of options with the highest total score across the 19 No. SEA Multi Criteria Assessment (MCA) sub-criteria questions	SEA Directive and Water Framework Directive
Most Resilient	This is the option or combination of options with the highest total score against the 4 resilience criteria. These include outages, financial uncertainty, regulatory changes, and climate change.	National Adaptation Plan and Climate Action Plan
Lowest Carbon	This is the option or combination of options with the lowest embodied and operational carbon cost	Climate Action Plan

We then follow an Approach Assessment Process (Figure 7.1) that allows us to compare the best-performing Options within each Approach Category relative to each other, in order to develop a Preferred Approach.

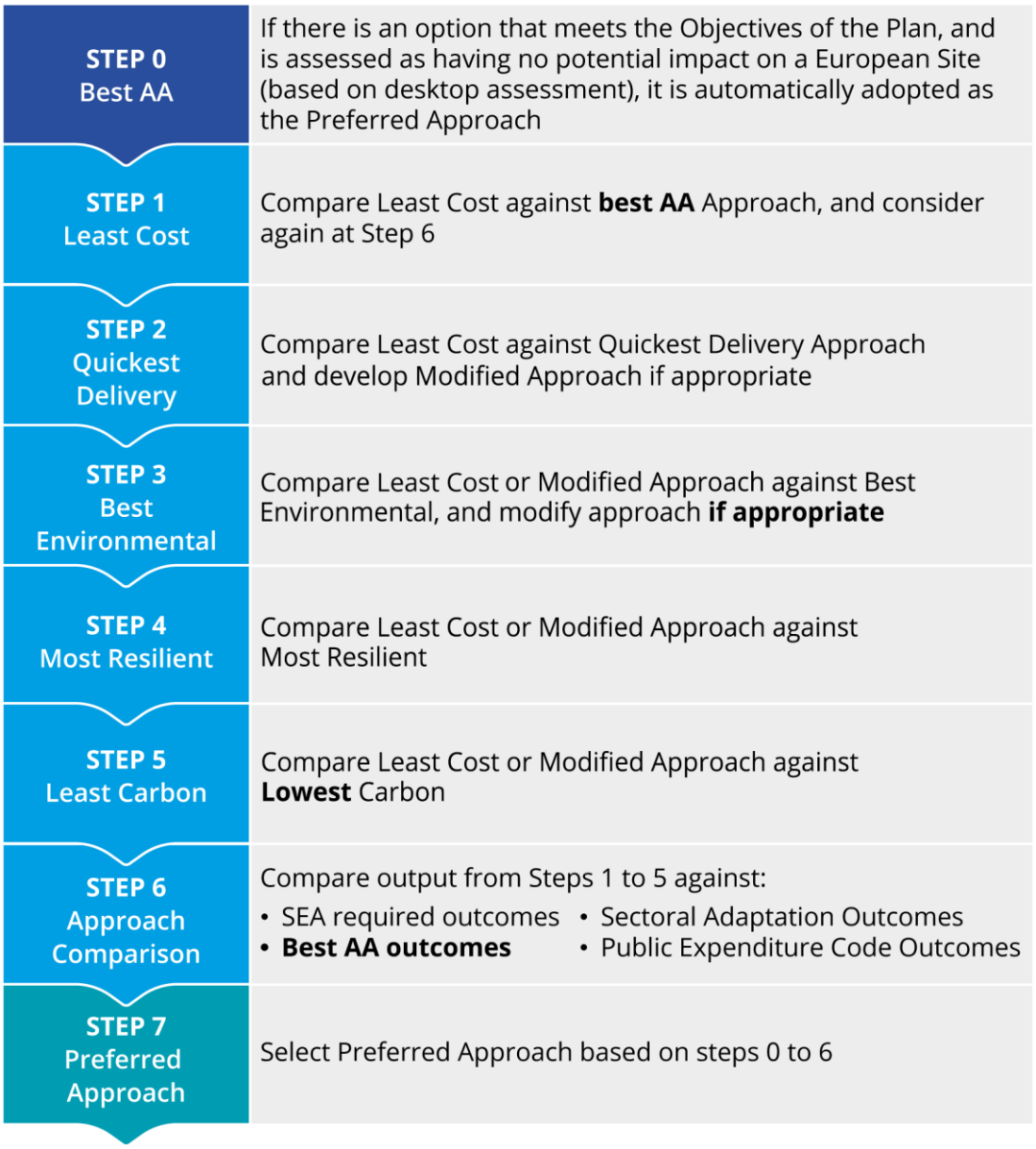


Figure 7.1 Approach Assessment Process

In many cases, a Feasible Option for a given WRZ may be the best Option across a number of Approach Categories. For example, an Option such as a groundwater source might score highest in terms of the Least Cost, Best Environmental and Lowest Carbon approaches.

As set out in Section 6 of the RWRP-SW, Feasible Options can vary in size from smaller localised Options to large regional Options, summarised as follows:

Water Resource Zone Options – These are Options that can only resolve Need for a single water supply. In most cases they are small, localised Options.

Study Area Options – These are Options that can resolve Needs across multiple water supplies in a Study Area. These tend to be larger Options.

Regional Options – These are the largest Options that can resolve Needs in multiple supplies across the entire region.

If we were to progress a Preferred Approach for each of the 174 WRZs in the Region using WRZ Options alone, we could potentially resolve the identified Needs; however, we could miss the opportunity to assess whether there are operational synergies that can improve sustainability, cost and reliability outcomes by considering larger Options that resolve Needs across multiple supplies. The Study Area and Regional Options allow us to consider a more holistic and strategic way of transforming our water supplies. Therefore, within the RWRP-SW we take the following approach:

a) We develop the Preferred Approach for all of the WRZs individually within each Study Area by selecting the WRZ Options that perform best overall in terms of whole life cost and Multi Criteria Assessment (MCA) scores (based on environmental, resilience, carbon, biodiversity, and delivery criteria). This combination of WRZ Options is known as the **WRZ Level Preferred Approach.**

b) We then consider whether the individual WRZ Options (which make up the WRZ Level Preferred Approach) can be rationalised into combinations of larger Study Area Options (SA Options), where available, in order to see if this offers any improved outcome for the Study Area in terms of whole life cost and MCA scores. The best performing combination of WRZ Options and Study Area Options that address the Need of all WRZs within the Study Area is known as the **Study Area Preferred Approach.**

c) Finally, we take the best outcome for each Study Area across the Region and consider whether any WRZ Options and SA Options can be rationalised into any Regional Options that may be available. Again, this allows us to see whether there are any improvements that can be made to the outcome in terms of whole life cost and MCA scores at Regional Level. **This is known as the Regional Level Preferred Approach.**

In **Section 7** of the RWRP-SW, we review the outcome of a) and b) above, being the WRZ Level and Study Area Preferred Approaches. In **Section 8** we consider the potential for a Regional Level Preferred Approach.

7.2 Study Area Preferred Approach - Summary

The Study Area Preferred Approach for the three Study Areas across the South West Region can be summarised as follows:

- 98 Options, including 63 WRZ Level Options and 35 Study Area Grouped Options.
- The WRZ Options consist of 26 local groundwater supplies, and 10 surface water supplies that contribute to meeting an estimated 10% of the supply Deficit across the Region.
- Water Quality upgrades to all water treatment plants (WTPs) to reduce risks identified through our Barrier Assessments.

The Preferred Approach for each Study Area is described in Table 7.2 and represented in terms of new and upgraded WTPs and trunk mains in Figures 7.3, and 7.4 for the three Study Areas in the South West Region. This can be compared to the existing infrastructure in Figure 7.2.

The WRZ Level Approach and the Study Area Preferred Approach are compared in detail for each Study Area in Section 7.3 of the RWRP-SW. At the WRZ Level there are no Feasible WRZ Options available for one WRZ in Study Area H (SAH) and four WRZs in Study Area I (SAI). For this reason, the WRZ Level Approach cannot meet the full Deficit for these Study Areas. Reviewing the transformation opportunities at Study Area and Regional Level enables us to identify alternative Options to address the Deficit.

