

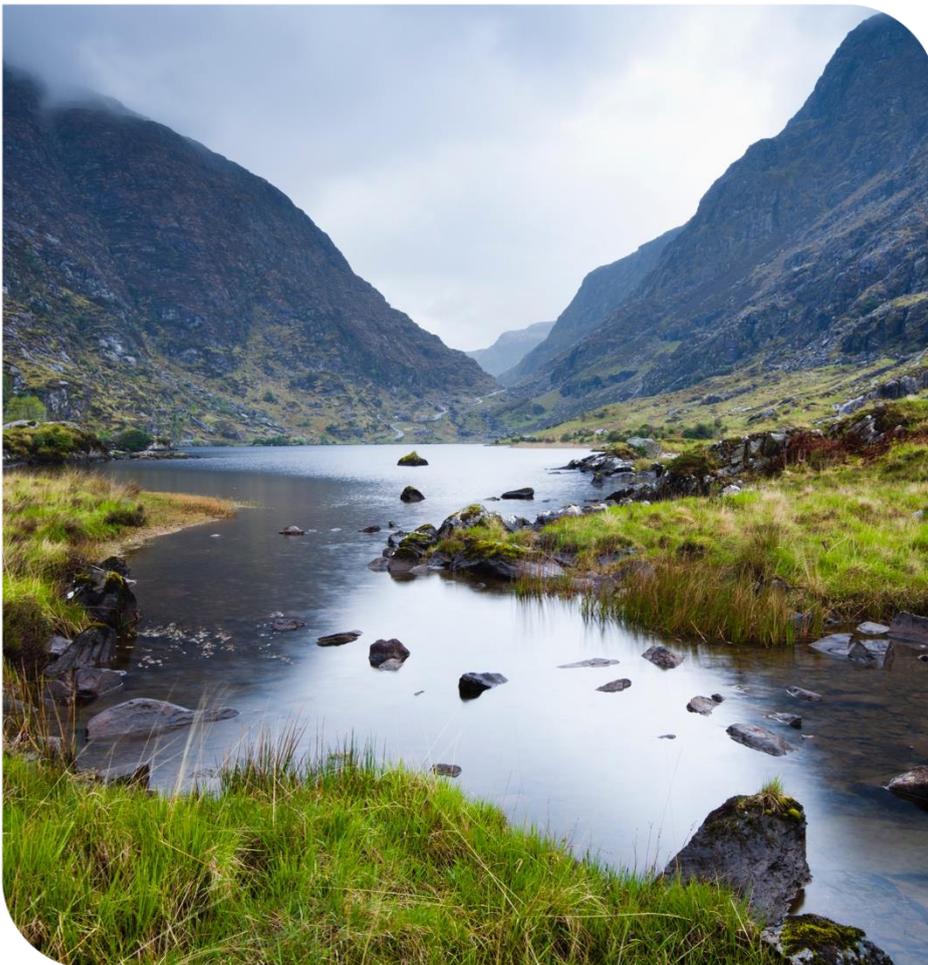
Autumn 2022



National Water Resources Plan

Phase 2 - Regional Water Resources Plan – Eastern and Midlands Consultation Report

Irish Water's 25-Year Plan for Our Water Assets in the Eastern
and Midlands Region



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 will also align to relevant updates in applicable policy.

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1 Introduction

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 NWRP 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 NWRP in two phases:

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 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. Each Regional Plan will undergo SEA and AA and will be subject to public consultation. The delivery of Phase 2 as four 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 Regional Water Resource Plan for the Eastern and Midlands (RWRP-EM) is the first of the four Regional Plans to be delivered; it will be followed closely by the Regional Plans for the South West, North West and South East over the next 12 months.

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

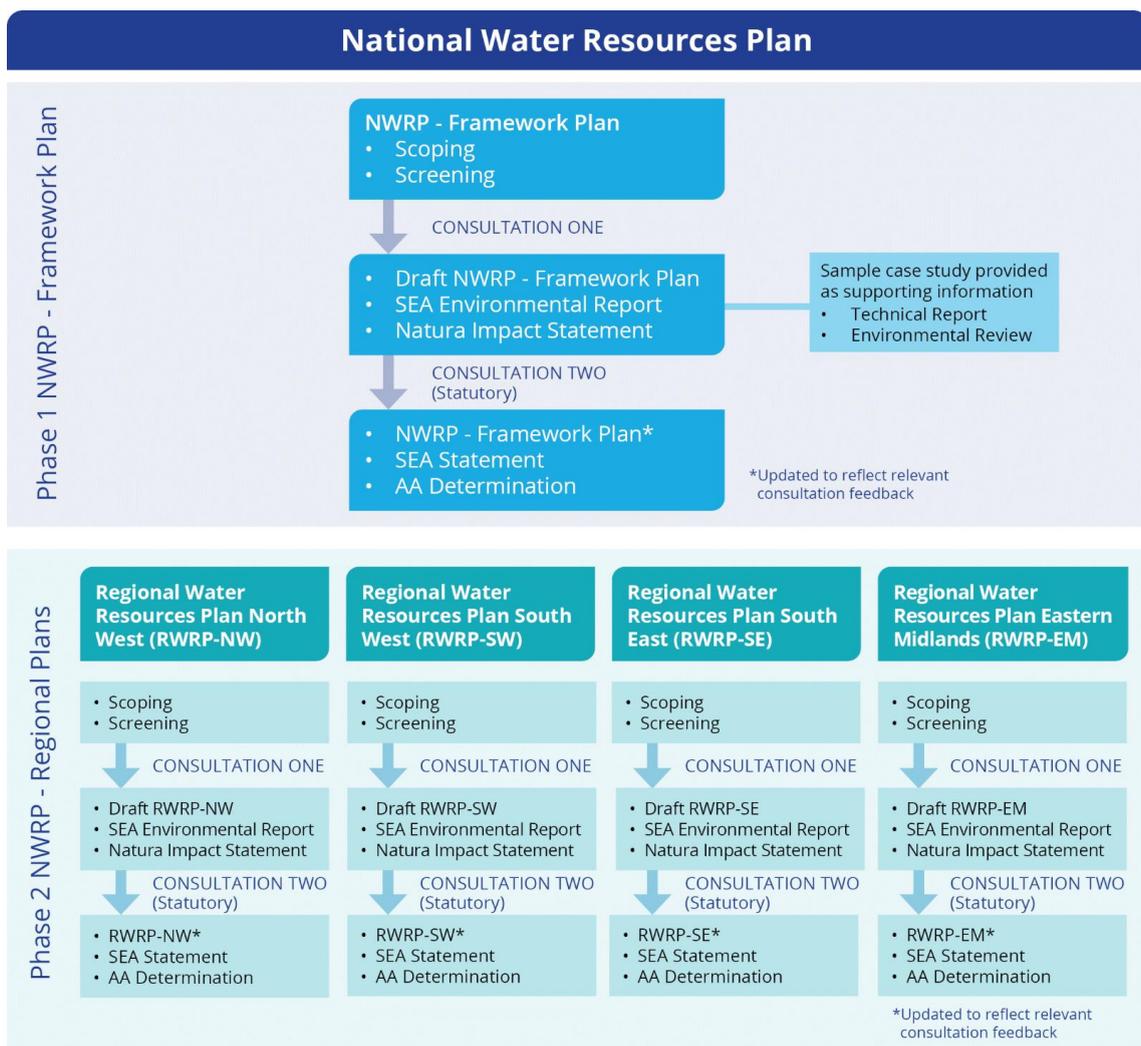


Figure 1.1 Components of the National Water Resources Plan

1.2 Benefits of the NWRP

Previously, the availability of water resources was mostly considered at a local or regional level. Undertaking a national plan now means that we can provide all our customers with a more consistent level of water supply that will ensure the best sustainable use of water resources for the benefit of all.

The NWRP sets out a standardised approach to water resources and services at national, regional and local levels, in the short, medium, and long-term. This means that in the future, wherever you are in the country, when you turn on your tap you will have a safe, secure, sustainable and reliable public water supply.

The NWRP is a long-term plan, to ensure our water resources are sustainable for future generations. A robust and sustainable water resources plan will ensure that Ireland's water supplies will have the capacity to support future growth and encourage investment.

1.3 Why do we need a NWRP?

Water is part of our everyday lives, we need it when we turn on the taps to get a drink, to wash our dishes and clothes, to have a shower and to flush the toilet. Businesses throughout the country also depend on a reliable water supply, from coffee shops and restaurants, to hairdressers, and farming enterprises right up to multi-national companies. It is essential to everything we do.

However, our water infrastructure is already under increasing pressure to meet the current demand for water as a result of population growth, climate change, and our changing environment. The quality of our drinking water can be affected in many ways including soil or rock types, land use practices, pollution, and even heavy rainfall. To prevent unplanned water outages, water conservation orders, reductions in water pressure, or restrictions to water supplies, we have to plan ahead. How we choose to plan our water resources today will determine the water supply we can provide now and into the future.

1.4 Consultation One

In Phase 2 each Regional Plan will undergo SEA and AA and will be subject to public consultation. Consultation one on the SEA Scoping Report for the RWRP-EM was held in June and July 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 Eastern and Midlands Region. The feedback obtained was considered and reflected in the draft RWRP-EM, the associated SEA Environmental Report and the NIS.

Throughout 2021 and 2022, ongoing stakeholder engagement took place with the environmental authorities, key stakeholders and local authorities respectively. This is further discussed in Chapters 3 and 4.

Members of the public, interested parties and environmental authorities were invited to contribute to the development of the draft RWRP-EM as part of the SEA and AA process through public consultation at key stages, as outlined in the RWRP-EM Consultation Roadmap in Figure 1.2

RWRP Eastern & Midlands Public Consultation Roadmap

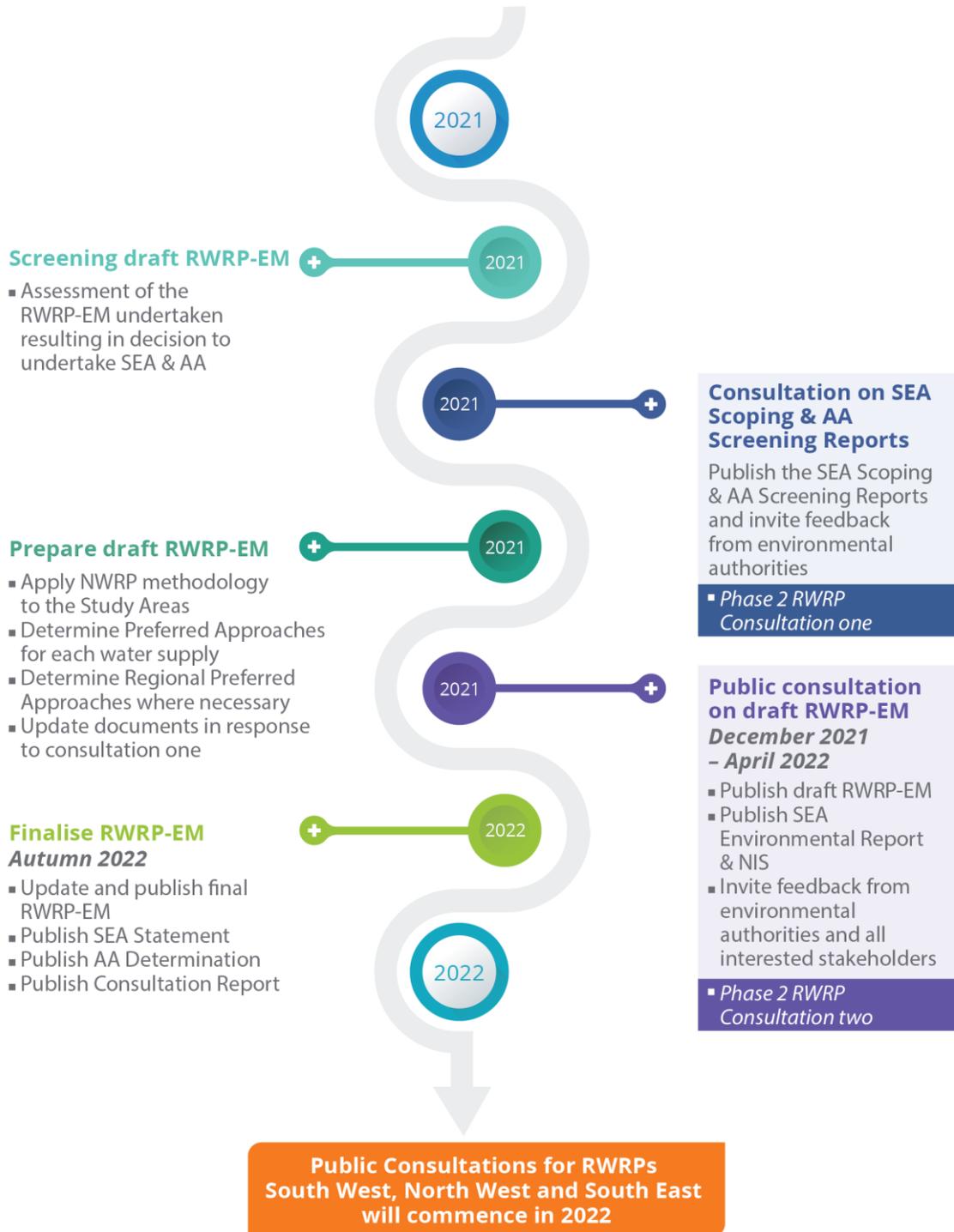


Figure 1.2 RWRP Eastern and Midlands Public Consultation Roadmap.

