



8

**Preferred
Approach -
Regional**



8.1 Introduction

As outlined in Section 1.9.4 of the Framework Plan and Section 1.4 of this document, given the large number of WRZs per capita of population, the National Water Resources Plan (NWRP) has been subdivided into 22 Study Areas (SAs) across four Regions.

These subdivisions are necessary and appropriate to make the Option development and assessment tasks manageable for both Uisce Éireann and the public/stakeholders during the consultation phase. Notwithstanding the sub-division, solutions are not constrained by distance i.e., WRZ, Study Area or Regional boundaries, but instead by the criteria of Resilience, Sustainability, Flexibility and Deliverability.

One of the key benefits of having a Regional Plan is that it allows us to consider options to address Need for each individual supply, and then to further assess whether the outcomes of the Plan can be improved by reviewing larger Study Area (SA) Options which serve multiple WRZs at Study Area Level; or even larger Regional Options that can be applied across the region.

Study Area and Regional Options in some cases perform better than local solutions, as they:

- Allow us to look at the resilient supplies across a wider area
- Provide opportunities to decommission problematic, unsustainable local sources
- Allow us to balance our overall regional abstraction in an improved way across multiple catchments, with improvements in sustainability
- Improve operational control by having fewer Water Treatment Plants (WTPs) to manage
- Provide more resilient WRZs that are less sensitive to peaks in demand during critical events.

In Section 7, we described the process applied to select the Study Area Level Preferred Approach. As part of this process, we assessed the Feasible Options to determine if any Study Area or Regional Options were available to meet the Need across multiple WRZs. While there were no regional options connecting WRZs across Study Area boundaries; inter-regional options were identified that connect WRZs to supply systems in adjacent regions.

As explained in Section 6, the Feasible Options are considered at Plan Level and are desk-based. The progression of the Preferred Approach is subject to project level assessments to confirm aspects such as the available source yield and environmental impacts. Where project level assessments identify challenges to the delivery of the Preferred Approach, alternative feasible options will be reassessed.

The Preferred Approach for Study Area M relies on the new and increased groundwater abstractions. The limited availability of data to support Plan Level yield assessments means the successful delivery of this Preferred Approach is less certain and an alternative option may be required.

In this section, we will:

- Explain the challenges to interconnecting supplies across the study areas of the South East Region;
- Provide an overview of the Regional Preferred Approach, outlining the benefits of supply rationalisation and interconnectivity achieved through our proposed SA Options;
- Present an alternative regional approach that involves an inter-regional transfer to meet the deficit in SAM.

8.2 Challenges to interconnecting supplies across the South East Region

Unlike the Eastern and Midlands Regional Water Resources Plan (RWRP-EM), our Option Development Process for the South East 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 WRZs across Study Area boundaries. The Study Area Preferred Approach does comprise interconnected supplies within the Study Area boundaries and in this way provides the benefit of resilience and improved environmental outcomes through the decommissioning of unsustainable sources and ageing infrastructure.

The South East Region has limited potential for regional interconnectivity due to the cost and challenge associated with transporting small volumes of water over long distances. Minimum main size requirements mean that treated water may be stored in the network for extended periods of time and hence there can be a significant time lag between when the water was treated and when the customer receives the water. Additional chlorine dosing may be required along the network to ensure water received by our customers meets the required water standards. Such arrangements can be complicated and costly for small supplies.

Additionally, almost two-thirds of the WRZs in the South East Region currently have a greater than two percent risk of experiencing a supply shortfall in a dry year, falling short of our target Level of Service. Options that require long lead times, like implementing large-scale interconnections, may not be the most effective solutions to address the pressing water shortages of these WRZs. Furthermore, there are limited surface water catchments within the region that can support large sustainable abstractions to supply multiple interconnected WRZs.

Across the South East Region, topography and the presence of environmentally sensitive sites, such as Special Protection Areas (SPAs) and Special Areas of Conservation (SAC), are not significant barriers to development across the study areas. Figure 8.1 shows there are very few SACs or SPAs that could potentially limit pipeline construction across the region. Although the Blackstairs SAC forms part of the boundary between SAL and SAM, there are no significant settlements nearby that would benefit from a connection across this route.