Other benefits of the Study Area Preferred Approach relative to assessing the WRZs individually, include:

- Reduced whole life investment costs of approximately 8% across the Region.
- Increased resilience through interconnections and rationalisation.
- Improved sustainability and reduced operational risk through decommissioning 90 WTPs and discontinuing 91 associated abstractions.
- The Study Area Preferred Approach is adaptable to change across a range of future scenarios including climate change, growth projections, sustainability outcomes and changes in leakage targets.

Section 7 sets out how we identify our Preferred Approach to addressing the Need at WRZ and Study Area level. The Study Area Technical Reports (Appendices 1-3) and the Study Area Environmental Reviews set out how the Preferred Approach has been identified in more detail.

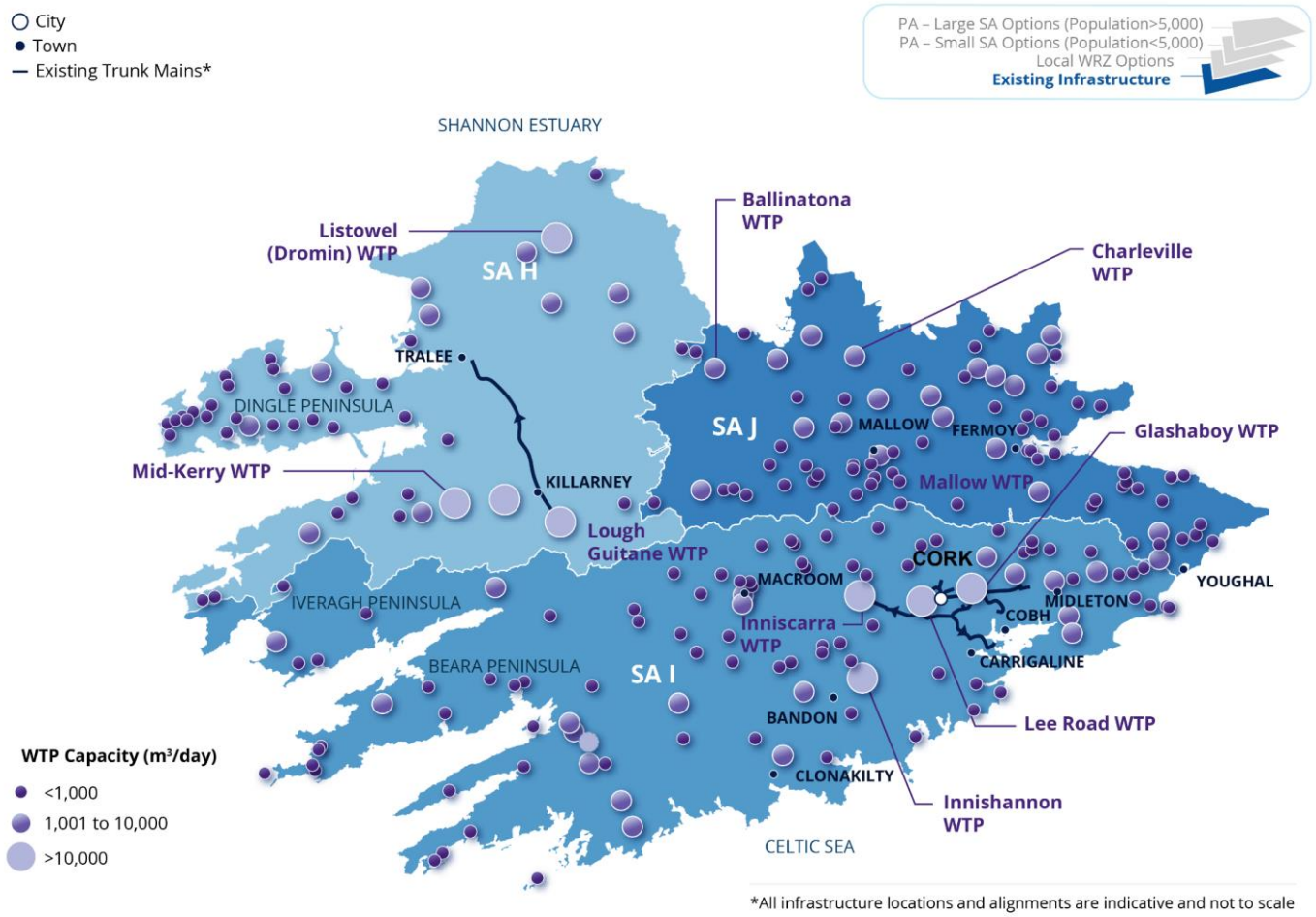


Figure 7.2 Existing Infrastructure

Table 7.2 Study Area Preferred Approach Description

Study Area	Description
Study Area H (SAH)	The Preferred Approach (PA) for Study Area H (SAH) consists of local WRZ Options for 12 of the 23 WRZs in the Study Area (SA). The 11 other WRZs are supplied by 6 SA Grouped Options that involve interconnections between one or more supplies, reducing the total number of WRZs from 23 to 17. The SA Grouped Options include: ➢ Four (4) interconnections with associated increased or new abstractions to support within SA transfers: • Listowel and Abbeyfeale, with a new groundwater source developed in the gravels between the two WRZs (SAH-524). • An Clochan and Ce Brennan WRZs, and increased groundwater abstraction at An Clochan (SAH-512). • Dun Chaoin and Baile an Fheirtearaigh WRZs, and increased groundwater abstraction from Tobar Bhreandáin WTP boreholes and supplying Dun Chaoin (SAH-533). • Central Region and Mid Kerry, and a new surface water abstraction from the lower Leane catchment (SAH-530). ➢ Two (2) options, rationalising supply systems: • Rathmore rationalised to the Central Region WRZ, decommissioning Rathmore WTP (SAH-540). • Two (2) WRZs (Cahersiveen and Emlaghpeasta) rationalised to Waterville (SAI), with an increased abstraction from Lough Currane, decommissioning 4 WTPs: Emlaghpeasta, Portmagee, Malainn and Cahersiveen WTPs. (SAH-531) The Preferred Approach provides environmental benefits by decommissioning 2 existing abstractions that may not meet sustainability guidelines - the Coulagh River Intake (Cahersiveen) and Gurrane Stream (Emlaghpeasta/Portmagee/Malainn) - and reducing a further nine (9) abstractions to theoretical sustainable thresholds. Ongoing leakage management through our National Leakage Reduction Programme, also contributes by reducing the volume of water lost in distributing water to demand centres. In SAH, planned leakage reduction programmes will reduce leakage by 1,070 m^3/day in Listowel, Central Regional and Mid-Kerry WRZs. We have also committed to additional Leakage Targets of 32.5 Ml/d that will reduce leakage to 21% of demand in WRZs where the demand exceeds 1,500 m^3/day. Delivery of the Preferred Approach will secure all of the supplies in the area in terms of Quality, Quantity, Sustainability and Resilience.
Study Area I (SAI)	The Preferred Approach (PA) for study Area I (SA)I consists of local WRZ Options for 36 of the 89 WRZs in the Study Area. This includes 2 Options for the Whitechurch WRZ – increasing the existing groundwater abstraction and developing a new groundwater abstraction. The 53 other WRZs are supplied by 12 SA Grouped Options that involve interconnections between one or more supplies, reducing the total number of WRZs from 89 to 49. The SA Grouped Options include: ➢ Ten (10) supply rationalisations: • Rationalising 18 WRZs to Cork City and interconnecting a further 3 WRZs to the scheme. This requires an increased surface water abstraction at Inniscarra impoundment to supply the deficit across the 22 WRZs (including Cork City). Twenty (20) WTPs will be decommissioned. (SAI-971) • Rationalising 4 WRZs (Kilnagurten, Coolyhane, Ballyverane and Clondrohid) to Macroom WRZ. This requires an increased surface water abstraction from Sullan River and a new WTP. Five (5) WTPs will be decommissioned. (SAI-952) • Rationalising 4 WRZs (Castletownbere, Glengarrif, Adrigole and Reenmeen West) to Bantry WRZ. This requires an increased surface water abstraction and new WTP. Four (4) WTPs will be decommissioned. (SAI-955) • Rationalising 3 WRZs (Knockadoon, Ballymacoda and Kilchraheen) to Youghal Regional WRZ. This Option involves a new WTP and GW abstraction and decommissions 4 WTPs. (SAI-949)