2 Pre-Consultation Engagement

As part of the development of the Phase 2 RWRP-EM and in advance of public consultation on Phase 2 Consultation 2, a pre-consultation engagement phase was undertaken with key stakeholders including environmental authorities. These include the statutory stakeholders identified pursuant to the Strategic Environmental Assessment Regulations and the Birds and Habitat Regulations. Although not prescribed under the SEA Regulations we have also included the Commission for Regulation of Utilities (CRU) due to the level of engagement required with our regulator and An Forum Uisce (AFU) due to their functions under the Water Services Act 2017.

A series of online briefings were facilitated by Irish Water as part of pre-consultation on the draft RWRP-EM and associated environmental reports. Emails offering pre-consultation briefings were issued to all stakeholder organisations detailed in Table 2.3 on 18 October 2021.

The purpose of the briefings in 2021 was to update stakeholders on our progress and discuss any new information available.

2.1 Key Stakeholders and Environmental Authorities

On 18 October 2021, Irish Water launched a period of pre-consultation engagement with key stakeholders including environmental authorities. The stakeholders received an invitation to a briefing with the NWRP Project Team. The environmental authorities were:

- Environmental Protection Agency (EPA);
- Department of Housing, Local Government and Heritage (DHLGH);
- Department of the Environment, Climate and Communications (DECC);
- Department of Agriculture, Food and the Marine (DAFM);
- Northern Ireland Environment Agency (NIEA); and
- Commission for Regulation of Utilities (CRU).
- An Forum Uisce (AFU)

Please see Table 2-3 for a list of all eight pre-consultation briefings completed during autumn 2021.

Table 2.1 Key Stakeholders (environmental authorities) Pre-consultation Briefings

Stakeholder	Date of Briefing
Department of the Environment, Climate and Communications	17 November 2021
Environmental Protection Agency (EPA including SEA Team)	16 November 2021
Department of Agriculture, Food and the Marine (DAFM)	16 November 2021
An Fóram Uisce (AFU)	15 November 2021
Commission for the Regulation of Utilities (CRU)	15 November 2021
Northern Ireland Environment Agency (NIEA)	17 November 2021
Geological Survey Ireland (GSI)	17 November 2021
Northern Ireland Water	16 November 2021

3 Consultation Two

3.1 Introduction

Irish Water undertook public consultation on Phase 2 of the draft RWRP-EM in accordance with the consultation requirements of the SEA Regulations. We have termed the Phase 2 draft RWRP-EM consultation as Consultation two. Consultation two also included an opportunity to make submissions on the accompanying SEA report, and on the NIS relative to AA matters, required to be taken into account in the AA process as outlined in the Birds and Natural Habitats Regulations 2011.

Irish Water’s consultation and engagement processes are in line with the public participation requirements of the Aarhus Convention, along with the requirements for public consultation for the purposes of the SEA Directive and Habitats Directive. Our public participation process includes different phases with reasonable timeframes in excess of the statutory minimums under the SEA Regulations, allowing the public to be informed, and for the public to participate effectively during the decision-making process.

Irish Water commits to continuing to provide communications and public consultation that are accessible, meaningful, transparent, proportionate and accountable for all stakeholders including those without a technical background. These principles have underpinned the approach Irish Water has taken to the communications and public consultation for the NWRP to date relative to Phase 1 NWRP Framework Plan and Phase 2 NWRP, the four Regional Water Resource Plans.

Table 3-1 sets out Irish Water’s guiding principles for communications and public consultation that have been observed throughout the development to date of the RWRP-EM.

Table 3.1 Principles of Consultation

Principle	Explanation
Accessible	Information should be easy to access, it should be communicated in a manner that is appropriate to the stakeholder group and should avoid the use of industry jargon. The consultation process should be inclusive, and it should be straightforward to participate in the process. This includes making submissions, asking questions and attending events.
Meaningful	Consultation is a two-way process and should be viewed as a genuine opportunity for stakeholders to influence outcomes. The Project Team should be prepared to consider all submissions that are received through the consultation process. Consultation should take place at identified stages in the development process, in advance of key decisions being made and feedback should be used to inform those decisions.
Transparent	Core to all engagement and communications in respect of a decision-making process is that the process is transparent, that people can understand and see the process by which decisions were made and how their input was considered. They may not agree with a decision, but they should have full access to the fair and objective process by which these decisions were made.
Proportionate	Undertaking communications activities that are appropriate for the specific project and circumstances. Ensuring Irish Water provides value for money at all times, while using its resources to make a real difference. Being flexible in our approach in order to respond to the complexities of each individual project.

Principle	Explanation
Accountable	Accountable project decision making ensures that the project has taken on board relevant feedback, has responded to the feedback provided in a fair and transparent manner and that the project only moves forward once each phase has been appropriately developed and reported on. Careful record keeping of submissions and the review process are features of this principle.

Throughout the development of the draft RWRP-EM, Irish Water has consulted with members of the public and all interested stakeholders in accordance with the following legislative, planning and best practice requirements:

- Aarhus Convention requirements;
- Strategic Environmental Assessment (SEA) Directive requirements;
- Habitats Directive requirements;
- Irish legislation requirements; and
- International best practice including Gunning Principals and International Associations for Public Participation Guidelines (IAP2).

3.2 Phase 2 – RWRP Eastern and Midlands

The draft RWRP-EM was issued for consultation on 14 December 2021. Irish Water subsequently facilitated two extensions to this statutory public consultation at the request of key stakeholders, the Department of Housing, Local Government and Heritage and the CRU, with consultation finally closing on 8 April 2022.

In order to assist stakeholders in making a submission as part of this public consultation, we invited feedback on the following consultation questions:

1. The Eastern & Midlands region baseline is discussed in section 2 of the draft RWRP-EM. Do you have any comments on the Eastern and Midlands region or in respect of the population growth and economic development and how this is considered in our water resources planning approach?
2. Within the Eastern and Midlands region we consider 134 water supplies (Water Resource Zones) represented across nine Study Areas. Do you have any comments on the Study Area delineation?
3. Section 3 of the draft RWRP-EM and each of the technical appendices 1-9 outline the need (deficits) in both quantity and quality across the region and in each of the Study Areas. Do you have any comment on the need (deficit)?

4. Interim Solutions are outlined in sections 4, 7 and 8 of the draft RWRP-EM and in each of the technical appendices 1-9. Have you any comments on this as a strategy of reducing risk to water supplies while developing our Preferred Approaches? Section 6 and the technical appendices 1-9 of the draft RWRP-EM summarises our Options Development Process. Do you have any comments on how the feasible options for the WRZs, Study Areas and the Region have been identified?
5. Section 7 sets out how the Preferred Approach is identified at WRZ and Study Area level. Each Preferred Approach will outline how it intends to address the need in the relevant area. Each of the technical appendices for Study Areas 1-9 and the Environmental Review for Study Areas 1-9 will set out how the Preferred Approach has been identified in more detail. Have you any feedback on any of the WRZ Preferred Approaches or Study Area Preferred Approach?
6. The draft RWRP-EM looks at a range of solutions to meet the need in a WRZ or Study Area (SA). These solutions are not limited by distance, therefore, some solutions for the WRZ or Study Area will optimize regional transfers. By way of example, there are 33 WRZs in the draft RWRP-EM, which are capable of benefitting from regional transfers. Section 8 of the draft RWRP-EM outlines how the regional solution will be identified and compared against the solution that sees each SA meeting its own needs and how the Regional Preferred Approach will be identified. Have you any comments on the Regional Preferred Approach?
7. Do you have any comments on the Strategic Environmental Assessment (SEA), Environmental Report and Natura Impact Statement (NIS) which accompany the draft RWRP Eastern & Midlands?
8. We have produced an RWRP Consultation Roadmap. Do you have any comments on this?
9. How would you like Irish Water to communicate with you as the RWRPs progress?

A number of communications tools were developed to promote the consultation and to raise awareness among the public, interested parties and environmental authorities and to encourage participation in the consultation process.

The following communications tools were used:

- RWRP-EM webpage on the Irish Water website;
- Consultation two information leaflets available in English and Irish;
- RWRP-EM infographic;
- RWRP-EM consultation roadmap;
- Non-technical summary (NTS) of the draft RWRP-EM;
- Press releases to national and regional media;

- Media interviews;
- Newspaper adverts;
- Online Briefings;
- Online Public Webinars;
- Social Media;
- Animations, explaining water resource planning topics including population growth, balancing water supply, demand and climate change;
- Public display of hardcopy documents; and
- Correspondence and briefings with:
 - Environmental authorities;
 - Elected representatives;
 - Local authorities;
 - Interested parties;
 - Media; and
 - General public.

These communications tools and channels are discussed in more detail in section 4.

4 Consultation Two Promotion

4.1 NWRP Webpage

An NWRP dedicated webpage was provided on the water.ie website and went live on 13 October 2017 at www.water.ie/nwrp. A dedicated webpage was created with details of the Phase 2 RWRP-EM consultation, i.e., Consultation two on 14 December 2021. An Irish version of the webpage was also made available.

The draft RWRP-EM, the SEA Environmental Report and the NIS were made available to view or download from the RWRP-EM dedicated webpage on 14 December 2021, along with all other relevant information, including the RWRP-EM consultation roadmap, the consultation information leaflet, the NTS and an RWRP-EM infographic.

Details on how to participate in the consultation were included on the RWRP-EM webpage. Submissions were invited via the following channels:

By email: nwrp@water.ie

Or by Post: National Water Resources Plan, Irish Water, P.O. Box 13216, Glenageary, Co. Dublin

For the period of the initial draft RWRP-EM consultation (between 14 December 2021 and 8 April 2022) there were 10,002 page views and 8,315 unique page views of www.water.ie/nwrp

Those that visited the site spent on average 4.41 minutes on the page. The majority of pages on water.ie are visited for less than a minute, showing the level of interest in the content and information provided. Table 4.1 outlines the number of opens of the consultation documents available on the webpage.

Table 4.1 Consultation document opens

Document	No. of openings
RWRP-EM draft Plan	255
RWRP-EM draft Plan Non-Technical Summary	104
RWRP-EM SEA Report	47
RWRP-EM NIS	46
RWRP-EM Consultation leaflet	102

The web page will continue to be regularly updated with the latest information as the project progresses.

4.2 Consultation Two Information Leaflet

A consultation information leaflet outlining the draft RWRP-EM, details of the consultation questions and information on how stakeholders could provide feedback on the draft RWRP-EM and associated environmental reports was published on the RWRP-EM webpage on 14 December 2021.

The leaflet provided a summary of the draft Regional Plan, how the Regional Plan will be delivered and the next steps.

The information leaflet was made available in both English and Irish. A copy of the English version can be found in Appendix A.

4.3 RWRP-EM Infographic

An RWRP-EM infographic was produced to be used in printed materials and on the webpage. The infographic is a helpful visual aid, which clearly illustrates water resources planning and outlines our approach to Ireland's first NWRP. The infographic aids communication, through an alternative format to text, assisting our efforts to effectively inform as broad a demographic as possible. The infographic can be found in Appendix B.

4.4 Press Releases

A press release announcing the commencement of statutory consultation on the Phase 2 draft RWRP-EM, was issued to national, regional, and local media on 14 December 2021. It was issued to raise awareness of the consultation amongst the general public and to increase public participation. The press release included details of the draft RWRP-EM and information on the consultation, along with links to the documentation and all necessary information on how to participate. Two more press releases were issued subsequently to notify stakeholder of extensions to the statutory public consultation at the request of key stakeholders, the Department of Housing, Local Government and Heritage and the CRU, with consultation finally closing on 8 April 2022.

The press release was also added to the news section of the Irish Water website, www.water.ie/news.

Media coverage generated from the press releases and a copy of the press releases issued are available in Appendix D.

4.5 Media Interviews and Press

Irish Water spokespersons were made available for media interviews and press briefings throughout the consultation period. Three radio interviews were completed by the project team on regional radio stations in Kildare, Limerick and Tipperary.

A considerable amount of national and regional coverage was generated across all media channels throughout the consultation period. Over 70 articles were published about the Phase 2 draft RWRP-EM plan in national and regional newspapers their online editions and on radio websites.

Media briefings resulted in media coverage across a range of online, broadcast and print media in promoting the consultation as shown in Appendix D.

4.6 Newspaper Adverts

Statutory newspaper adverts were placed in the Irish Independent, The Irish Examiner and the Irish Times on 14 December 2021, and the Irish Farmers Journal on 16 December 2021. The advertisements were published in national newspapers to raise awareness of the consultation across the country and to encourage participation. The advertisements advised where copies of the documentation could be obtained or viewed, the dates of the consultation, as well as the various means of engaging with the NWRP project team.

Regional adverts were published in 22 newspapers on 13 January 2022 advertising the online public webinars for the draft RWRP-EM.

Newspaper adverts were placed in the Irish Independent and the Irish Times again on 15 March 2022 announcing a further extension to the draft RWRP-EM Consultation and again in The Irish Independent on 25 March 2022 for the second extension.

Copies of the newspaper adverts are included in Appendix D.

4.7 Social Media

The launch of the draft RWRP-EM consultation was promoted on social media using the Irish Water Twitter, Facebook and LinkedIn page, as displayed in Table 4.2 below. Promoting the consultation on these platforms enhanced the potential to inform a higher volume of people across a broad demographic. A suite of engaging animations was developed for use on social media to explain many water resource planning topics including population growth, climate change and supply demand balance.