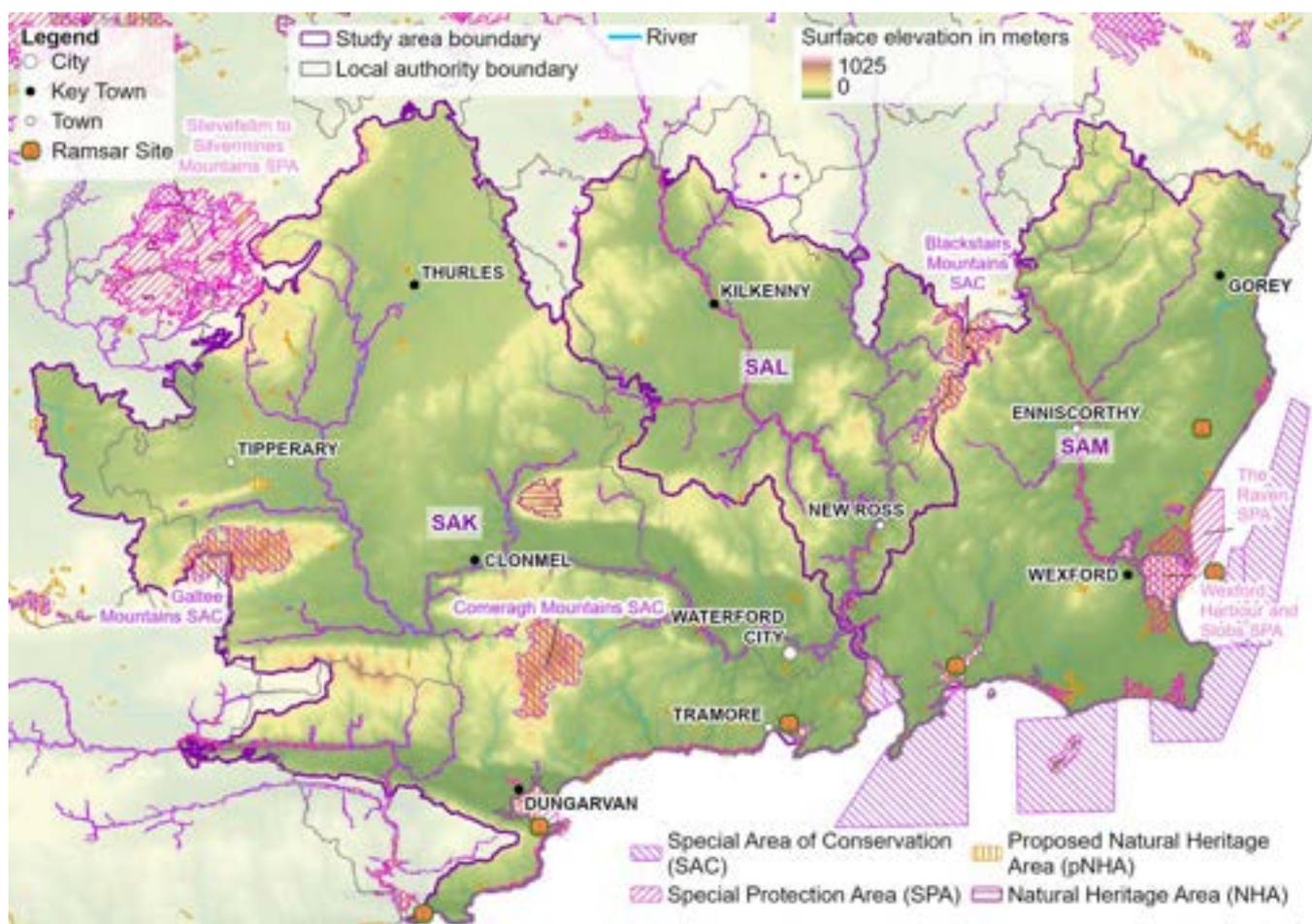


Figure 8.1 Designated sites in the South East Region

8.3 The Regional Preferred Approach

Due to the limitations described in Section 8.2, our Option Development Process for the South East 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 WRZs across the Study Area boundaries. For this reason, the SA Preferred Approach that is presented in Section 7 is assessed as the 'Best Value' solution to address the regional water supply Need. The Regional Preferred Approach is therefore the combination of the three Study Area Preferred Approaches for the South East Region.

8.3.1 Interconnected WRZs

Although the Preferred Approach for the South East Region does not involve a large-scale regional interconnected supply, the Preferred Approach does interconnect supplies within the Study Area boundaries. It therefore still provides the benefit of resilience and improved environmental outcomes, achieved through the decommissioning of unsustainable sources.

The interconnection of current supply systems within the region creates 12 new WRZs that incorporate 57 pre-existing WRZs. A further eight (8) WRZs will be connected to supply systems in the Eastern and Midlands Region.

The merging of WRZs reduce the total number of discrete water supply systems that Uisce Éireann will operate and maintain across the South East Region from 111 to 58.