Study Area	Description
	• Five (5) Options rationalising 6 WRZs. These options each require increased GW abstractions and will collectively decommission 7 WTPs • Rationalising Caherdaniel/Castlecove to Waterville WRZ. This requires an increased abstraction from Lough Currane and decommissioning 1 WTP. (SAI-923) ➢ Interconnecting Dunmanway and Drinagh and increasing the surface water abstraction from Curraghhlicky Lake (SAI-897). ➢ Transferring spare capacity within Skibbereen 1 to Skibbereen 2, via an interconnection (SAI-962). The Preferred Approach provides environmental benefits by decommissioning 6 existing abstractions that may not meet sustainability guidelines – Allihies impoundment, Gowlane Stream, Cahermore River, Glenberg, Barony River, Tibbotstwon Reservoir - and reducing a further 25 abstractions to theoretical sustainable thresholds. Ongoing leakage management through our National Leakage Reduction Programme, also contributes by reducing the volume of water lost in distributing water to demand centres. In SAI, planned leakage reduction programmes will reduce leakage by 2,294 m^3/day in Cork City and Clonakilty. We have also committed to additional Leakage Targets of 39.4 Ml/d that will reduce leakage to 21% of demand in WRZs where the demand exceeds 1,500 m^3/day. Delivery of the Preferred Approach will secure all of the supplies in the area in terms of Quality, Quantity, Sustainability and Resilience.
Study Area J (SAJ)	The Preferred Approach (PA) for Study Area J (SAJ) consists of local WRZ Options for 14 of the 62 WRZs in the Study Area. This includes 2 Options for the Whitechurch WRZ – increasing the existing groundwater abstraction and developing a new groundwater abstraction. The 48 other WRZs are supplied by 17 SA Grouped Options that involve interconnections between one or more supplies, reducing the total number of WRZs from 62 to 26. The SA Grouped Options all involve supply rationalisations: ➢ Three Options rationalise supplies to WRZs located in other Regions: • Labbamollogga WRZ rationalised to Ballylanders WRZ in SAK in the South East Region, decommissioning 1 WTP (SAJ-613). • Kilmurray (Mitchelstown) WRZ rationalised to Inchinleamy WRZ in SAK in the South East Region, decommissioning 1 WTP (SAJ-614). • Monabricka WRZ rationalised to South West Regional WRZ in SA8 in the Eastern and Midlands Region, decommissioning 1 WTP (SAJ-628). ➢ One Option rationalising Bweeng WRZ in SAJ to Donoughmore WRZ in SAI, decommissioning 1 WTP (SAJ-616). ➢ Rationalising 8 WRZs to Mallow, requiring an increased groundwater abstraction. Nine (9) WTPs will be decommissioned. (SAI-597) ➢ Rationalising 5 WRZs to Fermoy, requiring an increased groundwater abstraction. Five (5) WTPs will be decommissioned. (SAI-595) ➢ One Option rationalising 3 WRZs (Toureen Derry to Banteer and Glenleigh and Kilcorney to Millstreat) and 2 interconnections (Newmarket to Banteer and Millstreet), with two (2) new abstractions. The rationalisations decommission 6 WTPs. ➢ Ten (10) Options collectively rationalising 23 WRZs to 10 WRZs with associated increased/new abstractions. Sixteen (16) WTPs will be decommissioned. The Preferred Approach provides environmental benefits by decommissioning the River Allow abstraction which may not meet sustainability guidelines and reducing a further 3 abstractions to theoretical sustainable thresholds.

Study Area	Description
	Ongoing leakage management through our National Leakage Reduction Programme, also contributes by reducing the volume of water lost in distributing water to demand centres. In SAJ, planned leakage reduction programmes will reduce leakage by 369 m^3/day in Charleville/Doneraile, Millstreet and Newmarket WRZs. We have also committed to additional Leakage Targets of 18.7 Ml/d that will reduce leakage to 21% of demand in WRZs where the demand exceeds 1,500 m^3/day. Delivery of the Preferred Approach will secure all of the supplies in the area in terms of Quality, Quantity, Sustainability and Resilience

7.3 Review of the Preferred Approaches arising from Consultation

As set out in Section 9 of the RWRP-SW the RWRP will be formally updated every five years at which point there will be further opportunities for public participation. Baseline forecasts and data feeding into the NWRP will be reviewed annually. Our data is continuously improving, and it is important that we review our Preferred Approach further to the receipt of updated data. During the consultation period for the RWRP-SW we received updated data for a number of WRZs through consultation workshops and subsequent further assessment, which resulted in a review of the Preferred Approach for those WRZs.

Following the review, Irish Water considered that no change to the Preferred Approach is required at this stage but there is potential for amendment as the process of review and feedback is applied.

A summary of the updated data received and updates to the RWRP-SW are provided below.

7.3.1 Whiddy Island (Study Area I)

In the SAI Technical Report the WRZ preferred approach for Whiddy Island is to develop a new groundwater abstraction on the island to supply the required deficit. Three sites on the Island are considered potentially good locations for ground water supply and a trial well was developed at one of these sites. Results from the trial well test indicate that arsenic is evident in the groundwater and it would not be a suitable source of raw water for public water supply purposes. Trial tests will be carried out at the other two sites and if it is determined, further to these site investigations, that the groundwater supply is not suitable for public water supply other feasible alternatives will have to be reconsidered.

In the draft RWRP-SW, the only alternative feasible option for the Whiddy Island WRZ is to develop a desalination plant. Due to the planning and licensing application processes required for the desalination plant it would take several years to progress this project. However, there is a critical need on Whiddy Island and there have been significant issues associated with the deterioration of raw water quality which has led to the a ‘do no not consume’ notice being applied to the supply for a significant period of time. An option to rationalise Whiddy Island to Bantry was considered as part of a Study Area group option in the draft RWRP-SW and it is considered that this option could be delivered quicker than a desalination plant solution. Therefore, in this final RWRP-SW Irish Water have included the option to rationalise Whiddy Island to Bantry as a feasible alternative at WRZ level.

The Study Area I Technical Report has been updated to note the uncertainty associated with the WRZ Preferred Approach for Whiddy Island and the feasible alternative to rationalise Whiddy Island to Bantry, which was previously considered as a group option, has been considered as a feasible WRZ alternative option.

7.3.2 Kenmare (Study Area I)

The Kenmare supply is dependent on an import from a local group water scheme in dry weather when water levels at the existing lake source are low and there is an increase in demand associated with tourism in the area. During the consultation period it was noted that the group water scheme would not be able to continue providing supply to Irish Water.

The Preferred Approach for Kenmare, to develop a new SW abstraction from Kenmare River, will take several years to develop and obtain planning for the works, therefore in the interim there is a requirement to develop an emergency source to maintain supply during the summer period. Irish Water are currently workshopping potential interim emergency supplies.