In total, 12 Facebook posts, 3 Twitter posts and 3 LinkedIn posts were shared, 9 of which were promoted to achieve optimum stakeholder reach. In total, 2,763,920 impressions were made.

Table 4.2 Social Media

Platform	No. of posts	Impressions
Facebook	12	2, 744, 058
Twitter	3	4,197
LinkedIn	3	15,638

4.8 Public Display of Documents

In order to ensure the draft RWRP-EM and associated environmental reports were readily accessible, hard copies of the draft RWRP-EM in English, including appendices, the SEA Environmental Report, the NTS and the NIS were provided for public display in 29 local authority offices and at two county libraries for the duration of the consultation period.

The availability and location of these documents at the planning counter in local authority offices and at the county libraries was promoted through the project

website and advertisements. An audit of all 31 displays was undertaken by the NWRP team during the consultation period to ensure all documents were received and available as advertised. In addition, hard copies and electronic copies of these reports were available upon request through the project information service.

A full list of the planning counters and libraries where the documents were displayed is included in Appendix F.

4.9 RWRP Freephone Phonenumber

The NWRP team introduced a dedicated phonenumber during this period of consultation to improve accessibility due to Covid-19 restrictions or for those with limited or no internet access. The freephonenumber number, 1800 46 36 76, was publicised in national newspapers, on all of the consultation documents, and on the website. The phonenumber was staffed by the NWRP team during office hours throughout the consultation period.

4.10 Direct Engagement

At Irish Water we take the nature and quality of our relationships with all of our stakeholders very seriously. We have worked closely to understand their views and interests, to deliver the RWRP-EM in partnership and respond to your interests as we progress our plan. Irish Water engages with stakeholders through public consultation and ongoing engagement on our infrastructure projects and plans. We commit to continuous and responsive two-way communication, at every stage of the consultation process to ensure that information is accessible, meaningful, transparent, and accountable for all stakeholders.

4.10.1 Environmental Authorities

The environmental authorities have been engaged on numerous occasions throughout the development of the draft RWRP-EM Plan. These stakeholders play a key role in shaping and informing the development of the RWRPs. As part of the development of the draft RWRP-EM, there has been pre-consultation engagement with the environmental authorities, which was undertaken as outlined in section 2 of this report. On the commencement of the public consultation on the draft RWRP-EM and associated environmental reports, an email announcement was issued to all statutory stakeholders, including the environmental authorities as required by the SEA Regulations, on 14 December 2021.

Further briefings were offered throughout the consultation period and hard copies of the documents were distributed to the environmental authorities on request. Two additional follow up emails to announce the extensions of the

consultation period were issued to the environmental authorities on 11 March 2022 and 25 March 2022.

4.10.2 Elected Representatives

Emails were issued to all elected representatives via the Irish Water LRSD email channel, including Ministers, TDs, Senators, MEPs, and Councillors on 14 December 2021. The correspondence included details of the consultation and invited feedback on the draft RWRP-EM, NIS, and SEA Report, with the consultation questions set out. The correspondence also included links to the above documents, outlined the next steps in the process for developing the RWRP-EM, as well as the offer of a dedicated online briefing with the NWRP team and included details of an online booking form to arrange this.

Two additional emails were issued to the elected representatives to announce the extension of the consultation period for the draft RWRP-EM on 11 March 2022 and 25 March 2022.

4.10.3 Local Authorities

To increase awareness and encourage participation in the draft RWRP-EM consultation, Chief Executives and Directors of Services for Water / Environmental Services of all 31 local authorities were notified of the consultation by email on 14 December 2021. Correspondence included details of the draft RWRP-EM, an outline of the consultation and the consultation questions, and all necessary information on how to participate.

A hard copy of each of the consultation documents was provided to each of the 31 local authorities planning counters to provide council employees and members of the public alike the opportunity to view the documents in person. Further emails were issued to the local authorities to announce the extension of the consultation period on 11 March 2022 and on 25 March 2022 and to extend the display of the draft RWRP-EM.

4.10.4 Interested Bodies

Interested bodies were identified through a stakeholder mapping process from existing stakeholders that Irish Water engage with regularly on plans and projects and stakeholder groups who may have a valid interest in the development of the NWRP. This is to ensure that a wide range of stakeholder groups were made aware of the consultation and given the opportunity to engage and participate in the process.

An email was issued on 14 December 2021 to those identified, informing them of the details of the consultation and inviting them to give their feedback on the draft RWRP-EM Plan and associated environmental reports.

Further emails were issued to the interested bodies to announce the extension of the consultation period on 11 March 2022 and 25 March 2022.

4.10.5 Irish Water National Stakeholder Forum

Irish Water hosts the Irish Water National Stakeholder Forum quarterly, which has representations from the three pillars of sustainability: economic, social and the environment. Participants represent these sectors at a national level with effective two-way engagement occurring on specific themes.

On 3 March 2022, Irish Water briefed the National Stakeholder Forum and gave an update of the public consultation on the draft RWRP-EM.

4.10.6 Public Webinars

A total of eight public webinars were held over the month of February 2022 and 198 interested members of the public registered their attendance. Two of these webinars were held in the evening to facilitate workers and commuters.

The public webinars were advertised in 22 regional newspapers on 13 January 2022. Copies of the newspaper adverts are included in Appendix D. Updates were made to the Irish Water website and an email update was issued to all stakeholders on the NWRP mailing list. A presentation on the draft RWRP-EM Plan was given, followed by a Q&A session with the NWRP team. See Appendix J for a copy of the questions and answers.

4.10.7 Online Briefings

Extensive engagement with key stakeholders has been undertaken during the consultation period, see table 4.3.

Targeted consultation with these stakeholders ensures transparency and that all available data relevant to the draft RWRP-EM is gathered as early as possible in the process. In addition, it will help to ensure that concerns and queries raised can be addressed in a timely manner.

Table 4.3 Stakeholder Briefings RWRP-EM

Stakeholder	No of briefings	Attendance figures
Local Authority Councillors	22	89
Interested Bodies	5	40
Elected Representatives	3	19

Stakeholder	No of briefings	Attendance figures
Key Stakeholders & Environmental Authorities	6	34

Elected Representatives.

All national elected representatives were offered a dedicated briefing on 24 February 2022. In addition to this, two 1-2-1 briefings were held for a public representative who requested them. A total of 19 elected representatives registered their attendance.

An in-person launch day was also held on 2 March 2022, for all elected representatives in Buswells Hotel in Co. Dublin with four Oireachtas Members (or their representatives) attending.

1-to-1 briefings were offered to all national elected representatives as an alternative, if they were not available to attend the Buswells Hotel event, or the online webinar.

Key Stakeholders and Environmental Authorities

Key Stakeholders and environmental authorities were each offered a dedicated briefing during January and February 2022. A total of five briefings were held with the EPA requesting two briefings for its members.

For a full list of Key Stakeholders and environmental authorities' briefings please see Appendix M.

Local Authority Councillors

895 Councillors within the RWRP Eastern Midlands region were emailed offering them a dedicated briefing for their constituency. A total of 21 briefings were held between January 2022 and March 2022. 162 councillors registered their attendance for a briefing.

For a full list of the briefing dates with Local Authority Councillors please see Appendix I.

Interested Bodies

Interested bodies identified by Irish Water were offered a briefing between January and February 2022. A total of four briefings were held for interested bodies with 36 attending.

For a full list of the briefings with Interested bodies please see Appendix H

4.10.8 Q&A Document

All questions asked during the public webinars as discussed in section 4.10.6 were recorded and responded to by the NWRP team in a Q&A document and uploaded to the Irish Water website.

A copy of the Q&A document can be found in Appendix J.

4.11 Outcomes of Consultation

All feedback received during this public consultation process, on Phase 2 of the RWRP-EM, was reviewed by the NWRP team and all relevant feedback has been incorporated into the RWRP-EM. A summary of the feedback received, our response to this feedback and any consequential changes made to the RWRP-EM is detailed in chapters 5 - 15 of this report.

The SEA Statement and AA Determination adopted by Irish Water outline how environmental considerations have been integrated into the RWRP-EM and how consultation influenced the development of the RWRP-EM.

4.12 Review of Preferred Approaches Arising from Consultation

As set out in Section 9 of the RWRP-EM 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-EM 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 considers that the Preferred Approach for five (5) WRZs should be changed and the Preferred Approach for one (1) WRZ should be modified.

A summary of the updated data and the resulting change to the relevant Preferred Approaches is provided below. These changes are reflected throughout Section 7, Section 8 and Section 10 of the final RWRP-EM.

4.12.1 Barndarrig WRZ (Study Area 1)

The initial Preferred Approach for the Barndarrig WRZ was to increase the existing groundwater abstraction and upgrade the existing WTP (Option

reference SA1-037 in Appendix 1 of the RWRP-EM). However further to a review of existing WTP infrastructure and the raw water quality and feedback received at consultation workshops it was determined the level of upgrade required at the WTP was greater than initially assumed. The ground water exhibits high nitrates levels, requiring additional treatment processing capacity. On reviewing the feasible options to consider the additional infrastructure associated with the required WTP upgrade required, the Preferred Approach for the Barndarrig WRZ has been amended to rationalise the Barndarrig WRZ to the GDA WRZ and decommission the existing WTP in Barndarrig option reference SA1-503. Barndarrig will obtain supply from the Vartry WTP and the additional demand in the GDA will be offset by the NSS. Therefore, this PA will form part of the Regional Preferred Approach (as described in Section 8 of the RWRP-EM), which can resolve the Need in multiple WRZs across Study Areas. The details of the updated PA for the Barndarrig WRZ are reported in the Study Area 1 Technical Report, which includes analysis of this updated PA through the options assessment process.

4.12.2 Rahan WRZ (Study Area 5)

The initial Preferred Approach for the Rahan WRZ was to upgrade the existing Tully and Holmshill WTPs (Option reference SA5-085 in Appendix 5 of the RWRP-EM) for water quality purposes only, as the source yield data that was available at the time indicated a surplus rather than a deficit for the Rahan WRZ. However further to a review of existing WTPs and feedback received at consultation workshops, it was determined that the available yield from the sources was lower than previously understood. Therefore, a deficit has been identified and additional supply is required to support the current and future needs of the WRZ. On reviewing potential feasible options to provide additional supply to the Rahan WRZ, the Preferred Approach for the Rahan WRZ has been amended to provide a new groundwater source and provide upgrades to the existing WTPs option reference SA5-086.

The details of the updated PA for the Rahan WRZ are reported in the Study Area 5 Technical Report, which includes analysis of this updated PA through the options assessment process.

4.12.3 Mountbolus WRZ (Study Area 6)

The initial Preferred Approach for the Mountbolus WRZ was to upgrade the existing WTP (Option reference SA6-198 in Appendix 6 of the RWRP-EM) as the source yield data that was available at the time indicated a surplus rather than deficit for the Mountbolus WRZ. However, further to a review of existing WTP infrastructure and feedback received at consultation workshops, it was determined that the available yield from the sources was lower than previously understood. Therefore, a deficit has been identified and additional supply is required to support the current and future needs of the WRZ. On reviewing

potential feasible options to provide additional supply to the Mountbolus WRZ, the Preferred Approach for the Mountbolus WRZ has been amended to rationalise Mountbolus WRZ to the Tullamore WRZ and decommission the WTPs in the Mountbolus WRZ (Option reference SA6-552 in Appendix 6 of the RWRP-EM). The Mountbolus WRZ will obtain supply from a connection to the pipeline transferring water from the proposed New Shannon Source to the GDA. Therefore, this PA will form part of the Regional Preferred Approach (as described in Section 8 of the RWRP-EM), which can resolve Need in multiple WRZs across Study Areas.

The details of the updated PA for the Mountbolus WRZ are reported in the Study Area 6 Technical Report (Appendix 6 of the RWRP-EM), which includes analysis of this updated PA through the options assessment process.

4.12.4 Upperchurch WRZ and Killaloe WRZ (Study Area 8)

The initial Preferred Approach for Upperchurch WRZ was to increase the existing groundwater abstraction and upgrade the WTP (Option reference SA8-165 in Appendix 8 of the RWRP-EM). However, further to a review of existing WTP infrastructure raw water quality and feedback received at consultation workshops it was determined the level of upgrade required at the WTP was greater than initially assumed as the existing UV treatment would need to be replaced. On reviewing the feasible options to consider the additional costs associated with the required WTP upgrade, the Preferred Approach for the WRZ has been amended to rationalise Upperchurch WRZ to the Kilcommon WRZ and decommission the existing WTP in Upperchurch (Option reference SA8-523 in Appendix 8 of the RWRP-EM).

The initial Preferred Approach for Killaloe WRZ was to upgrade the existing WTP (Option reference SA8-180 in Technical Appendix 8 of the RWRP-EM). However, further to a review of existing WTP infrastructure and the raw water quality it was determined the level of upgrade required at the WTP was greater than initially assumed. The water exhibits high pH levels, and the hardness of the water is eroding services and resulting in failures of service connections. On reviewing the feasible options to consider the additional costs associated with the required WTP upgrade, the Preferred Approach for the Killaloe WRZ has been amended to rationalise Killaloe WRZ to the Newport WRZ and decommission the existing WTP in Killaloe (Option reference SA8-512 in Appendix 8 of the RWRP-EM). Killaloe will obtain supply from the proposed new WTP at Birdhill and form part of the Regional Preferred Approach (as described in Section 8 of the RWRP-EM), which can resolve Need in multiple WRZs across Study Areas.