Table 8.1 shows the number of new WRZs formed in the South East Region by merging a specific number of existing WRZs. For example, it shows that four (4) new WRZs are formed by merging two (2) WRZs each, hence replacing eight (8) existing WRZs. The table only refers to the new WRZs formed within the South East Region. It does not include the merged systems formed by interconnecting to water supply systems in the Eastern and Midlands Region, as the source supply is located outside of the South East Region.

Two (2) merged systems will interconnect ten or more WRZs. These are in Study Area K (Waterford and South Tipperary):

- **Clonmel WRZ** – Develops a new surface water abstraction from the River Suir that will supply 10 merged WRZs either through a direct connection to the Clonmel WRZ, or via connection to Templetny/Brackford Bridge WRZ. WTPs and associated abstractions will be decommissioned for eight connecting WRZs.
- **East Waterford Water Supply Scheme (WSS)** – Develops a new surface water abstraction from the River Suir, upstream of Carrick-on-Suir. The new abstraction will supply the forecast deficit in the East Waterford WSS, and an additional nine (9) WRZs that will be connected to the scheme. WTPs and associated abstractions will be decommissioned for nine connecting WRZs.

A further four (4) new WRZs are formed by merging five or six existing WRZs. Three (3) of these are also in SAK:

- **Lismore/Cappoquin/Ballyduff WRZ** - Increases groundwater abstraction from an existing borehole and commissions a new trial well. A New groundwater abstraction and upgrade in treatment capacity at LCM Cappoquin WTP is also proposed. WTPs and associated abstractions will be decommissioned for five connecting WRZs.
- **Thurles/Borrisoleigh:** Spare capacity from Thurles is supplied to five interconnecting WRZs. WTPs and associated abstractions will be decommissioned for four connecting WRZs.
- **Carrick-on-Suir:** Develops a new groundwater abstraction and new Lungan WTP. The new supply will address the deficit at four WRZs connecting to Carrick-on-Suir. The WTPs and associated abstractions will be decommissioned for all four connecting WRZs.

The fourth new WRZ is formed by merging five (5) WRZs with **Enniscorthy Town in Study Area M** (SAM). This involves an increased surface water abstraction from the River Slaney and upgraded WTP capacity. WTPs and associated abstractions of the four (4) WRZs connecting to Enniscorthy Town will be decommissioned.

The Preferred Approach also comprises 46 local, independent solutions to address the water quality and water supply needs of single WRZs. These are generally isolated rural settlements that are challenging to connect to adjacent supply systems due to the difficulties in transporting small volumes of water over long distances.

Table 8.1 Number of new WRZs formed (by Group Size)

Merged group size (Number of WRZs merged)	Number of New WRZs formed	Number of Existing WRZs replaced
Two	4	8
Three	2	6
Five	2	10
Six	2	12
Ten	1	10
Eleven	1	11
Total	12	57

Note: The table does not include the 8 WRZs that connect to the Eastern and Midlands region as the source supply systems are not located within the South East Region

8.3.2 Benefits of Interconnecting Supplies

In most cases, where WRZs are interconnected, one or more existing water supply systems are rationalised. The rationalisation of supply systems enables smaller and/or unsustainable sources to be decommissioned, delivering improved environmental outcomes and wider associated community benefits. The decommissioning of WTPs through rationalisation also delivers efficiencies through the reduced number of assets to operate and maintain. The Regional Preferred Approach proposes to decommission 66 sources and 63 WTPs. Supplies will only be decommissioned once a new source is connected and operational and abstraction licenses for the new or alternative supply have been obtained.

Larger interconnected water supply systems usually comprise multiple raw and/or treated water storages and WTPs. This provides operational flexibility and increased resilience by enabling supply to be delivered from other connected WTPs or storages during drought periods and at times of supply outage. Larger supply systems are therefore less sensitive to peaks in demand during critical events. For this reason, peaking factors (used to estimate design capacity) are lower for larger WRZs. Similarly, for larger WRZs, the uncertainty in the supply demand calculation reduces, as any potential changes in demand forecasts will have a relatively lower impact for a large WRZ compared with smaller WRZs. As a result, the headroom allowance we need to plan for is lower. The combination of reduced peaking effects and reduced headroom allowance means that the estimated supply volume that we need to provide a 1 in 50 Level of Service (LoS) to customers is lower. One of the key benefits of merging WRZs is this reduction in the design capacity resulting from the increased resilience of larger water supply systems.

Headroom is the term given to a buffer in the Supply Demand Balance (SDB). It accounts for the uncertainty with data and the assumptions used in the supply and demand estimates and forecasts.