The Study Area I Technical Report has been updated to note that the interim solution for Kenmare is to Upgrade WTP to Irish Water Standards and develop an emergency source

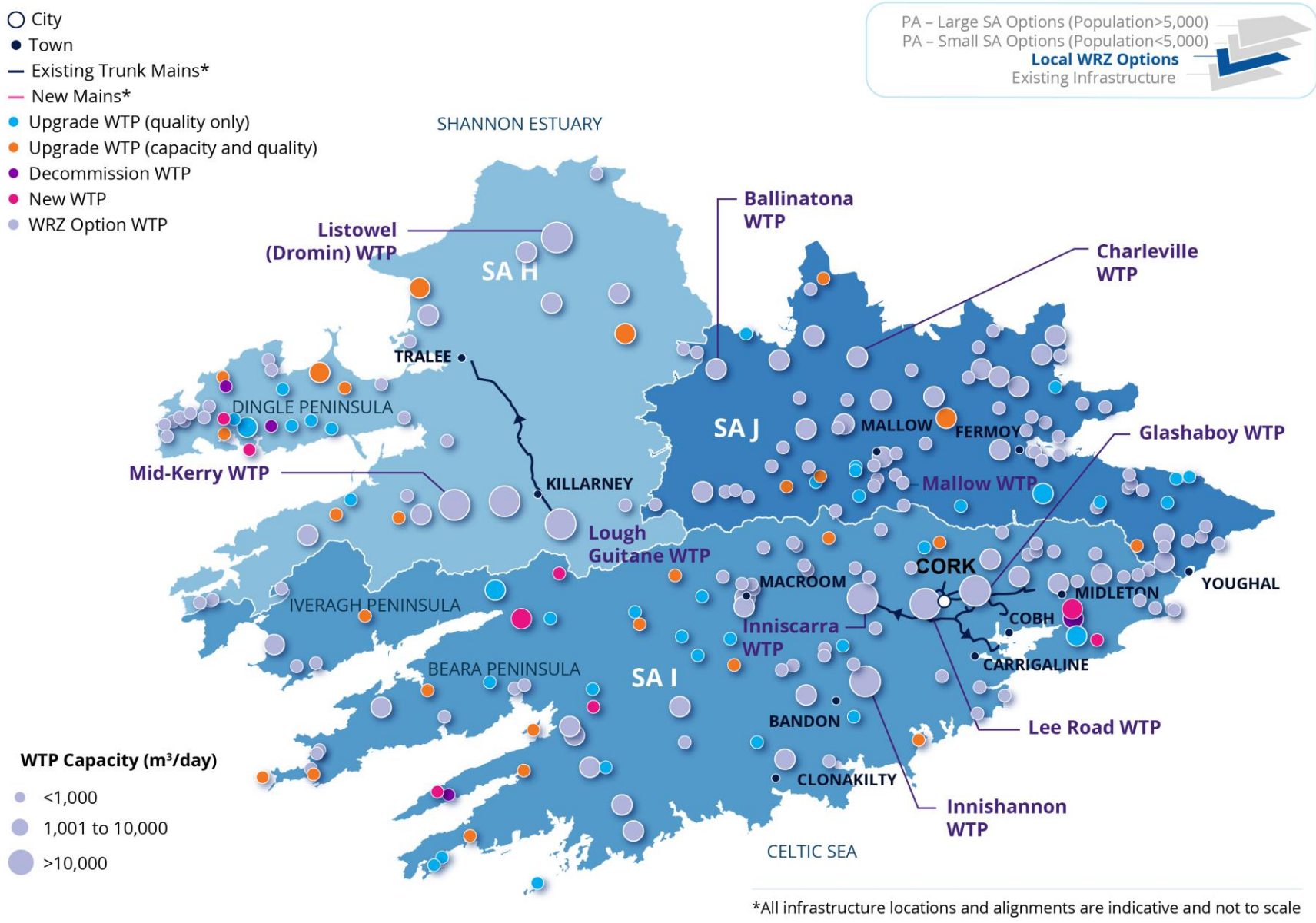


Figure 7.3 Preferred Approach – Local WRZ Sources

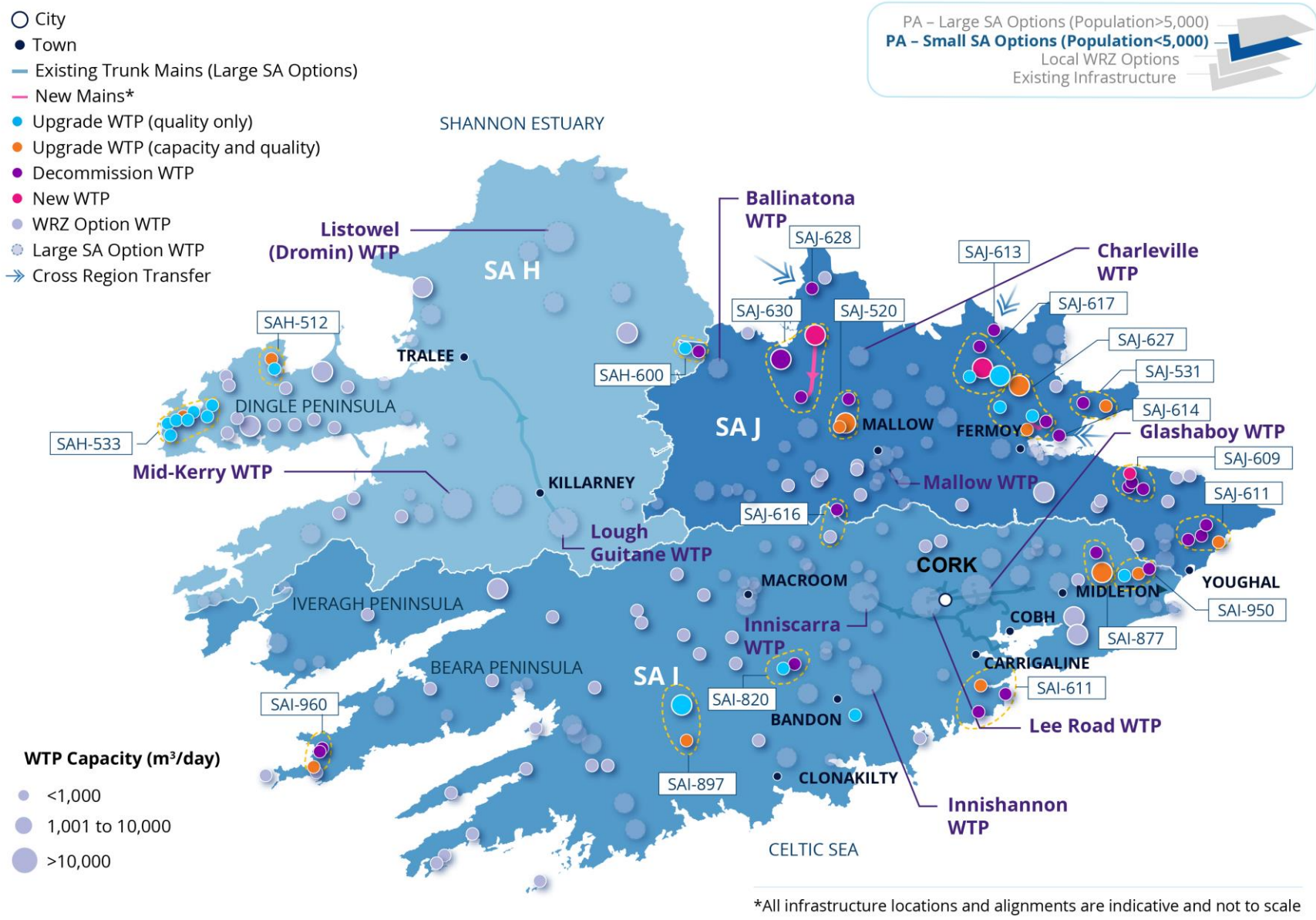


Figure 7.4 Preferred Approach – Small Study Area (SA) Options (Population < 5,000)