The details of the updated PA for the Upperchurch WRZ and the Killaloe WRZ are reported in the Study Area 8 Technical Report (Appendix 8 of the RWRP-EM), which includes analysis of this updated PA through the options assessment process.

4.12.6 GDA WRZ (Study Area 9)

Further to a review of leakage targets carried out by the Irish Water leakage reduction team the leakage targets for the GDA were revised from 84MI/d to 92 MI/d and these revised targets were built into the SDB. This reduced the deficit in the Supply Demand Balance for the GDA and all feasible solutions were reconsidered for this reduced deficit. On reviewing the revised feasible options considering the reduced deficit it was determined that the solution to provide supply to the GDA from the New Shannon Source remained the Preferred Approach. The magnitude of the supply required was reduced.

The details of the revised SDB deficit, and revised feasible options for the GDA are reported in the Study Area 9 Technical Report. The updated version of the Supply Demand Balance is provided in Appendix 10 of the RWRP EM.

4.12.6 Updated Leakage Targets

As noted in Section 5.2.1.2, for WRZs outside the GDA, Irish Water has set additional leakage targets with the objective of reducing leakage levels to 21% of total demand for larger WRZs (WRZs where demand is greater than 1,500m³/d). Further to feedback received at consultation workshops, it was noted that these leakage targets had been applied to WRZs where 'accounted for demand' (that is, demand excluding current leakage) is greater than 1,500 m³/day rather than the 'total average demand' (which includes leakage volumes). It was decided to apply these targets to WRZs where the 'total average demand' is greater than 1,500 m³/d. This results in a higher number of WRZs being selected and increases our total leakage targets for WRZs outside the GDA from 58 MI/d to 64.5 MI/d.

The details of the revised leakage targets are reported in Section 5.2.1.2 of the RWRP-EM.

4.12.7 Conclusions on Review of Preferred Approaches arising from consultation

Irish Water considered that Preferred Approach for 5 WRZs should be changed and the Preferred Approach for 1 WRZ should be modified based on updated information obtained during the consultation process.

5 Analysis of feedback

This section of the report outlines the approach taken to analysing the 64 submissions received during this period of statutory consultation, Consultation two on the Phase 2 of the RWRP Eastern and Midlands and associated environmental reports.

5.1 Methodology

Each submission received via email has been acknowledged by the NWRP team and reviewed in its entirety. The personal data of individuals who made submissions is not documented within this report and is being held in accordance with GDPR 2018.

Following a review of the feedback received, the key themes which emerged were identified to assist consideration and review, and are as follows:

- Policy;
- RWRP- EM Regional Plan;
- Environment;
- Need;
- Solutions Methodology;
- Regional Plan Consultation Process;
- Plan Implementation;
- Option Types;
- Natura Impact Statement;
- Water Resource Planning; and
- Outside the Scope of the RWRP-EM.

The following sections of this Consultation report comprise a summary of all submissions received under each theme followed by Irish Water's response. Some feedback may be relevant to a number of themes and so will be addressed under several headings.

The views represent the views of those who made submissions as part of the public consultation process. The issues outlined in the feedback section are in the order in which they appear and there is no bias implied by the order in which they are addressed.

5.2 Out of Scope

There were several submissions received during the consultation that mentioned topics outside of the scope of the RWRP-EM. Although not directly related to this consultation, we have captured and summarised that feedback in Chapter 16 and have forwarded on any queries to the relevant teams in Irish Water to respond.

Any feedback in relation to in-flight Irish Water projects, or in reference to any other area of the Irish Water business should be sent directly to the

corresponding project teams, unless applicable to how they are included in the RWRP-EM. Further details of these project teams can be found on www.water.ie.

5.3 Submission Process

In the following chapters, the key references from submissions to issues under each theme are summarised. Within the overall theme, several sub-themes are identified and a summary of the relevant mentions in the submissions are detailed under each sub theme followed by our response. A ‘mention’ does not imply the sentiment of the comment, whether it was positive or negative or to what extent it was discussed in a submission. The number of mentions may, in some cases, be greater than the number of submissions received if the sub-theme was mentioned more than once in a submission. It is the number of mentions recorded overall in all 64 submissions.

Our response is of necessity set out generally speaking on a broad basis. References to any consequential changes made to the draft RWRP-EM Regional Plan, any clarifications required, and any other actions considered appropriate have been included. Also included is a consolidated summary of those changes and flow-on actions in the “Conclusions” section at the end of each of the following chapters.

It is acknowledged that there is a degree of repetition in some of the responses to the various sub-themes. This is to allow a reader interested in just one sub-theme to get a full picture of the response to it, without having to cross-reference the response given to other sub-themes.

Relevant feedback captured in the next section will be fed forward to those involved in the development of the remaining Regional Plans, South West, North West and South East.

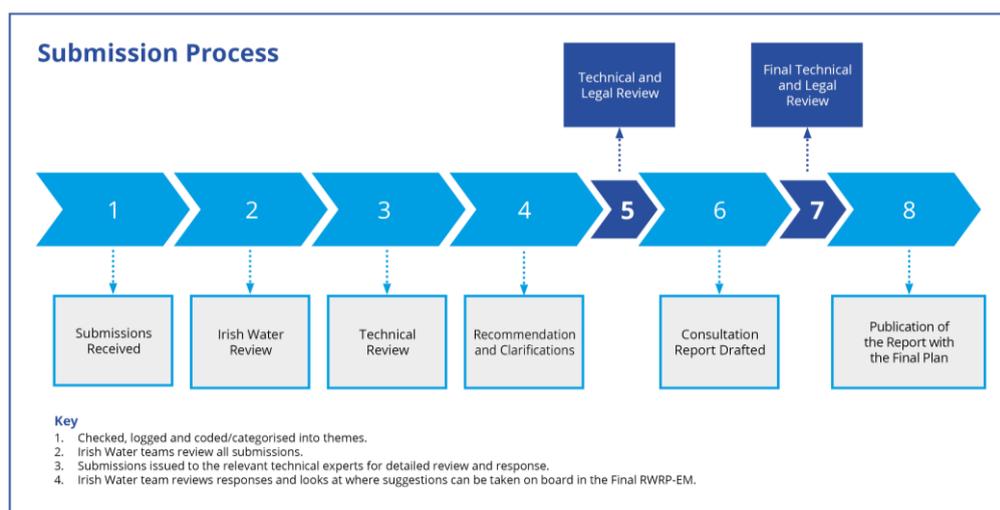


Figure 5.1 Submission Process

5.4 Submission Overview

The following figures present the results of the overall analysis of the 64 submissions. Figures 5.2 and 5.3 display the themes and sub-themes mentioned as a percentage of the overall mentions.

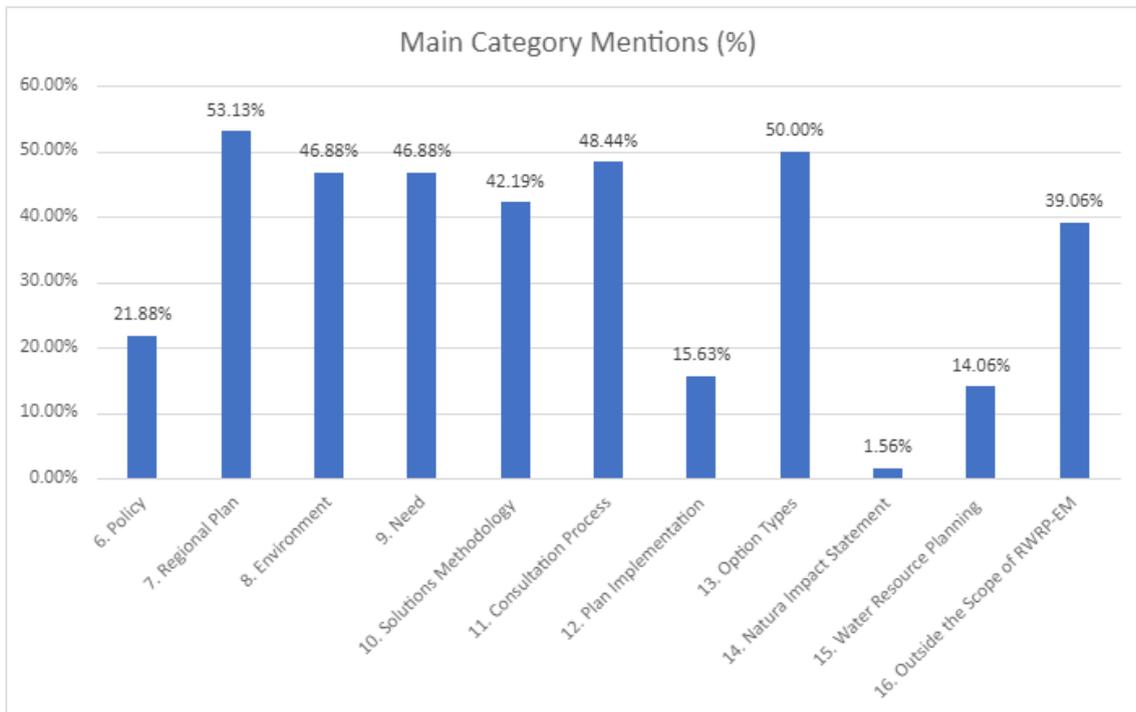


Figure 5.2 Theme Mentions.

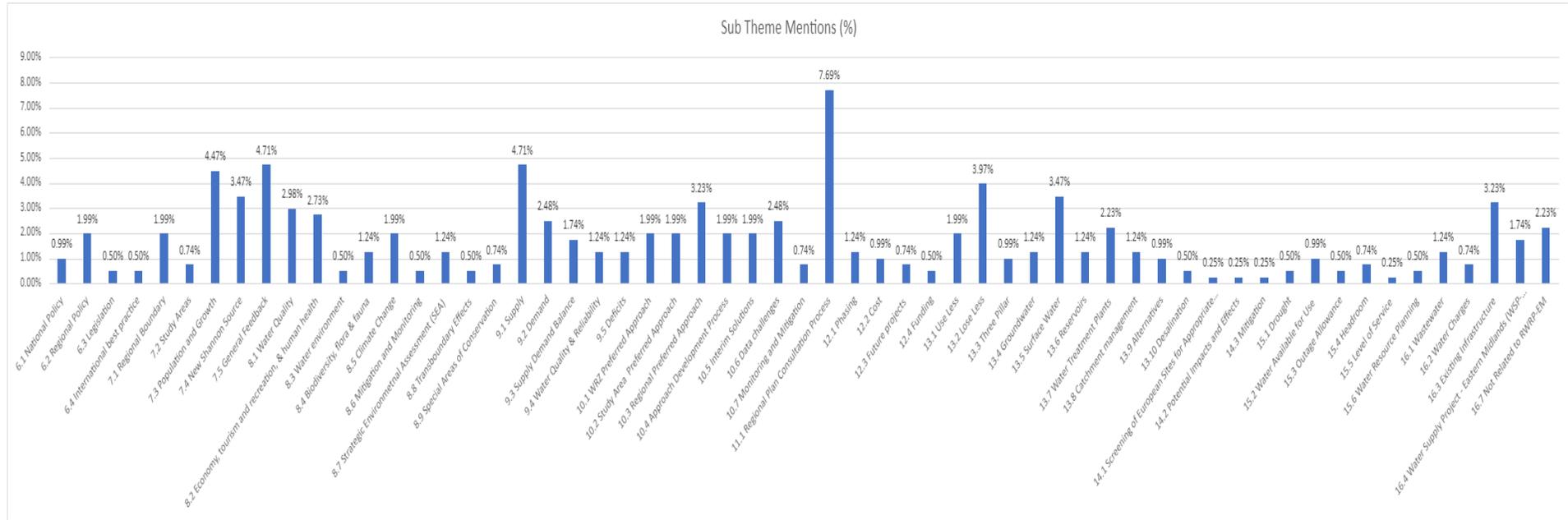


Figure 5.3 Sub-themes Mentions

6. Policy

In this chapter, we summarise the key references in submissions to issues under the broad theme of “Policy”. Within the overall Policy theme, we identified four sub themes, which we set out in Figure 6.1. We deal with each of these sub-themes in this chapter, setting out first a summary of the relevant mentions in the submissions, followed by our response. The sub-themes are not dealt with in any particular order.

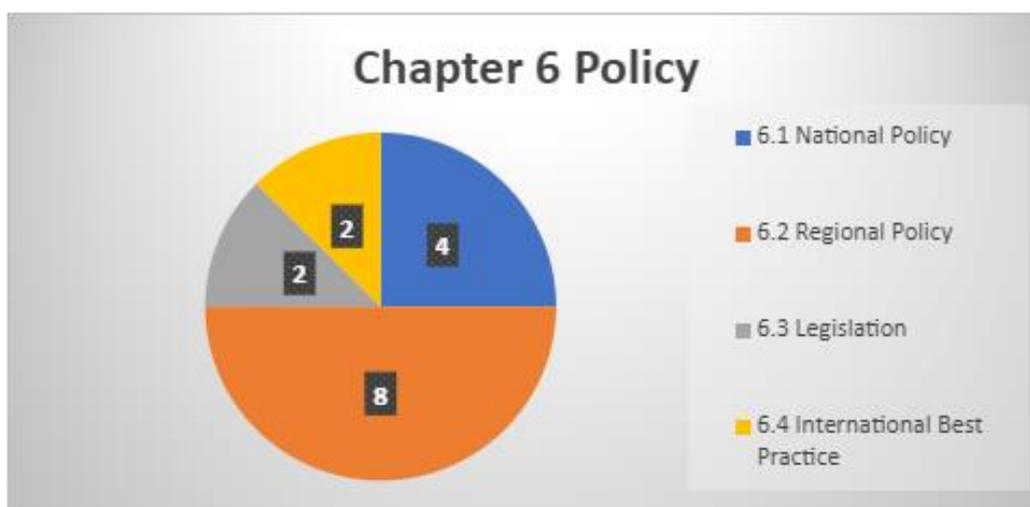


Figure 6.1 Policy Theme

6.1 National Policy

6.1.1 Summary of National Policy Feedback

Ibec noted that Irish Water must plan its future regional supply capacity in a manner consistent with the core objectives of the National Planning Framework (NPF) and the National Development Plan (NDP) especially in terms of facilitating compact, urban growth.