The **Level of Service (LoS)** refers to the Reliability of the supply that our customers can expect to receive and is expressed as a frequency or return period of supply failure. A 1 in 50 LoS means that customers would only expect to experience a supply failure, on average, once every 50 years; or there would be a 2% chance of experiencing a supply failure in any given year.

Another benefit of larger interconnected systems is the increased efficiency and economies of scale in delivering leakage reduction measures compared with fragmented systems. As explained in Section 5 of this Plan, we have committed to leakage targets that reduce leakage levels to 21% of average demand for large WRZs where the demand is greater than 1,500 cubic metres per day (m³/day).

Prior to the development of solutions at project level, the SDB will be updated to account for the changes in both the water available for use (resulting from the decommissioned sources), and the changes in demand (resulting from increased leakage targets and reduced headroom and peaking factors). The following section describes the approach that will be applied to re-calculate the SDB.

8.3.1.1 Re-calculation of the Supply Demand Balance (SDB) for Large Interconnected Supplies

As mentioned above, the Preferred Approach for SAK includes two large interconnected systems, each merging at least ten WRZs to form two (2) new WRZs: Clonmel WRZ and East Waterford WSS WRZ.

The formation of the proposed new Clonmel WRZ will involve merging 11 WRZs. Ardfinnan Regional and Templetney/Brackford Bridge WRZs will be interconnected with Clonmel WRZ. Four (4) adjacent WRZs will be rationalised to Templetney/Brackford Bridge WRZ and a further four (4) WRZs will be rationalised to Clonmel. The water available for use (WAFU) for these WRZs will therefore reduce to zero when the Preferred Approach is in place as the sources will be abandoned. The full demand for each WRZ will be supplied from the proposed new surface water abstraction from the River Suir. The sources and WTPs for Ardfinnan Regional and Templetney/Brackford Bridge WRZs will be maintained. Therefore, it is only the Deficit in these WRZs (rather than the full Demand) that will be met from the new and/or upgraded sources. Two of the three WTPs that currently serve the Clonmel WRZ will also be decommissioned. Only the WAFU from the Monroe WTP source will be maintained. Table 8.2 lists the additional supply that would be required from the new River Suir abstraction for each WRZ. The table shows the WAFU from the maintained WTPs will be 7.6 MI/d; and the estimated WRZ 2044 DYCP demand will be 24.2 MI/d. Therefore, the additional supply required from the new abstraction is estimated to be approximately 15.3 MI/d, without considering the lower headroom allowance and higher leakage targets for larger interconnected systems.

Table 8.2 also lists the peaking and headroom factors that are applied in the SDB to calculate the demand for the existing discrete water supply systems. For the proposed integrated multi-source systems, the headroom factor will reduce to 10% across all WRZs and the peaking factor will remain at 20%. When leakage targets and the smaller headroom allowance is considered, the 2044 DYCP demand reduces from 24.2 ML/d to 8.9 MI/d.

Similarly, the expansion of the East Waterford supply scheme to include a further nine (9) WRZs will decommission 10 WTPs and their associated abstractions. This will result in a Deficit of approximately 20.8 MI/d that would need to be met from the new River Suir abstraction. Table 8.3 shows the WAFU from the maintained WTP will be 23.1 MI/d; and the estimated WRZ demand will be 43.9 MI/d. Therefore, the additional supply required from the new abstraction is estimated to be approximately 15.3 MI/d, without considering the lower headroom allowance and higher leakage targets for larger interconnected

systems. When leakage targets and the smaller headroom allowance is considered, the 2044 DYCP demand reduces from 43.8 MI/d to 32.7 MI/d.

The supply demand balance for all interconnected systems will be reassessed at project level to confirm the abstraction that is required to meet the combined demand under the merged water supply system. Due to the higher leakage targets for large WRZs and the smaller headroom allowance, the recalculated abstraction volume at project level may be less than the Plan Level assessment.

Table 8.2 Supply Required for the new Clonmel WRZ

Current WRZ	2044 DYCP* Demand (m ³ /day)	2044 DYCP* WAFU** from existing supplies (m ³ /day)	Additional Supply Required (from New/Upgraded sources) (m ³ /day)	Headroom (% of Average Demand)	DYCP* peaking factor (% of normal year average demand)
New surface water abstraction from the River Suir and new WTP at Barnes					
Ahenny	60	0	60	20%	20%
Ardfinnan Regional	7,420	1,190	6,230	15%	20%
Ballinvir	40	0	40	20%	20%
Clonmel	11,490	4,340	7,150	10%	20%
Tullohea	360	0	360	20%	20%
Kilcash	80	0	80	20%	20%
Templetney/ Brackford Bridge PWS	4,550	3,300	1,250	15%	20%
Glenagad	30	0	30	20%	20%
Russeltown	40	0	40	20%	20%
Poulavanogue (Waterford)	80	0	80	20%	20%
Kilmanahan	20	0	20	20%	20%
Total	24,170	7,640	15,340	-	-

*DYCP is the weather planning scenario that is used in our National Water Resources Plan (NWRP) to estimate the supply Deficit that the Plan must address. It represents the period within a dry year where demands can be significantly above average.