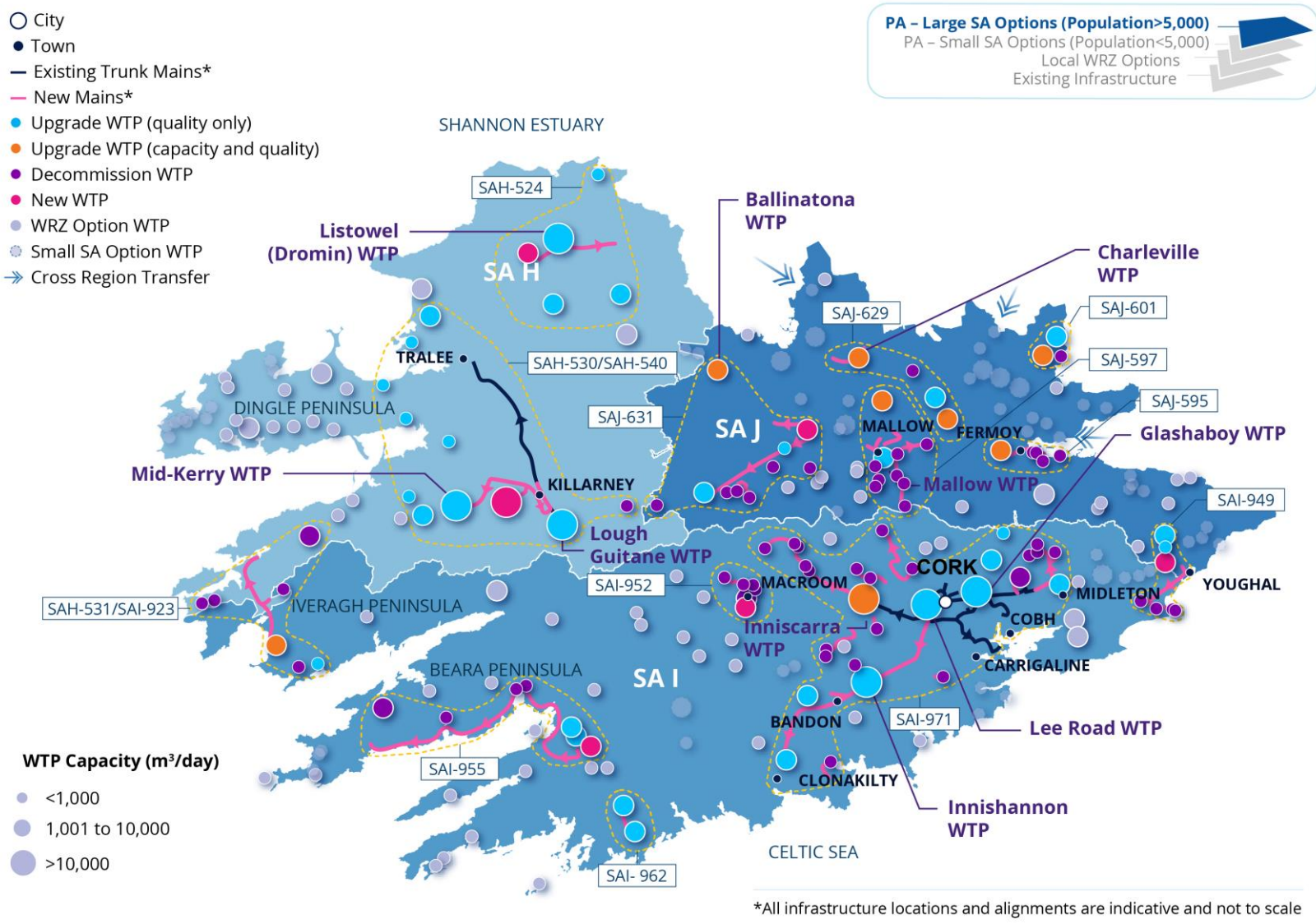


Figure 7.5 Preferred Approach – Large Study Area (SA) Grouped Options (Population > 5,000)

7.4 Interim Solutions

As it will take a number of investment cycles to deliver the Preferred Approach across all WRZs, Irish Water must continue to deliver safe, secure, and reliable water supplies to meet customers' needs and enable growth across the South West Region.

Therefore, within our RWRP SW we have identified 227 interim short term capital maintenance solutions for all WTPs. These solutions will be utilised when needed and will allow Irish Water time to deliver the Preferred Approach, while at the same time, maintaining a sustainable water supply. The interim solutions are generally smaller in scale and rely on existing infrastructure.

The interim solutions we have identified to address the short-terms needs within the South West Region are detailed in Section 7.6 of the RWRP-SW and in each of the Study Area Technical Reports (Appendices 1-3).

Section 4 and 7 of the RWRP-SW and the Study Area Technical Reports (Appendices 1-3), set out solutions we can undertake to address some of these needs in the interim, while we develop the Preferred Approaches.

7.5 Sensitivity Analysis

Within Section 7 of the RWRP-SW, we test the Sensitivity of the Preferred Approach to changes in the Supply Demand Balance (SDB) to ensure that the Preferred Approach is robust and that our Plan is adaptable. We consider how the Preferred Approaches would perform across a range of future events, such as climate change and new abstraction legislation, which could alter the SDB and introduce uncertainty to our long-term forecasts.

The Sensitivity Assessment is based on the following questions:

- What if the deployable output from existing supplies is reduced based on sustainability limits required by new water regulation and abstraction legislation resulting in a larger SDB Deficit?
- What if climate change impacts on our existing supplies are greater than anticipated?
- What if our forecasts overestimate projected Demand and expected demand growth does not materialise resulting in a smaller SDB Deficit?
- What if we are able to reduce leakage below SELL within the timeframe of the Plan resulting in lower Needs?
- What if leakage targets are not met?

Overall, the Sensitivity Assessment of the Interim and Preferred Approaches for the South West Region indicates the Options are highly adaptable to a broad range of future scenarios.

The outcomes of the Sensitivity Assessment are discussed in more detail in the Study Area Technical Reports included as Appendices 1 – 3 of the RWRP-SW.

8. Preferred Approach – Regional Level

Unlike the Eastern and Midlands Regional Water Resources Plan (RWRP-EM), our Option Development Process for the South West Region did not identify any Feasible Options with the potential, in terms of quantity and distribution of supply, for a large-scale interconnection of multiple Water Resource Zones (WRZs) across Study Area boundaries. Regional interconnectivity is limited by the terrain of the South West Region and the volume of water we can sustainably abstract from water sources. For this reason, the Study Area Preferred Approach that is presented in Section 7 is identified as the 'Best Value' solution to address the regional water supply Need, and as such represents the Regional Preferred Approach.

The Regional Preferred Approach provides a solution that will address the Needs (both Quality and Quantity) across all existing WRZs by:

- Merging supply systems within the region to form 30 new interconnected WRZs via 644 kilometres of trunk mains; reducing the number of WRZs from 174 to 92. The interconnected systems will be supplied from new and increased groundwater and surface water sources within the South West Region.
- For the remaining WRZs
    - Developing local new and increased groundwater sources to supply 26 existing WRZs.
    - Developing local new and increased surface water sources to supply 10 existing WRZs.
    - Connecting three small, rural WRZs to water supply systems in adjacent regions.
- Improving the barrier performance at 137 existing WTPs to reduce Water Quality risk across all WRZs.
- Upgrading the capacity of 47 WTPs and constructing 17 new WTPs.

Each of the projects and Options identified in the Regional Preferred Approach for the four RWRPs that make up the NWRP will be subject to their own planning and regulatory processes and will be delivered on a phased basis. This will allow for progress on a risk-based prioritisation of capital investment across the country enabling Irish Water to address Need across the entire water supply and asset base. It will take a number of investment cycles to progress these projects and they may evolve in later iterations of the NWRP.

The RWRP-SW looks at a range of solutions to meet the need in a WRZ or Study Area. These solutions are not limited by distance, therefore, some solutions for the WRZ or Study Area will include interconnections between several WRZs and across Study Area boundaries.