Ibec highlighted its recent advice to the Government’s Planning Advisory Forum regarding linking plan-making to the census cycles as key to ensuring that core decisions better reflect current demand. They also questioned the accuracy of the current NDP process being based on 2016 and 2011 statistics and highlighted the importance of the Census 2022 population figures being analysed to meet the first targeted review of the NPF.

Ibec advised a review of the Housing Needs Demand Assessment undertaken by each local authority, and across the regions. Ibec also welcomed Irish Water’s consultation paper that acknowledges the need to refine its demand projections as new information becomes available.

The Environmental Protection Agency (EPA) advised that Irish Water should ensure consistency and alignment between the draft RWRP-EM plan and the environmental objectives in the other three RWRPs and national plans.

The EPA welcomed the inclusion of Table 9.2 – Cumulative Effects with other plans and programmes. They outlined that the consultation on the draft National Policy Statement on Geothermal Energy for a Circular Economy is currently ongoing and suggested that it may be useful to also take it into account.

The EPA welcomed the clear commitment to supporting the relevant objectives of the NPF and the Regional Spatial Economic Strategies (RSES) to better align with the population and growth projections, both at a national and a regional scale. They noted that it allows for the coordination of water services, supporting infrastructure planning and national, regional and county level land use planning and ensures that the relevant environmental commitments made at both national and regional level are reflected in the Plan.

The EPA acknowledged the inclusion of Figure 2.5 in the draft RWRP-EM, which shows the linkages between the planning system and Irish Water’s plans and programmes.

The Office of the Planning Regulator (OPR) highlighted it as critical that the draft RWRP-EM is based on the population growth forecasts set out in the NPF and the three RSESs. This, they stated, would help achieve a more balanced regional development for the targeted growth of cities, regional growth centres, and settlements identified for significant growth in each RSES.

The OPR also welcomed the clear identification of the settlement hierarchy as noted in national planning policy, including City, Regional Growth Centres, and Key Towns.

6.1.2 Response to National Policy Feedback

Irish Water acknowledges the importance of utilising up to date population projections when determining demand for water supply as noted within the submissions of Ibec, the EPA, and the OPR. Irish Water confirms that growth projections used within our draft RWRP–EM were based on best available data from the NPF and RSES’s at the time of compiling our draft RWRP–EM. Irish Water also notes that a workshop was held with each local authority planning and water services section to review data and information in advance of the publication of the RWRP-EM.

A key objective of the RWRP-EM is to ensure that water infrastructure can support the proposed growth policies at national, regional and county level. Irish Water will ensure that any future demand projections are informed by the most

current national, regional and local demographic data available at the time of their making and revised appropriately, if required. Irish Water will update the Supply Demand Balance with the 2022 census data. Updated data and information such as new census data, will be incorporated via the monitoring and feedback process in section 8.3.8 of the Framework Plan.

In response to the EPA submission querying the interaction of the RWRPs, Irish Water confirms that the environmental objectives are defined in the Framework Plan and will be applied consistently across all RWRPs, and a cumulative assessment of the impacts will be completed in each subsequent RWRP.

6.2 Regional Policy

6.2.1 Summary of Regional Policy Feedback

Roscommon County Council (RCC) noted the projected growth figures for the County is estimated at 6,500 – 7,500 up to 2026 with a projected growth of 9,500 – 10,500 by 2031 with all towns and villages in the south of the county identified as potential growth settlements and development pressure areas.

RCC noted that in the County Development Plan (CDP) 2021-2027 for Roscommon the Monksland portion of Athlone is not covered in terms of zoning but that the 2021-2027 CDP will be aligned to National and Regional Planning Policy. They added that zoning provisions for Athlone will be included in their Joint Urban Area Plan, which is to be prepared by RCC and Westmeath County Council although the timeframe for this joint plan has not yet been set out.

The draft Joint Urban Area (JUA) Plan covers the Roscommon portion of Athlone, and it allocates 658 new residential units to Monksland between 2021 and 2027, representing a population increase of 1,763 over the lifetime of the JUA plan. The draft CDP has set the policy framework for the JUA, and it is in the JUA that the detail relating to Monksland will be included.

The Southern Regional Assembly (SRA) stated that their priorities for investment are identified in the RSES and Metropolitan Area Spatial Plans (MASPs) for Cork, Limerick-Shannon and Waterford, which came into effect on the 31 January 2020. They commented that in line with the NPF and the NDP, the plans set a 12-year statutory strategic planning and economic development framework for future economic, spatial, and social development of the Southern Region to become one of Europe's most "Creative and Innovative", "Liveable" and "Greenest" Regions.

The SRA added that the Regional Policy Objectives (RPOs) of direct relevance to the implementation of the NWRP include RPO 4 Infrastructure Investment and RPOs 7-10 Investment and Delivering.

The SRA argued that in order to see a unified NWRP, it is important to commit within the final plan that Irish Water will coordinate with each Local Authority to refine assumed demand and growth rates in alignment with the approved Core Strategies of each City and CDP in the Region. The SRA also called for investment in required water infrastructure to deliver each Core Strategy. They also argued that, in order to support rural town and village regeneration for a strong rural economy, it is important that Local Authorities receive support to implement Core Strategy distribution of growth to smaller settlements, including services that support serviced sites and new Housing in Small Towns and Villages Programme initiatives.

Meath County Council (MCC) highlighted that the current RSES for the Eastern and Midlands Region focuses on healthy placemaking, economic opportunities and climate action in the region. They added that investment in water infrastructure will be required to ensure the sustainable development of the region. MCC referenced some of the Strategic Investment Priorities for water set out in the RSES, including the Eastern and Midland Regional Water Supply Project being expanded to supply other communities and investment by Irish Water to tackle leakage through find and fix, and water mains rehabilitation.

The Rural Water Programme of MCC stated that the RSES strongly supports rural regeneration which, they highlighted as key to their future vision for County Meath as set out the County Development Plan (CDP). MCC see Irish Water as a key part of this process in partnership with Local Authorities, developers and communities to ensure that sustainable water services solutions are presented and implemented.

MCC welcomed the participation of Irish Water in the review process of the Meath CDP 2021-2027 that was adopted on 22nd September 2021 and came into effect on 3rd November 2021. They added that ongoing interface between the Planning Department and the Irish Water Spatial Planning Team is essential. MCC detailed their CDP's Core Strategy vision, with the main goal of supporting the creation and sustainable development of progressive, dynamic and healthy communities throughout the County, delivering a high-quality living and working environment that meets the needs of all residents.

MCC outlined their CDP's main priorities, which they reported are required to align with National and Regional policy objectives. The priorities MCC referenced in their submission included:

- Metropolitan Growth in Dunboyne, Maynooth, Kilcock; Directing future growth towards key designated settlements such as Drogheda and Navan. Creating sustainable “live work” communities.

- Investment in rural towns and villages to combat the decline of rural areas, including a ‘New Homes in Small Towns and Villages’ initiative between Local Authorities, infrastructure agencies, and local communities to boost economic development and rejuvenate rural communities.

MCC argued that a safe, reliable, secure water supply is necessary to allow them to realise these objectives. They called for resource planning to be aligned clearly with their development priorities and detailed objectives set out in their CDP.

MCC stated they have been proactive in their approach to Economic Development in the county in recent years and cited the publishing of their Economic Development Strategy for County Meath 2014-22, which they stated provides the framework for revitalising and accelerating economic development in the county. They noted that the Strategy was formally launched in June 2015 with a target of creating 7,500 jobs by 2022 and stated that a review of this strategy is due in early 2022.

MCC reported that the Economic Development Strategy identified key strategic sites in Navan, South Drogheda Environs, Dunboyne, Ashbourne, and Kells. They added that their successful implementation of the Economic Strategy allowed the Meath CDP 2021-2027 to identify 7 additional strategic employment sites. They reported that in some cases these sites are located in areas with high incidences of outbound commuting, combined with a high-quality skill set profile among residents.

MCC added that they intend for these sites to function as regional anchors for enterprise and employment growth in the county, reducing the need for Meath residents to travel outside the county for employment. They then argued that the availability of a safe, reliable, secure water supply is a critical factor in enabling continued economic development in the County.

Clare County Council’s Strategic Economic Initiatives Unit (CCC-SEIU) highlighted the RSES for the Southern Region, which recognises the spatial and economic suitability of the University of Limerick and South Clare site as a Strategic Development Zone (SDZ), and a Strategic Employment Location, subject to the provisions of the Planning Act and all environmental considerations. They also note that the designation of these lands as an SDZ is identified as a National Enabler in the Limerick-Shannon Metropolitan Area Strategy Plan, and has the support of regional land-use and economic policy through the SRA.

CCC-SEIU noted that the development of the University of Limerick - Clare Campus has been a matter of strategic importance for the wider region for over 20 years, having first been identified for expansion in the 1999 Clare CDP and

subsequently in the Mid-West Regional Planning Guidelines. They added that the Clare CDP 2017-2023 and draft Clare CDP 2023-2029 zone lands as 'University' for the future development of the University of Limerick – Clare Campus.

They stated that this zoning is logical in the context of the previous expansion of the University across the River Shannon into County Clare in 2001, and the expansion to date resulting in 40% of the UL campus now being in County Clare. They also note that the proposed SDZ correlates with the land zoned as 'University' in the Clare CDP 2017-2023. CCC-SEIU then highlighted that ultimately the lands within the UL SDZ and existing University of Limerick including water and wastewater infrastructure are served from treatment plants in the administrative area of Limerick City.

CCC-SEIU noted that the draft RWRP-EM appears to view infrastructure and water supply solutions and proposals for Limerick as strictly aligned to administrative boundary areas rather than in alignment with economic and urban planning reality and land use policy, specifically the RSES and the Clare CDP.

The OPR highlighted it as critical that the draft RWRP-EM is based on the population growth forecasts set out in the NPF and the three RSES. This, they stated, would help achieve a more balanced regional development for the targeted growth of cities, regional growth centres, and settlements identified for significant growth in each RSES. The OPR also noted that the draft RWRP-EM includes areas from both the Eastern and Midlands (EMRA) and Southern (SRA) regional assembly areas, including two of the five designated cities in the NPF; Dublin and Limerick.

The OPR added that the EMRA and SRA have both prepared a Metropolitan Area Spatial Planning (MASP) for the cities Limerick and Dublin and their metropolitan hinterlands, as required by the NPF, which identifies locations for strategic employment and residential development areas. The OPR noted that the intent is for MASPs to act as strategic planning and investment frameworks for the city metropolitan areas, addressing high-level and long-term strategic development issues such as capacity issues for water and wastewater infrastructure.

The OPR noted that the RSES sets specific population targets for their respective cities and metropolitan areas. They also noted that the growth to 2044 identified in the draft RWRP-EM is generally consistent with the RSES and NPF. They then advised that direct reference to the Metropolitan Areas, such as the Limerick-Shannon Metropolitan Area, inclusive of Limerick City and Suburbs, and the Remainder of the Metropolitan Area, would provide greater consistency across all of government policy.

The OPR highlighted that the Dublin MASP identifies the need for water network and storage upgrades as key infrastructure for various strategic development areas, including the Metropolitan Key Towns of Bray, Fassaroe, Maynooth and Swords.

The OPR argued it is not clear if all relevant growth factors have been considered in respect of the relevant RWRP-EM study areas, before recommending that this is accounted for if not, given the key role of the areas in delivering the RSES. The OPR then argued that the assumption in the draft RWRP-EM that growth in non-domestic demand will be offset with efficiency measures outside of the Greater Dublin Area (GDA) and regional growth centres should be assessed against the EMRA and SRA RSES. They also argued that the draft RWRP-EM needs to recognise that policies in the RSES support significant employment growth in MASP settlements outside the immediate city area in locations such as Bray, and also in some 'Key Towns' such as Carlow and Ennis.

The OPR welcomed the commitment in the draft RWRP-EM to align and deliver on the objectives of each RSES and coordinate with local authorities to invest in water infrastructure to service the core strategies of city and county development Plans.

The OPR welcomed the clear recognition in the draft RWRP-EM region of the two 'Regional Growth Centres' of Drogheda and Athlone, which were designated in the NPF to act as regional economic drivers and supports for their wider catchment areas. They also noted that the EMRA RSES identifies the 2031 target populations for Drogheda and Athlone as 50,000 and 30,000 respectively, before arguing that it is important that these targets are reflected in the estimates used to inform demand in the RWRP-EM study areas.