**WAFU (Water Available for Use) is the amount of water that can be supplied from a supply system, taking into account infrastructure capacity constraints, treatment losses and planned and unplanned events that can reduce supply. If the existing source will be decommissioned under the Preferred Approach, the WAFU from the existing source is zero.

Table 8.3 Supply Required for the new East Waterford Water Supply Scheme

Current WRZ	2044 DYCP* Demand (m ³ /day)	2044 DYCP* WAFU* from existing supplies (m ³ /day)	Additional Supply Required (from New/ Upgraded sources) (m ³ /day)	Headroom (% of Average Demand)	DYCP* peaking factor (% of normal year average demand)
New surface water abstraction from the River Suir, upstream of Carrick-on-Suir					
East Waterford Scheme	42,660	23,100	19,560	10%	20%
Smoores	20	0	20	20%	20%
Faha	60	0	60	20%	20%
Fews	70	0	70	20%	20%
Dunhill-Cois Coille	30	0	30	20%	20%
Dunhill Ballinageeragh	10	0	10	20%	20%
Ballyogarty	370	0	370	20%	20%
Kilmacthomas	250	0	250	20%	20%
Scrahan	20	0	20	20%	20%
Kill/Ballylaneen	400	0	400	20%	20%
Total	43,890	23,100	20,790	-	-

*See footnotes for Table 8.2

8.3.3 Cross-regional transfers

The Regional Preferred Approach includes three (3) inter-regional transfer connecting to WRZs in the Eastern and Midlands Region, as detailed in Table 8.4. All three interconnections enable the decommissioning of connecting WRZ WTPs and abstraction sources.

The connection to Arklow WRZ requires a small increase in the groundwater surface water abstraction, representing. The new connected demand will represent about 10% of the total demand of the WRZ. The connection to Tinahely and Limerick City Environs will not require additional source upgrades.

For each inter-regional transfer, Table 8.4 lists the ‘Source’ and ‘Destination’ study area, the ‘parent’ WRZ (i.e., the WRZ which is to supply the other WRZ) and the rationalised WRZs (i.e., the WRZs which will be receiving a supply from the ‘parent’ WRZ). These transfers are shown in Figure 8.2 with the letter reference listed Table 8.4.

Table 8.4 Inter-regional Transfers

Source SA (Source Region)	'Parent' WRZ	Destination SA	Destination WRZ/s	2044 Transfer volume (m ³ /day)	Figure 8.2 Reference
SA1 (Eastern and Midlands)	Arklow	SAM	Coolgreany	10	A
SA1 (Eastern and Midlands)	Tinahely	SAM	Ballingate	720	B
SA8 (Eastern and Midlands)	Limerick City Environs	SAK	Carrigmore, Killeely, Herbetstown, Knocklong/Hospital, Ballylanders, Galbally	3,940	C

When assessing the Options at the Study Area level, the impact of the abstraction volume that is required to supply both the WRZs in the 'Source' Study Area and the WRZs in the 'Destination' Study Area, is considered in combination. As with all new and upgraded abstractions, the volume is limited to the estimated dry year sustainable abstraction threshold.

8.3.4 Cumulative Effects at Regional Level

At the Regional Level, cumulative effects need to be considered in relation to the combined effects from proposals in the three Study Areas of the South East Region and includes consideration of the transfers across Study Areas and inter-regional transfers.

For cumulative effects to occur, there needs to be an overlap of temporal periods in some way for the impacts and/or the effect. For example, two strategic-level schemes being constructed at the same time could result in cumulative traffic movements, while two schemes being operated together could result in a drawdown of groundwater levels. A precautionary approach has been taken for the cumulative effects assessment, which assumes that all Options could be constructed at the same time and then all Options would be operated at the same time.