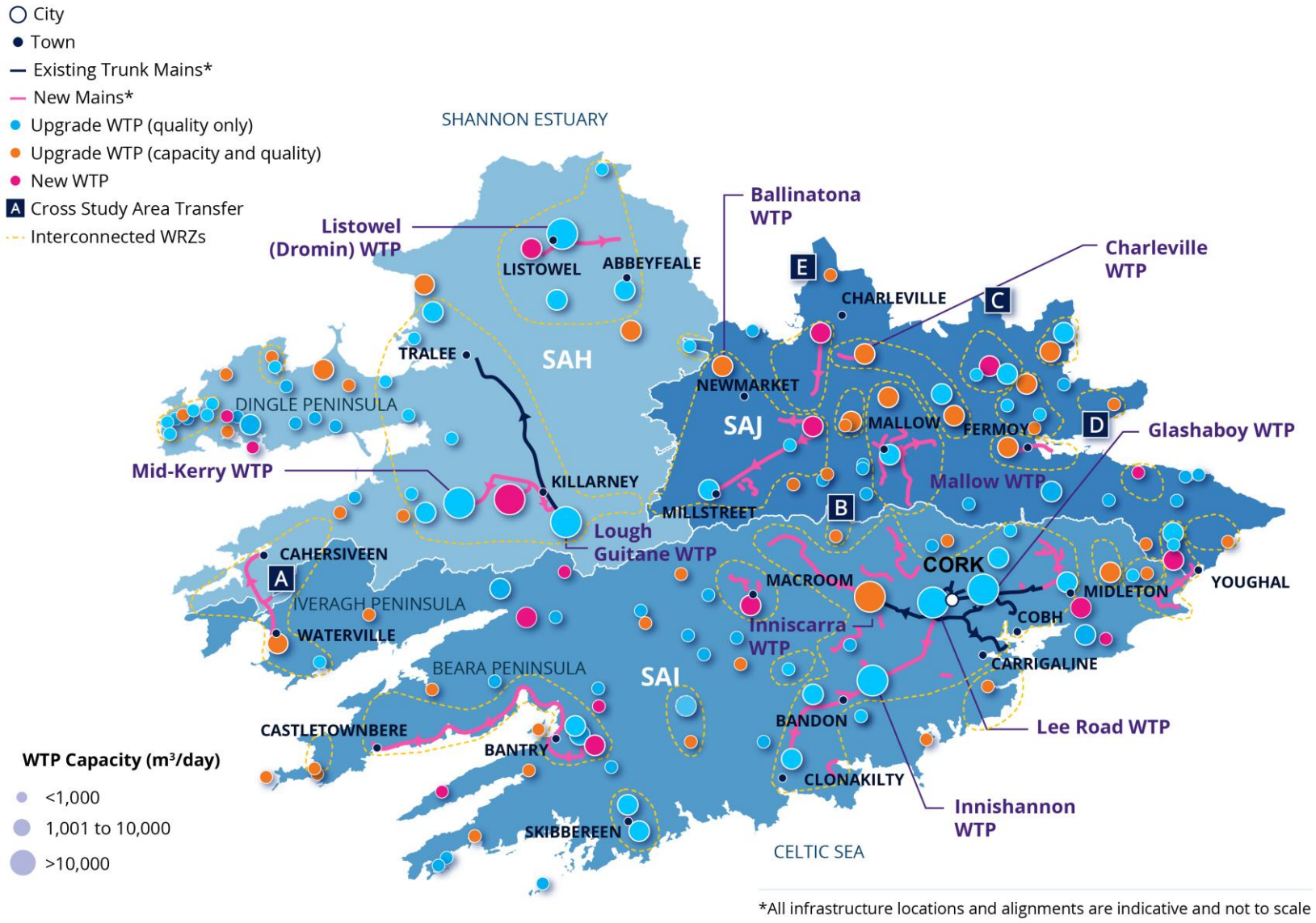


Figure 8.1 Preferred Approach - South West Region

It should be noted that all Options to resolve Need are at a plan level. Environmental impacts and costing of projects are further reviewed at project level and where alternatives will need to be considered as part of the Environmental Impact Assessment process in the usual way. No statutory consent or funding consent is conferred by inclusion in the NWRP. Any projects that are progressed following this plan will require individual environmental assessments, including, where appropriate, Environmental Impact Assessment and Appropriate Assessment (as required), in support of planning applications (where a project requires planning permission) or in support of licencing applications (for example, for new abstractions). These applications will also be subject to further rounds of public consultation. The future investment needed to deliver these projects must also be identified and quantified through Irish Waters economic regulatory process in line with government policy.

9. South West Region – Monitoring and Feedback

Section 9 of the RWRP-SW details Stage 2 of the Options Assessment Methodology (see Figure 1.5). The NWRP will be formally updated every five years. Baseline forecasts and data feeding into the NWRP will be reviewed annually. Irish Water has prepared a regionally specific:

- Monitoring and Mitigation Plan for the RWRP South West which is based on Section 4 of the Strategic Environmental Assessment (SEA) Statement prepared in relation to the NWRP Framework Plan. The Monitoring Plan has been designed to provide a basis for the identification and continuous review of the positive, negative and cumulative impacts of the RWMP-SW, and it will form part of the SEA statement to be published with the final Regional Water Resources Plan for the South West. The Monitoring Plan is provided in two parts to cover both plan level monitoring and project level monitoring. Indicators and targets to measure performance are set out in Section 4 of the Framework Plan SEA Statement.
- The Environmental Action Plan (EAP) set out in Section 10 of the SEA Environmental Report for the RWRP-SW which will set out the recommendations of the SEA in relation to the RWPR-SW and mitigation measures to take forward. Irish Water's commitment to implement this monitoring and mitigation is set out in Chapter 8.3.8 of the NWRP Framework Plan.

The approach to monitoring takes account of the EPA guidance document 'The Tiering of Environmental Assessment – The influence of Strategic Environmental Assessment on Project-level Environmental Impact Assessment'.

Irish Water's commitment to implement this monitoring is set out in Chapter 8.3.8 of the NWRP Framework Plan

9.1 Monitoring and Mitigation

The monitoring and mitigation process involves:

- Identifying the internal and external factors that may impact the NWRP and mapping the areas of the NWRP that they will influence.
- Updating Needs identification by updating the Supply Demand Balance (SDB), Drinking Water Safety Plans (DWSP) and Barrier Scores to reflect these changes; and
- Incorporating feedback from SEA mitigation actions and Monitoring Plan set out in the SEA Statement prepared in relation to the NWRP Framework Plan.

The SEA and Natura Impact Statement (NIS) options assessment account for the implementation of mainly standard mitigation measures, such as the use of good construction practice with specific mitigation measures also presented in the NIS. Examples of standard measures expected to be embedded in the design and development of infrastructure options are listed in Appendix D of the SEA Environmental Report for the RWRP-SW. Standard and specific mitigation measures identified include recommendations for further environmental assessment work to be undertaken at project stage (to further inform the development of suitable project specific mitigation measures), as well as mitigation to be implemented directly at project stage.

An Environmental Action Plan (EAP) is provided in Section 10 of the SEA Environmental Report for the RWRP-SW and this summarises the actions and areas of further study identified in the SEA. The SEA Environmental Report in Section 10 also includes a Monitoring Plan that identifies the targets and indicators to be measured or recorded to determine progress towards meeting SEA objectives. The EAP considers the Options and Approach appraisal process as well as the integration of environmental considerations.

With respect to the NIS assessment, standard and option specific mitigation measures (see Sections 6.3.1 – 6.3.5 of the NIS) will be applied, unless project-level Appropriate Assessments (AAs) or project-specific environmental assessments demonstrate that they are: not required (i.e., the predicted effect will not occur), are not appropriate, or that alternative or additional measures are necessary or are more appropriate.