The OPR highlighted to Irish Water that development plans for many of the 'Key Towns', are now adopted, with further plans due to be adopted within the coming months. They further confirmed that in each case, the core strategy was considered to be consistent with the population growth of the RSES. Clare County Council's Planning Department's Economic Development Directorate argued for a more balanced regional investment programme in order to deliver on the objectives of the NPF. They added that Clare County Council would welcome the opportunity to engage with Irish Water in developing such a plan.

Clare County Councils Planning Department, Economic Development Directorate (CCC- PDEDD) stated that they were preparing a new Clare CDP 2023-2029 and added that the consideration of the draft RWRP-EM was therefore timely in terms of forward planning and the plan-making process.

CCC- PDEDD added that, for the first time, the life cycle of CDPs countrywide would be largely aligned with each other, presenting an opportunity for Irish Water to align the capital investment programme cycle also. CCC- PDEDD stated that this would provide certainty for local authorities in preparing their core strategy and land-use zoning of settlements, which they argued is essential to plan for effective and sustainable settlement growth. This, they added, was of relevance for rural counties and in far greater need than a water infrastructure plan.

CCC- PDEDD highlighted the Opportunity Sites identified in various settlements within the County where their redevelopment would make a positive contribution to employment generating uses. They added that there are 19 Opportunity Sites identified in Ennis, with technical guidance provided for each. CCC- PDEDD argued that the potential domestic and non-domestic demand generated by the delivery of these sites must be considered in the water supply considerations.

Tipperary County Council (TCC) noted that in Irish Water's submission on Tipperary's draft CDP 2022-2028 that there is water capacity to cater for growth in Newport and Ballina within the lifetime of the CDP. TCC also noted the current Supply Demand Balance (SDB) deficit in the Newport Regional Water Supply Scheme. TCC voiced concerns about insufficient capacity to cater for the sustainable delivery of growth within settlements where a deficit is identified over the lifetime of the CPD and beyond. TCC added that they would welcome clarification of water supply deficits in the context of the Irish Water submission to the Draft CDP and early engagement with Irish Water to understand the implications for sustainable development of these settlements, where potential deficits are identified.

TCC noted that Irish Water data relating to population forecasts, economic trends and tourism were gathered before the onset of the Covid-19 pandemic. They argued that trends patterns may therefore need to be revised by Irish Water. TCC noted that Census 2022 will provide updated data, which they said will need to be accounted for in the data modelling.

TCC anticipated that Irish Water's key considerations will be potential changes to demographics in relation to commercial and office settings, changes in hospitality and tourism impacts. TCC highlighted to Irish Water that the Chief Executive's Report on the Draft CDP outlines proposed material amendments to the Core Strategy (including growth targets), which were due to be considered by the elected members of TCC at their meeting on 14 March 2022. They added that any such proposed amendments would be published on the TCC website.

TCC also anticipated that, subject to the necessary resolution of their elected members, the proposed material amendments to the Draft CDP will be placed on public display in due course.

6.2.2 Response to Regional Policy Feedback

Many of the submissions received under this section welcome the commitments made in the Framework Plan and RWRP-EM to align with the NDP, RSES and Regional Growth Centres but also query how future plans and data in relation to population growth and economic development will be taken into account in the plan.

Irish Water's approach to population forecasts is set out in more detail in Section 4.3.2.1 of the Framework Plan. As set out in Section 2 of the RWRP-EM, a key objective of the RWRP-EM is to ensure water infrastructure can support the proposed growth policies at national, regional and county level. Irish Water confirms that growth projections used within our draft RWRP-EM were based on best available data from the NPF and RSES's at the time of compiling our draft RWRP-EM. Irish Water also notes that a workshop was also held with each local authority planning and water services section to review data and information in advance of the publication of the RWRP-EM.

Irish Water will ensure that any future demand projections are informed by the most current national, regional and local demographic data available at the time of their making and revised appropriately, if required. Irish Water will update the Supply Demand Balance with the 2022 census data. Updated data and information such as new census data and impact of Covid 19, will be incorporated via the monitoring and feedback process in section 8.3.8 of the Framework Plan.

We recognise the ongoing work between the Regional Assemblies and the local authorities over the course of the development of the Local Authority Development Plans. As these plans are finalised, Irish Water will incorporate the increasingly refined growth rates into our demand forecasts through the monitoring and feedback process set out in Section 8.3.8 of the Framework Plan.

A number of submissions referred to Municipal Area Spatial Plans, Strategic Development Zones and Regional hubs, noting that water services infrastructure would be required to facilitate development in these areas. Irish Water can confirm that this is taken into account in the RWRP-EM.

The RWRP-EM determines a preferred approach to resolve need at Water Resource Zone (WRZ) Level. Metropolitan Areas and Strategic Development Zones such as the Limerick-Shannon Metropolitan Area and the proposed South Clare/University of Limerick Economic Strategic Development Zone form

part of the WRZ. Irish Water can confirm that growth projections for these areas are included in the WRZ growth projections. Details of local infrastructure required to service these areas will be considered in more detail at project level. To provide clarity on this point, in the final plan, we have provided reference to Metropolitan Areas and Strategic Development Zones in Section 2 and provided additional text in Section 6.4 in regard to project level assessments.

As identified in the Framework Plan, the NWRP is the framework for delivering the objectives set out in Irish Water's Water Services Strategic Plan. Two of these objectives are "Support Social and Economic Growth" and "Invest in our Future". These objectives align our strategy with both the NPF and the NDP. By transforming our water supplies to ensure that they are safe, secure, reliable, and sustainable, we are striving to ensure that measures to support growth and economic development, incorporate protection of the natural environment and resilience to climate change. These objectives are part of the service measure framework for our regulated capital investment plans and are one of the factors considered in driving investment decisions.

We note the concerns of a number of local authorities that the Regional Water Resources Plans (RWRPs) do not align with the regional assemblies' spatial areas or local authority boundaries. In light of the scale of information to be assessed and presented, along with the fact that this is the first water resource plan in Ireland with a fragmented supply, it was considered necessary and prudent to divide the public water supply system into the four Regional groups. These regional boundaries are only relevant for the development of the first NWRP and have been identified as the most appropriate way to allow Irish Water to identify Preferred Approaches for each WRZ in an efficient and timely manner.

The formation of the four regional groups (described below) was determined based on the following criteria;

- **The Water Resource Zone boundaries:** To represent our current supplies. Due to the disproportionate volume of WRZs in the country, for administration of the roll out process, the area has been split into four regional groups.
- **Local Authority boundaries:** This allows us to align the Local Authority Development Plans to our Supply Demand forecasts, and to assess the full options assessments process with our colleagues in the Local Authority Water Services Sections. In some cases, the Local Authority areas had to be split for delivery purposes.

- **Environmental Impact:** As far as possible, designated water body catchment (or at least sub-catchment areas), as delineated by the EPA under the River Basin Management Plan, have been used.
- **Irish Water Operational Regions** (North and West, Eastern and Midlands, and Southern Region): In order to allow us to optimize the staffing resources during the roll out of the four RWRPs.

We confirm that the four RWRPs are a mechanism for delivery of this iteration of the NWRP, and that the outputs from the RWRPs for all supplies will be assessed nationally and prioritised on an equivalent basis for future investment plans. Irish Water is regulated by the CRU, and one of the prioritization criteria for our investment plans is Growth and Economic Development. When prioritising growth projects through Irish Water's Capital Investment Plans, we will ensure that these decisions are based on dialogue with the RSES and local authority housing and planning functions. We also recognise the obligations to comply with our regulator for water quality and the environment, the EPA, and the requirements stipulated in relevant legislation and regulations.

Where possible, investment plans are aligned with local authority housing and planning functions to support development. However, it should be noted that there are significant legacy issues across our supplies, and it will take many capital investment cycles to resolve these issues. The phasing and timeframes for delivery of individual projects will be determined through the capital investment process with continual dialogue with the Regional Assemblies and local authority housing and planning functions.

In response to MCC and SRA, Irish Water also recognises the need for balanced development and the need to support rural communities. Irish Water is committed to facilitating rural growth through the "Small Towns and Villages Programme." Details on the programme can be found on our website. <https://www.water.ie/news/green-light-for-21-additi/>

However, it should also be noted that all supplies from the largest to the smallest are considered within the NWRP, with needs assessments and Preferred Approach developments conducted for every one of the 539 supplies nationally.

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 regard to the TCC submission on the difference between the capacity register and the SDB, the SDB looks to provide a 1 in 50 level of service. This equates to a 2% probability of failure. Achieving this Level of Service will reduce impacts to our customers during dry weather and/or extreme events. In the capacity register we are looking to allow development while maintaining the existing level of service across our supplies. This is to ensure we can allow connections while we are improving the Level of Service across our supplies.

6.3 Legislation

6.3.1 Summary of Legislation Feedback

Meath County Council (MCC) stated that the RSES highlights that Irish Water will need to consider contingency plans to address any potential delays in the delivery of projects to ensure resilience of water supply for the Eastern and Midland Region. MCC voiced their support for the need to address long-term water supply for the Dublin region, adding that some areas of Meath currently obtain their water supply from these schemes. They also noted that it is proposed that SA3 will also obtain water supply from the New Shannon Source (NSS) project. MCC stressed the importance that the potential for delay to projects is considered as, in some cases, projects are dependent on legislative changes such as abstraction legislation.

Dublin Chamber voiced concerns about the delayed progress of the required water abstraction legislation, which they stated has been under discussion since 2018. They added that this delay risks presenting another obstacle to the timely execution of the New Shannon Source (NSS) project.

6.3.2 Response to Legislation Feedback

Irish Water welcomes the support expressed by MCC in relation to the ongoing Irish Water efforts to address the long-term water supply needs of the Greater Dublin Area. Irish Water acknowledges that some of these efforts such as the New Shannon Source (NSS) are dependent upon legislative updates and may thus be subject to potential delay.

Section 7.6 of the RWRP outlines the process for developing interim options to address critical water quality and quantity issues while we deliver our Preferred Approaches through the coming investment plans. Using this process in the interim, short term capital maintenance solutions have been identified for all

WTPs and these solutions are referred to in Section 6 of the Study Area Technical Reports.

These interim measures for the GDA are outlined in Section 6 of the Technical Report for Study Area 9 and include capacity upgrades to existing water treatment plants.

These interim solutions alongside leakage and water conservation measures will allow us to maintain the existing Level of Service (LoS) to our customers while facilitating growth prior to the delivery of the Preferred Approach and, in the long term, these solutions will improve resilience in the network and improve the security and reliability of the supply to the GDA.

Chapter 3 of the 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.

Irish Water will take into account any relevant new legislation that impacts water supply and will update the RWRP-EM if required in accordance with the feedback and monitoring process set out in section 8.3.8 of the Framework Plan.

6.4 International Best Practice

6.4.1 Summary of International Best Practice Feedback

Future Proof Clare highlighted that the Independent Expert Panel for the Legal Definition of Ecocide define 'Ecocide' as unlawful or wanton acts committed with knowledge that there is a substantial likelihood of severe and either widespread or long-term damage to the environment being caused by those acts.

They highlighted that over-extraction of water from the river, agricultural and domestic pollution of rivers, fracking, mining and industrial contamination, would all be classed as forms of Ecocide. Future Proof Clare urged Irish Water to take a stand against such crimes.

An Forum Uisce (AFU) took the view that Irish Water should have more emphasis on their 'green agenda', illustrating how they are aligning their plans with both national policies, such as the Climate Action Plan, and international policies, such as the EU Green Deal, Paris Agreement and the UN Sustainable Development Goals.

6.4.2 Response to International Best Practice Feedback

The NWRP is Ireland's first water resources plan, which includes over 530 fragmented WRZs. Ireland is behind other European Countries and the UK (United Kingdom) in terms of our information, guidance and practices in water resource management; however, Irish Water, in the preparation of this first national water resources plan, is taking a significant first step in closing that gap. As there are no specific guidelines for water resource planning in this jurisdiction, Irish Water investigated the approach taken in England, Scotland and Wales (countries with established practices and guidance on water abstractions) and conducted significant stakeholder consultation in the development of the Framework Plan (which includes the Methodology) and the RWRP-EM.

We are satisfied that we have utilised the best possible methodologies, considering the condition and stage of evolution of the public water supply in Ireland, and that we have ensured that the RWRP-EM was as comprehensible as possible and includes the best available data at the time of completing the reports. Irish Water acknowledges that information and data will develop over time and the NWRP facilitates a monitoring and feedback loop in addition to the commitment that the plan will be reviewed at regular intervals.

The delivery of the Preferred Approach, together with the decommissioning of some potentially unsustainable WTPs demonstrates Irish Water's commitment to achieving sustainable abstraction thresholds across the region. These measures will ensure that the water supply activities in the region support Ireland as a country in meeting its obligations under the Water Framework Directive.

Climate change considerations are built into our methodology and form an integral part of the plan. Please see section 8.5 of this Consultation Report ("Climate Change") for further information.

Irish Water is not in charge of regulating or authorising planning permissions; however, Irish Water is asked to provide observations on planning applications which may impact drinking water sources. This may include explorative drilling near ground water sources, septic tanks near groundwater and surface water sources and developments which may result in discharges to waterbodies upstream of drinking water abstractions.

Irish Water is fully committed to the "green agenda". In their submission on the RWRP-EM, the EPA welcomed Irish Water's existing national programmes, (i) Source Protection Programme, (ii) Reservoir Cleaning Programme, (iii) Disinfection Programme, (iv) Lead Mitigation Programme, (v) Trihalomethane reduction works in place to protect and provide for clean and wholesome drinking water.