The Strategic Environmental Assessment (SEA) Environmental Report prepared for the RWRP-SE assesses the cumulative effects of proposals across the three Study Areas related to:

- Biodiversity – for example, a cumulative loss or fragmentation of habitats or changes to a habitat quality through changes in water quality or groundwater levels;
- Water environment (surface water and ground water WFD status) – for example, changes to water quality due to multiple construction projects;
- People and health – for example, nuisance or physical health impacts caused by multiple construction works taking place at the same time;
- Landscape and visual – for example, if there are a number of Options located close together that could alter the landscape character or views;
- Cultural heritage – for example, if the same cultural heritage features are affected by above ground infrastructure in close proximity or the combined effect of loss to undesignated 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. Combined effects on climate change adaptation are also considered including effects on biodiversity and the water environment (for example, changes to water quality due to multiple construction works taking place at the same time).

Sustainability analysis for groundwater and surface water abstractions has already taken account of combined effects from other Uisce Éireann abstractions within and across Study Area or region boundaries.

The components of Preferred Approaches most likely to lead to within-plan cumulative effects are the construction of pipelines and associated works, such as new WTPs and pumping stations. The Cross Region transfers are shorter in length than some of the within Study Area Options. Cumulative effects on landscape and visual amenity across Study Area Preferred Approaches and from pipeline construction of these cross transfers are therefore unlikely to be significant.

Further details of the cumulative assessment at regional level are provided in Section 9 of the SEA Environmental Report for the RWRP-SE, including the cumulative effects with other plans and programmes.

8.3.5 Transboundary Effects

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-SE.

8.3.6 Option Types and Component Summary

The Regional Preferred Approach provides a solution to address an estimated 2044 DYCP Deficit of 80 Ml/d. This is achieved through a combination of within Study Area interconnected supplies, local groundwater and surface water sources, and three interconnections to sources from an adjacent Study Area. It also includes WTP upgrades to reduce water quality risks identified through our barrier assessment.

Table 8.5 summarises the Option Type and the Deficit that will be supplied for the South East Region.

Table 8.5 Preferred Approach Option Types

Option Type	No. of Existing Benefitting WRZs	2044 DYCP Deficit Supplied (m ³ /day)	Percentage of Regional Deficit Supplied (%)
Local source (GW)	27	21,420	70
Local source (SW)	1	7,460	<1%
Within SA interconnection	57	50,790	30
Inter-regional connection	8	820	<1%
WTP upgrade (WQ only)	18*	not applicable	not applicable

*This is the number of WTPs that will be upgraded for water Quality only. It does not include the existing WTPs that will be upgraded for both WQ and capacity, as these form part of the other Option Types.

When the Options within the Regional Preferred Approach are delivered, the number of WRZs across the South East Region will be reduced from 111 to 58 through the development of interconnected systems. Twelve (12) new WRZs will be formed, and 455 kilometres of trunk mains (>300 mm diameter) will be constructed to interconnect supply systems.

Table 8.6 summarises the changes to WTPs and abstractions with the Regional Preferred Approach in place. Figure 8.2 displays the WTPs and trunk mains that will form part of the Regional Preferred Approach; while Figure 8.3 shows the location of the surface water and groundwater sources.

Table 8.6 WTP and Abstraction Summary

Option Component	No. of Water Treatment Plants	No. of Surface Water Abstractions	No. of Groundwater Abstractions
New	13	3	16
Increased capacity	24	1	20
Maintained (WTP upgrade for quality only)	56	31	45
Decommissioned	63	11	55