The proposed Monitoring Plan indicates a range of recommendations for the RWRP-SW including (but not limited to) issues relating to:

- Climate change such as decarbonisation, increased contribution of renewable/low carbon energy and improved energy efficiency.
- Catchment Management including carbon offsetting, supporting biodiversity, and recreational objectives for population wellbeing.
- Biodiversity, flora and fauna for example ensuring no adverse effects on the integrity of any European site and, where feasible, to seek to maintain and/or contribute to the site achieving Favourable Conservation Status and ensuring the protection of nationally designated sites and wider biodiversity.

In certain circumstances, monitoring and feedback will identify the need for a variation of the NWRP - Framework Plan or a Regional Water Resources Plan. Where a variation is required, as noted above, Irish Water will screen the change for SEA and AA in accordance with its legal obligations.

9.2 Internal and External Factors

Irish Water is committed to a programme of continuous monitoring to ensure both internal and external factors which may influence the NWRP are identified.

External factors which can influence the performance of our water supplies include:

- Changes in legislation and policy that impact the way we operate our asset base or the impact of this on the environment.
- Reductions in water supply availability due to climate disruption and environmental impacts.
- Growth in demand for water for domestic and non-domestic use.
- Funding availability and requirements to improve Levels of Service to water users.

Irish Water is committed to reviewing the RWRP-SW following the publication of any relevant new legislation, regulations, and policies. Irish Water will review policies routinely and update the Framework Plan as necessary.

In order to address reductions in water supply availability due to climate disruption and environmental impacts, Irish Water has ensured that conservative estimates have been used within our Supply Demand Balance (SDB) but will continue to assess supply availability and modify the SDB appropriately.

In order to address domestic demand growth, the Irish Water Spatial Planning team continues to interface directly with the Regional Assemblies and the Local Authority Planning departments, through a ten-year capacity register, during preparation of the regional growth strategies and the County Development Plans.

Internal factors which can influence the performance of our water supplies include:

- Leakage and network performance
- Data quality, quantity and availability

Irish Water is committed to the development and delivery of a long term and intelligence improvement strategy, on data related to supply demand balance, water quality, asset register, outage allowances, headroom, and performance of asset base (including network models). As actual data becomes available, this data will be updated in accordance with the feedback and monitoring process.

Upon identification of a change through the monitoring process Irish Water will assess the impact of these changes on the Framework Plan and the Regional Water Resources Plans

9.3 Future Actions

Additional opportunities were identified following consideration of stakeholder feedback from the Framework Plan, public consultations. A list of commitments which are subject to funding were identified by Irish Water to further support the implementation of the NWRP and are listed in Section 9.3 of the RWRP-SW.

10. Conclusion

Section 10 of the RWRP-SW details the key outcomes of the RWRP-SW.

10.1 Plan Outcome

As described in Section 8, when we apply our water resources planning methodology to the 174 WRZs in the South West Region, the Regional Preferred Approach consists of a combination of local water supply sources and regional solutions. This involves:

- Reducing the number of WRZs in the South West Region from 174 to 92.
- Constructing 644 kilometres of trunk mains (diameter > 300mm) to develop larger interconnected WRZs for the urban areas in the region.
- Development of 17 new water treatment plants (WTPs).
- Decommissioning 90 WTPs and discontinuing 91 abstractions.
- Improving the barrier performance of the 137 remaining WTPs to reduce water quality risk across all our WRZs and upgrading the capacity of 47 of these WTPs to address the current supply Deficit and to meet forecast growth.
- Reducing leakage to 23% of regional demand through pressure management, active leakage control, and targeted asset replacement.

10.2 Benefits of the Preferred Approach for the South West Region - Transformation

The development of the RWRP-SW allows Irish Water for the first time to review water supply Needs collectively across the South West Region and across the entire spectrum of risk including Quality, Quantity, Reliability and Sustainability. It allows us to consider Local Options to resolve these Needs and larger Options that can address multiple supplies.

The Plan allows us to move away from reactive management of risk at a single source or for a single Need (e.g., Quality risk alone), to a more holistic view of the transformation required across all of our supplies to meet the objectives set out in the Water Services Strategic Plan (WSSP)[1] and the Water Services Policy Statement (WSPS)[2].

The interconnected supplies of the Preferred Approach will benefit an estimated 93% of the projected 2044 population. Figure 10.1 shows the largest proposed interconnected supply system in each Study Area in the South West Region.

[1] The Water Services Strategic Plan is Irish Waters Strategic Plan. It is a plan required under statute and sets out Irish Waters business objectives in terms of water and wastewater services

[2] The Water Services Policy Statement 2018-2025, is the Government's policy document on water services.

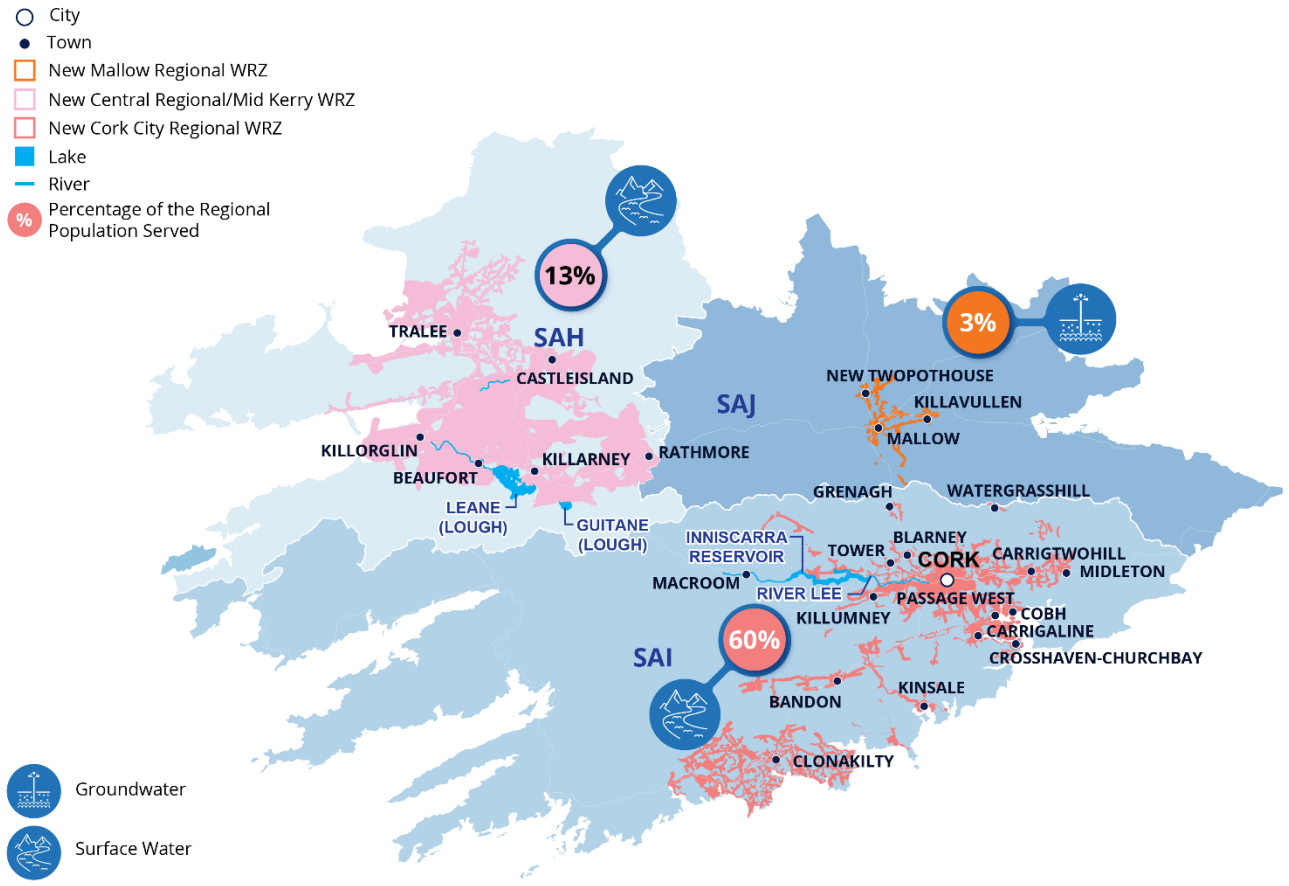


Figure 10.1 Preferred Approach - Large Interconnected Supplies in the South West Region