The EPA welcomed that Irish Water are committed to fully adhering with the World Health Organisation of source protection and seeks to establish drinking water safety plans across all supplies under Irish Water's remit. Implementation of source protection measures will require further collaboration with several stakeholders including, riparian owners, industry groups, the agricultural, forestry and environmental sector and Teagasc. In recognition of the importance of multi-stakeholder engagement and collaboration in managing shared natural resources, Irish Water are members of an expert group chaired by the Department of Housing Local Government and Heritage (DHLGH) to make recommendations to the Minister regarding a new approach to drinking water source protection as part of the transposition of the recast Drinking Water Directive.

6.5 Conclusions on Policy Feedback

Having carefully reviewed the submissions received on the theme of Plan Implementation, Irish Water considered that more clarity on the project development process should be provided in the RWRP-EM. This change is explained in section 6.5.1 "Clarifications" below. In addition, some of the points made in the submissions will be taken forward in other ways, as explained in section 6.5.2 "Recommendations" below.

6.5.1 Clarifications on Policy Feedback

The following section of the RWRP-EM has been updated to reflect feedback under the theme of Policy Feedback:

Section 2 - Reference to Metropolitan Areas and Strategic Development Zones is now provided.

Section 2 - Provision of new text regarding Ireland's commitments to reducing carbon emissions.

Section 6 - Provision of a new section, Section 6.4 Project Level Summary, which discusses how data will be reviewed at project level and how details such as Metropolitan Areas and Strategic Development Zones will be considered at project level.

6.5.2 Recommendations on Policy Feedback

1. Irish Water will continue to consult with the RSES and local authority housing and planning functions on population and growth forecast and in the development of Capital Investment Plans.
2. Irish Water will update the Supply Demand Balance based on the 2022 census data. Updates to the Supply Demand Balance will be

incorporated via the monitoring and feedback process in section 8.3.8 of the Framework Plan as set out in Section 2 of the RWRP-EM.

3. Irish Water will take into account any relevant new legislation that impacts water supply and will update the RWRP-EM if required in accordance with the feedback and monitoring process set out in section 8.3.8 of the Framework Plan.

7. RWRP-EM Regional Plan

In this chapter, we summarise the key references in submissions to issues under the broad theme of “Regional Plan”. Within the overall Regional Plan theme, we identified five sub themes, which we set out in Figure 7.1. We deal with each of these sub-themes in this chapter, setting out first a summary of the relevant mentions in the submissions, followed by our response. The sub-themes are not dealt with in any particular order.



Figure 7.1 Regional Plan

7.1 Regional Boundary

7.1.1 Summary of Regional Boundary Feedback

Future Proof Clare highlighted that, as the county of Clare is split into two separate regions in the NWRP, it may cause difficulties in the preparation of County Development Plans and other such county, or regional based planning structures.

Future Proof Clare recognised that water sources span county boundaries but noted that most democratic structures operate within county boundaries and see this as being likely to cause competition for water investment between neighbouring counties rather than collaboration. They requested that the regions in the RWRPs should be mapped on existing regional planning divisions.

Clare County Council Physical Development Directorate noted that as the North and West supply areas of county Clare have not been considered in the draft

RWRP-EM. They raised concerns over not taking a whole of county approach. They outlined an example of the import of water from the Lissycasey Group Water Scheme TG4-SA8-05 considered as an option but not the impact of this export to the area to the west and north of Clare.

The Southern Regional Assembly (SRA) noted the clarification that the boundary in the RWRP-EM is determined by the boundaries of the Irish Water Operational Regions, WRZ boundaries, water supply delivery areas, water body catchments and sub catchments. The SRA further welcomed the clarification that once the first NWRP has been finalised the relevant regional groupings will have no ongoing application. The SRA expects that the Region's other Key Towns close to the boundaries of this RWRP-EM are being addressed in the subsequent RWRPs for the South West and South East water region catchments.

The Environmental Protection Agency (EPA) noted that this Regional Plan is one of four and more a reflection of Irish Waters internal management processes and that the final decisions on the Regional Water Resources Plan will consider all four regional plans in an integrated manner.

Clare County Council Strategic Economic Initiatives Unit (CCC-SEIU) commented that it appears in the draft RWRP-EM plan that the areas of County Clare to the middle and west of Study Area 8 have not been considered in any meaningful way and the areas to the south and east of County Clare have not been considered in the context of the larger Regional Options or the Preferred Approach Regionally.

They raised concerns that the draft RWRP-EM views infrastructure and water supply solutions and proposals for Limerick strictly aligned to administrative boundary areas rather than in alignment with economic and urban planning reality and land use policy – specifically the Regional Spatial and Economic Strategy (RSES) and the Clare County Development Plan (CDP).

They further requested that greater emphasis would be placed on Shannon Town in the draft RWRP-EM and that the Irish Water proposals would cater for the existing and planned sustainable development of the settlements in the Strategic Development Zone (SDZ) and South Clare and references same in the text and maps of the RWRP-EM by reference to 'UL – SDZ'.

CCC-SEIU queried the inclusion of Study Area 8 in the Eastern and Midlands Area given the geographical difference between it and the eastern part of the country where lower levels of rainfall are recorded. CCC-SEIU sought clarity to ensure that any GDA water supply scheme utilising the Shannon system does

not jeopardise growth in Study Area 8. They noted there are no detailed plans in the draft RWRP-EM to deliver headroom to County Clare from the New Shannon Source and that several key existing and proposed strategic developments in Clare are not sufficiently emphasised in the plan.

Clare County Council's Planning Department, Economic Development Directorate (CCC-PDEDD) agreed with the necessity for splitting the County by defining the regional boundaries but highlighted that this has no regard to the County's location within the Southern Region, nor alignment with other spatial or regional areas. They suggested a comprehensive approach to the long-term water resource planning for the County to ensure growth is provided for in a proper and sustainable manner which will also contribute to balanced regional growth.

CCC-PDEDD argued that the inclusion of part of County Clare in the Eastern-Midlands region is to include the proposed extraction point from Lough Derg, the New Shannon Source (NSS), to the GDA. They contended that this results in County Clare being split between two regions and compromises the complete assessment of the County as a whole, in terms of population and need. CCC-PDEDD reiterated its request that the boundaries be re-examined in order to allow the County to be considered in a holistic manner in terms of future supply needs.

CCC-PDEDD noted that Irish Water proposes to meet local authorities where the county is split between regional resource plans and highlighted it as essential that engagement with CCC is initiated at the earliest opportunity to provide clarity on the practicalities of the proposed county split and the implications for the future planning of the County.

CCC-PDEDD commented that the draft RWRP-EM diminishes the role of County Clare and the Southern Region within the text whereby it refers to Growth Centres and Key Towns but only those as set out in the Eastern and Midlands RSES and does not refer to those identified in the Southern RSES, citing Ennis as an example of this. They noted that the maps included in the draft RWRP-EM identify cities, regional centres and RSES Key Towns, but do not identify Shannon which is a Metropolitan Town as identified in the RSES and has a greater population than some of the other key towns identified. CCC-PDEDD requested that the RWRP-EM maps identify the Metropolitan Town of Shannon and show the Limerick-Shannon Metropolitan Area boundary.

Limerick Greens queried the definition and description of the draft RWRP-EM. They argued that there is no Eastern and Midlands region in Ireland that includes Limerick, the Shannon Estuary and other parts of the Mid-West region identified on the map in the draft RWRP-EM and that this is not consistent with the definition of regions by Ireland's regional assemblies or Project Ireland

2040. Limerick Greens questioned why Irish Water chose to define the Region this way. They include both the Mid-West and the Greater Dublin Area, noting it as an unsustainable proposal to take water from the River Shannon in the Mid-West to the East Coast.

Limerick Greens commented that the number of jobs that Irish Water details as currently in the Eastern and Midlands region is incorrect. They further commented that the statement in the draft RWRP-EM of a proposition for the development of larger interconnected WRZs for the urban areas in the region is materially incorrect as Limerick and Dublin are not in the same Region.

Limerick Greens remarked that the draft RWRP-EM uses blended figures citing an example that by 2044, the net Deficit across the Eastern and Midlands Region will increase by 141% in a normal year. This, they noted, makes it difficult to identify the key problem that Dublin cannot sustain further population growth without importing water from the Shannon. They pointed out that Limerick has not reached the limits of sustainable development and is not challenged by a water deficit, despite the use of what they termed blended statistics for the defined “region” that the draft RWRP-EM suggests.

7.1.2 Response to Regional Boundary Feedback

Many submissions under this section query the regional boundaries. In light of the fact that this is the first NWRP, with 539 WRZs and a very significant challenge in terms of historic underinvestment in water infrastructure to date, it was considered necessary and prudent to divide the public water supply system into the four Regional groups. These regional boundaries are only relevant for the development of the first NWRP and have been identified as the most appropriate way to allow Irish Water to identify Preferred Approaches for each WRZ in an efficient and timely manner.

The formation of the four regional groups (described below) was determined based on the following criteria;

- **The Water Resource Zone boundaries:** To represent our current supplies. Due to the disproportionate volume of WRZs in the country and for administration of the roll out process, the area has been split into four regions.
- **Local Authority boundaries:** This allows us to align the Local Authority Development Plans to our Supply Demand forecasts, and to assess the full options assessments process with our colleagues in the Local Authority Water Services Sections. In some cases, the Local Authority areas had to be split for delivery purposes.

- **Environmental Impact:** As far possible, designated water body catchment (or at least sub catchment areas), as delineated by the EPA under the River Basin Management Plan, have been used.
- **Irish Water Operational Regions** (North and West, Eastern and Midlands, and Southern Region): In order to allow us to optimize the staffing resources during the roll out of the four RWRPs.

Once the first NWRP has been finalised, it is comprised of the Framework Plan and four Regional Water Resources Plans which together will be treated as a unified plan. The relevant regional groupings will have no ongoing application. In particular, the Preferred Approaches identified in each RWRP will be prioritised collectively through Irish Water's planning and investment cycles. In other words, there will not be any difference in investment priority across the four regional groupings. Where local authority areas have been split, Irish Water will engage with the relevant local authorities following the finalisation of the RWRPs, on the outcomes for all of the water supplies in their areas.

The Regional Groupings are for delivery purposes only and will not impact the prioritisation of activities/interventions for upcoming capital investment plans. Growth and economic development will be one of the considerations during prioritisation. Irish Water will interface with the Regional Assemblies and local authority planning and development departments during this process as outlined in section 1.8.2 of the Framework Plan.

The RWRP-EM considers all WRZs in the Region, and a Preferred Approach for each is identified using the methodology set out in the Framework Plan, whether that is at WRZ, SA (Study Area) or Regional Level as appropriate. A Preferred Approach was determined for all WRZs in the West and Mid Clare areas that are included in the Eastern and Midlands Region. The remaining areas of Clare will be included in the Northwest Region.

The option TG4-SA8-05 to provide supply to Ennis from the Lissycasey Group Water Scheme was considered unfeasible at coarse screening stage due to the lack of the available supply and the length of main that would be required for a relatively small supply. Therefore, we did not consider the impacts of such an option further. However, where options to import water from group water schemes are considered feasible the environmental impacts of the import, including the environmental impact of the increased abstraction are assessed in accordance with the methodology and the potential for in combination environmental impacts with other options are also considered. In combination impacts with options outside the region will be considered in each subsequent regional report.

Each of the four RWRPs, together with their respective SEA Environmental Reports and Natura Impact Statement will ensure that consideration is given to the cumulative impacts and in-combination effects of the other RWRPs, and adjustments will be made to address those impacts to the fullest extent possible based on all available information.

The NWRP relates to a live and functional water supply, therefore “need” across our existing supplies is the starting point for our NWRP. Where need is identified, we then set about assessing options to address need. As continuity of water supply must be ensured whilst delivering NWRP, the existing asset base is the logical starting point.

In section 2.2 of the RWRP-EM there is a reference to the number of businesses supplied by Irish Water in the Region. This figure is correct as per the information available to us and does not reflect the number of jobs in the region.

7.2 Study Areas

7.2.1 Summary of Study Areas Feedback

Roscommon County Council noted that Appendix 5 Study Area 5 Technical Report identifies Roscommon as a principal settlement, but that Roscommon town is not included in the current Study Area delineation. They queried whether the Study Area delineation could be extended to cover all WRZs (Water Resource Zones) south of Roscommon town to include Roscommon town, which could then avail of a significant ground water resource located in Ballinagard, and address growth projections for Roscommon town.

Ibec noted that the grouping of 134 Water Resource Zones into nine Study Areas is a pragmatic decision but involved a degree of subjective judgement as to the commonalities in each Study Area. Ibec further noted that Study Area 9 is unusual in containing only one WRZ but agreed that there is no obvious advantage in sub-dividing it, or in merging it with another Study Area. They agreed that the Preferred Option for the Greater Dublin Area (GDA), and for the Eastern and Midlands region, would be unlikely to change consequently.

Clare County Councils Physical Development Directorate (CCC-PDD) highlighted that Ennis is connected to the Shannon and Sixmilebridge WRZ. They added that the trunk main between Dromoland Interchange Junction 11 on the M18 and Clareabbey roundabout on the N85 and the section along the M18 from Junction 12 Killoo to Junction 14 Barefield has not been commissioned. They argued that this should not be considered a combined WRZ until the main is commissioned.