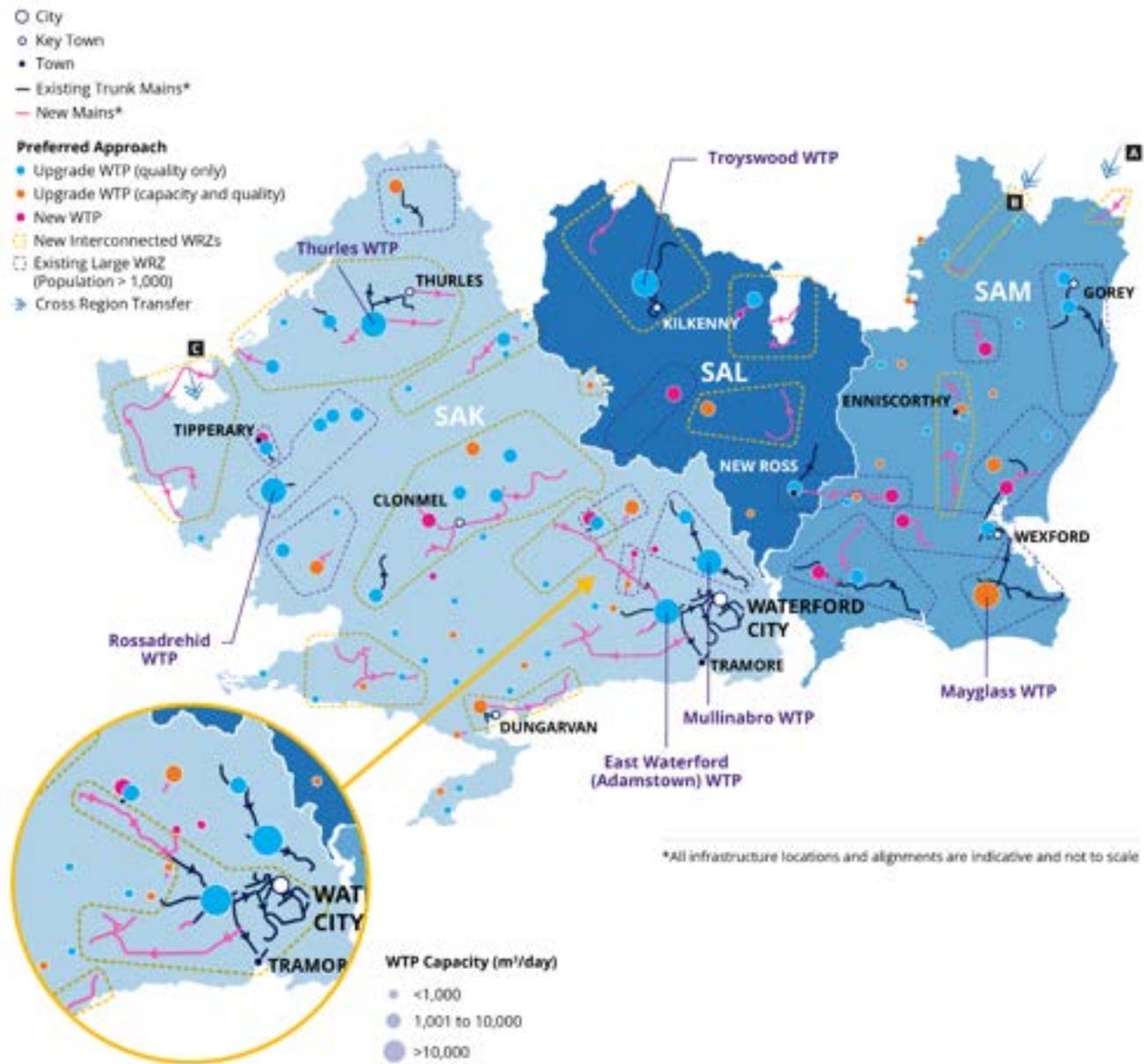


Figure 8.2 Regional Preferred Approach

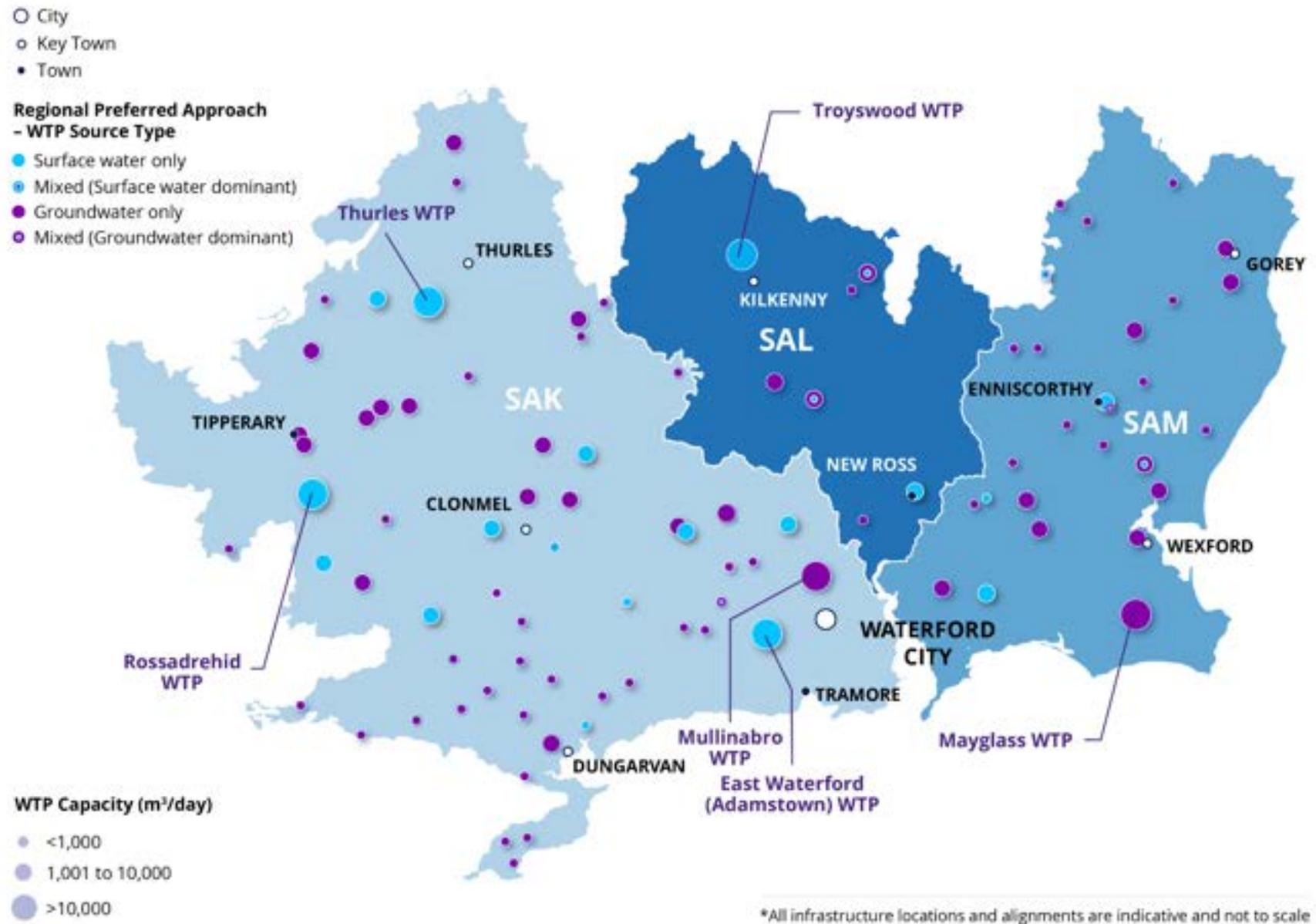


Figure 8.3 Regional Preferred Approach – Groundwater and Surface Water Supplies

8.4 Summary

The Regional Preferred Approach considers, at a Plan Level, what projects/solutions might work best to meet the overall Deficit in the South East Region. Taking a holistic view of the region presents opportunities to improve the sustainable management of our water resources and increase operational flexibility and resilience.

While some small Cross Study Area Transfers have been identified, the potential for a large feasible option with the capability to provide regional interconnectivity (across Study Area boundaries) is limited due to the cost and challenge associated with transporting small volumes of water over long distance. However, the Approach Development Process at Study Area Level, has identified interconnected supplies within the Study Area boundaries that will ultimately increase resilience and provide improved environmental outcomes. The interconnection of WRZs form 12 new WRZs, replacing 57 existing WRZs. This will reduce the total number of water supply systems that Uisce Éireann will operate and maintain across the region from 111 to 58.

The Regional Preferred Approach also comprises 48 local WRZ options to address the water quality and water supply needs of single WRZs

The benefits of delivering the Preferred Approach include:

- Improved environmental outcomes by decommissioning of inefficient infrastructure and abandoning abstractions including 11 surface water and 55 groundwater abstractions. This includes seven (7) surface water sources assessed by Uisce Éireann as not meeting sustainability guidelines during dry weather flows.