The RWRP-SW provides the following in terms of strategic transformation of our water supplies:

- A high degree of flexibility in our plans, particularly in terms of domestic and non-domestic growth. Having an interconnected network allows us to facilitate and support higher growth in the smaller connected settlements within the South West Region, if Needs manifests itself in that way over time.
- More balance across the South West Region, with the abstractions for supplies balanced across all of the major catchments within the region. Therefore, water abstraction to support public water supply will become more sustainable and resilient to future shocks such as drought and climate change.
- Improved risk management and operational control across a smaller number of interconnected WRZ, where possible. Where this is not possible, we will manage risk by selecting secure protected water sources and appropriate treatment barriers.
- An understanding of the transformation required across our water supplies, to ensure that we can have reliable and sustainable supplies into the future.
- An understanding of the scale and asset type we require to ensure that our customers receive the required Quality and Quantity in their water supplies.
- The combination of solutions - Use Less, Use Less and Supply Smarter.
- The investment required over the short, medium and long term to transform our supplies.
- A Sensitivity Assessment that allows us to test the Preferred Approach against a range of future scenarios to ensure the Preferred Approach is robust and adaptable.

10.3 Benefits of the Preferred Approach – Quality, Quantity, Reliability and Sustainability

Delivery of the Preferred Approach will provide the best overall outcome for the South West Region, particularly in relation to environmental, ecology and resilience outcomes, and will result in:

- All WRZs in the South West Region meeting the minimum 1 in 50 LoS during normal, dry, drought and winter conditions.
- All WRZs will include appropriate barriers to mitigate against Water Quality risk.
- All WRZ's will be resilient with improved environmental Sustainability.
- Transformation of water services in the region, from a fragmented supply system with large variation in Levels of Service, to an interconnected supply with uniform and improved Levels of Service.
- Customer benefits in terms of increased Reliability and reduced occurrence of outages across our supplies.
- Customer benefits in terms reduced Water Quality risk and the instances of boil water notices
- Improved Resilience, with 93% of the projected 2044 population supplied through interconnected sources that will provide operational flexibility, allowing us to manage seasonal variation in water availability and drought events. The remaining populations will be served by sustainable local groundwater and surface water sources.
- Sources that are more environmentally sustainable and allow us to adapt to climate change and align with the requirements of the Water Framework Directive and Habitats Directive.
- Improved operational control across our water supplies, and ability to react to adverse events.
- Improved efficiency of our distribution networks in terms of leakage, pressure and strategic storage.
- Ability to facilitate growth and economic development.

11. Public Consultation and Implementation of the South West Plan

11.1 Consultation on the RWRP South West

Irish Water consulted on the draft Regional Water Resources Plan for the South West Region during the period June 2022 to August 2022. Public consultation is a key element in ensuring stakeholders and members of the public have an opportunity to contribute to the development of the RWRP. This consultation was an opportunity to consider the process of how we identify the issues in, and determine what opportunities are feasible, for the water supply in the South West Region and how we develop solutions to these issues.

Stakeholders were invited to make submissions or observations on the Options outlined in the draft RWRP-SW. Irish Water considered those submissions and observations and, where appropriate, revised the draft South West Regional Water Resources Plan to take account of them. All feedback received was reviewed and categorised under key themes. The feedback relevant to the South West Region is summarised and responded to in a consultation report.

Relevant feedback was incorporated into the final RWRP-SW and associated SEA Statement and Appropriate Assessment Determination. How feedback from the consultation has influenced the final RWRP- SW is detailed in the consultation report and SEA Statement.

Consultation submissions from individuals were reported anonymously and feedback from organisations were attributed to them. Individual submissions were not individually responded to but were responded to in the consultation report which is published on www.water.ie/nwrp.

Feedback received outside the scope of the draft RWRP- SW and the associated environmental reports was not considered as part of this public consultation process and was not reported on. Any feedback in relation to in-flight Irish Water projects, or in reference to any other area of the Irish Water business was sent directly to those project teams', unless applicable to how they are included in the RWRP-SW. The project team details can be found on www.water.ie

View our privacy notice at www.water.ie/privacy-notice.

In order to help members of the public or organisations in making a submission, and to ensure clarity on the scope of what we would like consultees to consider in their feedback, Irish Water invited submissions on the following questions. However, this was just an aide and all submissions received in response to the consultation were considered.

1. Within the South West Region we consider 174 water supplies (Water Resource Zones) represented across 3 Study Areas. Do you have any comments on the Study Areas?
2. In Section 2 of the draft RWRP-SW we set out information on the current situation in the Region in respect of the population growth and economic development and how we considered this in our water resource planning approach. Do you have any comments on this?
3. Section 3 of the draft RWRP-SW and each of the Study Area Technical Reports (Appendices 1-3) outline the Need in terms of water quality, quantity, sustainability and resilience across the region and in each of the Study Areas. Do you have any comment on the Need (Deficit)?
4. Section 4 and Section 7 of the draft RWRP-SW, and the Study Area Technical Reports (Appendices 1-3), set out solutions we can undertake to address some of these Needs in the interim, while we develop the Preferred Approaches. Do you have you any comments on this?

5. Section 6 and the Study Area Technical Reports (Appendices 1-3) of the draft RWRP-SW summarises our process for developing options to address the Needs in the SW Region. Do you have any comments on this process?
6. Section 7 sets out how we identify our Preferred Approach to addressing the Need at WRZ and Study Area level. The Study Area Technical Reports (Appendices 1-3) and the Study Area Environmental Reviews will set out how the Preferred Approach has been identified in more detail. Have you any feedback on this?
7. The draft RWRP-SW looks at a range of solutions to meet the need in a WRZ or Study Area. These solutions are not limited by distance, therefore some solutions for the WRZ or Study Area will involve interconnections across multiple supply systems. Have you any comments on the Regional Preferred Approach?
8. Do you have any comments on the Strategic Environmental Assessment (SEA) Environmental Report and Natura Impact Statement (NIS) which accompany the draft RWRP-SW?
9. We have produced a RWRP Consultation Roadmap. Do you have any comments on this?
10. How would you like Irish Water to communicate with you as the RWRPs progress?

11.2 Next Steps

SEA requirements and consultation comments have been taken into account in finalising the Regional Plan. Responses to the consultation are reported in the Post Consultation Report[4]. In addition, the SEA Environmental Report has been updated to take account of amendments to the RWRP-SW and comments received through the consultation process

Further consultation on the remaining two (2) Regional Water Resources Plans including corresponding SEA Environmental Reports and Natura Impact Statements will be undertaken over the next 12 months.

Following on from the public consultation, submissions and observations received will be taken into consideration before adopting all four (4) RWRPs. Once the first NWRP has been finalised, it will be comprised of the Framework Plan and the four (4) Regional Water Resources Plans and together they will be treated as a unified Plan.

The NWRP will ensure that there is a transparent Framework Plan and Regional Water Resources Plans to allow Irish Water to provide a safe, secure, reliable, and sustainable water supply now and into the future. This will be used to inform future regulated capital investment plans and operational plans.

12. References

1. European Union (Drinking Water) Regulations. 2014. (S.I. No. 122/2014).
2. Government of Ireland. 2018. *Ireland 2040 Our Plan – National Planning Framework.*
3. UK Technical Advisory Group (UKTAG). 2008.*UK Environmental Standards and Condition (PHASE 1)*. Water Framework Directive.
4. Uisce Éireann. 2022. *RWRP-SW Post Consultation Report*. [Online]. Available from: https://www.water.ie/projects/strategic-plans/national-water-resources/rwrp/south-west/