- Increased resilience through interconnected supplies. This includes the development of a new surface water abstractions from the River Suir to supply 10 WRZs connecting to the Clonmel system and nine (9) WRZs connecting to the East Waterford Supply scheme. Connection to the Limerick supply system in the Eastern and Midlands Region will also increase resilience to six (6) WRZs that are currently supplied by small local groundwater sources.
- A reduction in demand met through increased leakage targets and the lower headroom requirement of larger interconnected systems.
- Improved minimum Level of Service of 1 in 50 in drought and winter conditions across all WRZs in the South East Region, as well as increased resilience during normal and dry conditions.

The Options identified in the Regional Preferred Approach will be subject to their own planning and regulatory processes. As mentioned previously, the solutions identified in the NWRP will be delivered on a phased basis and will progress based on a risk-based prioritisation of capital investment, allowing Uisce Éireann to address Need accordingly. It will take a number of investment cycles to progress these projects and they may change in later iterations of the NWRP. Over time, the intention is to ensure the delivery of a more Sustainable, Resilient and cost-effective water supply service.

8.5 References

1. European Commission. 2000. *WFD Directive 2000/60/EC on establishing a framework for community action in the field of water policy*.
2. Water Environment (Abstractions and Associated Impoundments) Act, 2022. Available from: <https://www.irishstatutebook.ie/eli/2022/act/48/enacted/en/html>
3. UK Technical Advisory Group (UKTAG). 2008. UK Environmental Standards and Condition (PHASE 1). Water Framework Directive.