7.2.2 Response to Study Areas Feedback

Roscommon is a key town that will be considered in the Regional Water Resources Plan North West. During the option selection process, all feasible options are considered. Irish Water can confirm that locations of proposed new supplies are not constrained by Study Areas or regional boundaries. When looking at proposed sources for the Roscommon WRZ in the North West region, options for transfers from sources or existing WRZs in the Eastern and Midlands Region will be considered.

The Study Area boundaries are based on WFD catchments and WRZ location and type (urban and rural). Further details on grouping WRZs into study areas are provided in Section 8.3.2 of the Framework Plan.

The areas of Ennis, Shannon and Sixmilebridge are covered by two WRZs;

- The Ennis WRZ which provides supply to the main settlement of Ennis and surrounding areas. And
- The Ennis/Shannon/Sixmilebridge WRZ which provides supply to Shannon Sixmilebridge and parts of the South East of Ennis.

7.3 Population and Growth

7.3.1 Summary of Population and Growth Feedback

A stakeholder queried the assumption that the Greater Dublin Region is set to grow to a figure approaching two million people in the coming decades in the context of balanced regional development with regards to the western half of the country. The Stakeholder noted that the development and enlargement of the cities of Cork, Limerick and Galway represents a more sustainable pattern of development for the state outside the Greater Dublin Region.

Roscommon County Council (RCC) highlighted that all towns and villages in the south of County Roscommon are identified as potential growth settlements, as noted in the National Planning Framework (NPF), with Athlone and Roscommon town being identified as particular areas with development pressure. They further noted that Athlone is identified as a Regional Growth Centre in the Eastern and Midlands Region and Roscommon Town is a key town in the region. RCC noted that Athlone is supported by a strong network of Key villages and provides secure employment and economic growth potential.

Deputy Fergus O'Dowd TD highlighted that Drogheda is designated as a centre for population growth in the National Development Plan (NDP) 2040 and will see incremental increases in population year on year.

Clare County Council's Physical Development Directorate noted that the RSES for the Southern Region identified Shannon for significant population growth, greater than a 30% increase by 2040. They asked that the Irish Water would include the uplift figures for Shannon/Sixmilebridge at 15.3% to 2044 and that these are further reviewed to ensure adequate future capacity is provided for growth. Clare County Council further highlighted that there is a variation on population figures shown in the draft plan from 239,750 and 233,560 and required clarity.

They also highlighted that there is no reference to the University of Limerick (UL) in the draft RWRP-EM plan despite having a student population of 16,500, and a planned expansion at UL and an anticipated 3,500 population by 2029, as noted in the Draft Clare County Development plan 2023-2029. They queried whether it has been included in the 52.7% growth figure for Limerick City environs and requested that its current and future requirements should be included in the plan.

Clare County Council Planning Department, Economic Development Directorate (CCC-PDEDD) highlighted that in Section 2.1, the reference to the most populated study areas within the regional plan are Study Area 9 GDA and Study Area 8, which includes Limerick City. They queried why the key towns of Ennis and Shannon were not referenced here.

CCC-PDEDD referenced section 2.2.2 of the Eastern and Midlands RSES and stated that a Water Supply Project is required to ensure that sufficient treated water is available to service the Growth Centres and Key towns identified in the strategy. CCC-PDEDD observed that no similar reference is made in the RWRP-EM to the Southern Region, or to Ennis or Shannon, both of which are identified as key drivers for both the County and the Region in the RSES and NPF. CCC-PDEDD requested that in finalising the RWRP-EM, Irish Water must be cognisant of the Core Strategy of the Draft County Development Plan 2023-2029 in terms of population and Housing Supply Targets allocation and distribution throughout the network of towns and villages as set out in the settlement hierarchy.

CCC-PDEDD noted that the projected population growth for Clare is now far lower than it was in the past, according to the NPF. They further highlighted that the timelines for the finalisation of the RWRP-EM and the Clare County Development Plan (CDP) 2023-2029 do not align and the new development plan will not be in place until after the completion of the RWRP-EM. They noted it as imperative that Irish Water has regard to the Draft Clare CDP 2023-2029, in terms of future population and Housing Supply Target allocation and distribution for the forthcoming CDP plan period. They requested that population targets set out in Table 2.2 of the dRWRP-EM should be refined to reflect the population targets set out in the Core Strategies of Local Authorities across the

Region.

CCC-PDEDD requested that regarding the population and housing supply target allocation and distribution in the Draft Clare CDP 2023-2029, the following projects must be provided for by Irish Water and considered within the Supply Demand Balance;

- Ennis Key Town - Ennis 2040 Economic and Spatial Strategy
- Limerick-Shannon Metropolitan Area
- Shannon Metropolitan Town
- South Clare/University of Limerick Economic Strategic Development Zone (SDZ)

Kildare Chamber agreed that improving the delivery and sustainability of water supply throughout our Island is vital for the continued growth of the mid-east region.

Councillor Pat Hayes argued that the draft RWRP-EM should allow for the growth of other towns such as Athlone, Wexford and Drogheda. Cllr Hayes commented that there is not much pay back for Clare, considering it will be helping all of these towns to grow around the country by supplying them with water. Cllr Hayes noted that in County Clare, the projected population growth is now far lower than it was in the past and that Leakage is a real problem.

The Southern Regional Assembly (SRA) noted that water infrastructure is fundamental to service growth, and it plays a critical role in achieving the RSES strategy outcomes for sustainable, planned and infrastructure led development. They highlighted that the Southern Region has significant growth projections as outlined in the NPF and RSES. The SRA welcomes the indication of growth for Limerick City of circa 60% by 2044 in the draft RWRP-EM but recommends that direct reference needs to be made to the growth of Limerick-Shannon Metropolitan Area.

The SRA requested that Irish Water ensures the metropolitan areas are given recognition within the NWRP in terms of their growth targets. The SRA noted that the population growth to 2044 set out in the draft RWRP-EM is marginally above the RSES and NPF Implementation Road Map July 2018 projections to 2031. They also commented that additional growth capacity for Study Areas 7 and 8 may be required for a more robust assessment of future demand (water demands from employment growth also needs to be factored and robust). The SRA requested that all Key Towns in the Southern Region that fall within the catchment of the RWRP-EM are serviced for at least 30% growth for water demands and for population and employment growth. They noted that the RSES population projection for Carlow, as outlined in the RSES, is a key component of the population growth to 2044 assigned to Study Area 6.

The SRA requested that Irish Water confirms that robust growth rates have been assumed to service that part of the Southern Region within Study Area 6 and await details of the draft RWRP for the South East to confirm that the Southern Region's South East Strategic Planning Area is serviced in full. They also noted that as the exact details of the next adjoining draft RWRP for the South West and the towns serviced within it are not included, the SRA advised that the Key Towns of Thurles (also in the northern part of Tipperary) and Newcastle West (in the southern part of Limerick) are taken into consideration and that it is confirmed servicing their growth targets will be included in the draft RWRP for the South West and South East regions as relevant.

The SRA noted and welcomed the statement that Irish Water recognises the ongoing work between the Regional Assemblies and the Local Authorities over the process of Local Authority County and City Development Plan reviews. As these plans are finalised, Irish Water will incorporate the increasingly refined growth rates into demand forecasts. This is critical as water supply and infrastructure investment to deliver the Core Strategy of each City and County Development Plan is needed to implement the NPF and RSES. The SRA recommends that this commitment is a key action under the NWRP.

An Forum Uisce (AFU) highlighted that population growth and expansion of businesses both industrial and agricultural are expected to increase pressures for water supply in the coming years. They noted that accurate projections are essential, as a proactive managerial approach to the available water resources and the necessary targeted infrastructure updates. AFU commented that future planning around water supply services will require data from reliable growth projections, along with data on IW's infrastructure and the environmental (water bodies) capacity.

AFU recommended that the population growth of settlements and cities, as noted in page 83 of the draft National Planning Framework (NPF) can be considered sustainable in terms of existing indicators of development such as the rate at which cities are expanding spatially versus the rate their population is growing, but not necessarily in terms of IW's supply capacity (hydrological yield, capacity of water treatment plants and reservoirs' capacity) to cover the increasing demand. As such AFU recommended an expansion on Table 2.2 of the draft RWRP-EM where the population growth projections are noted and should also include here, or in the respective Appendices, the city-specific projections to ensure there is adequate control on the supply at different regions within a county, where the city-specific population that is served by reservoirs must be known for detailed planning.

Furthermore, AFU noted that in page 37 – Table 2.3 of the draft RWRP-EM, it is important to know which of these water bodies are in areas with poor

infrastructure and significant population growth. AFU recommended an examination of the condition of the water bodies (surface and groundwater) and the infrastructure serving each demand node in combination with the expected future conditions. AFU noted that this information would help support the selection of preferred options, as it could reveal more challenges that could lead to alternative water allocation requirements.

Meath County Council commented that there has been substantial investment in water infrastructure in Meath over the last 15-20 years in response to the rapid growth in population experienced. They highlighted that as the population continues to grow in the county and the employment base expands, sustained investment in water infrastructure will be required to facilitate the additional demand from homes, businesses, and services.

The Environmental Protection Agency requested that in Chapter 2, Section 2.2, Growth and Development (page 19) of the draft RWRP-EM, the population of Limerick City should be amended from 0.93 million to 94,192 as per the CSO (Central Statistics Office), 2016 figure.

Tipperary County Council (TCC) noted that IW has developed a 10-year capacity register based on an amended Supply Demand Balance (SDB) to provide local authorities with an indication of settlements, which have potential capacity constraints and that this capacity register will be made available. TCC welcomed input into the proposed process which will involve an ongoing feedback loop between the Resources Planning process and the forward planning processes in Irish Water, the regional assemblies and the local authorities. This, they noted, will enable Irish Water to update the SDB annually in line with the data received, allow Irish Water to respond to growth and development needs and prioritise water supply investment in collaboration with local authorities with reference to the CDPs and Local Area Plans.

Clare County Council Strategic Economics Initiatives Units (CCC-SEIU) highlighted that both the NPF and the Limerick Shannon Metropolitan Area Strategic Plan, as set out in RSES, have identified significant growth and expansion of the Limerick-Shannon Metropolitan Area. They further commented that Shannon has not been captured in the draft RWRP-EM Plan and is absent from reference in text, policy, and mapping. They queried how the draft RWRP-EM identified solutions in the absence of this key growth area. CCC-SEIU noted it as critical that Shannon is identified on the maps associated with the Plan and is taken into consideration as part of the overall strategy for high growth centres and that significant consideration is afforded to the development of Shannon.

CCC-SEIU remarked that it was critical from a sustainable population and economic development perspective for the South Clare region, in line with Clare

County Council's vision and objectives, the Irish Water proposals cater for the existing and planned sustainable development of the settlements in the Strategic Development Zone (SDZ) and South Clare. They requested that Irish Water recognises same in the text and map of the RWRP-EM by referencing the 'UL – SDZ.'

They further considered that the capacity of the associated infrastructure and water treatment plants should be adequately sized, designed and planned for as part of this RWRP-EM to cater for the existing and proposed developments in South East Clare and in particular the proposed UL (University of Limerick) South Clare SDZ as expressed in the 2017 Clare CDP, the Draft CDP 2023-2029 and the RSES for the Southern Region.

CCC-SEIU noted that the Plan in terms of population forecasts for the RWRP-EM takes growth projections based on the best available data from the NPF and the RSES for the Southern Region. Clare County Council together with UL have submitted to Government an application for the designation of lands as the South Clare/ UL Economic SDZ in accordance with Section 166 of the Planning and Development Act 2000, by reason of its social and economic importance to the State. CCC-SEIU highlighted it as critical that the water supply (and wastewater treatment) forecasts take the proposed South Clare/ UL Economic SDZ into consideration in terms of the area identified as a high growth centre, which will necessitate connection to the proposed GDA scheme in order to ensure a reliable and sustainable water supply to this "National Enabler" as identified in the RSES.

The Office the Planning Regulator (OPR) requested that the draft RWRP-EM would be aware of the more detailed population and housing targets in the case of 'Key Towns' so that the timing and level of investment is aligned with the implementation of the NPF and RSES. The OPR noted that at present Table 3.8 – Population Growth Rate in the draft RWRP-EM contains generalised assumptions and growth rates for settlements and applies a growth rate based on the size of a settlement rather than its designation, which is not consistent with the RSES and further risks assuming a 'business as usual' growth pattern.

The OPR were unclear if the increase in the population allocations to the three metropolitan key towns of Swords, Maynooth and Bray agreed through the Dublin MASP Implementation Group has been incorporated into the population growth forecasts (Table 2.2) of the draft RWRP-EM. They highlighted the provision arising from National Policy Objective (NPO) 68 of the NPF, which allows that, 'A Metropolitan Area Strategic Plan may enable up to 20% of the phased population growth targeted in the principal city and suburban area, to be accommodated in the wider metropolitan area, i.e., outside the city and suburbs, or contiguous zoned area, in addition to growth identified for the Metropolitan area.'

Limerick Greens queried whether the Industrial and Economic growth potential of the Mid-West Area could be a viable alternative to the Shannon Pipeline Abstraction project. They noted that in the interests of the National Planning Framework (NPF), a more focussed industrial development of the Midwest of Ireland – to exploit the natural capacity of the Shannon environment, along with the Mid-West climatological advantage over the East, would strategically enhance the commercial and industrial potential of the Midwest and the appropriate and sustainable development of Tipperary, Limerick, Clare and Shannon Airport.

Dublin Chamber commented that the need to invest ambitiously in water infrastructure must also be seen in the context of past and projected population growth. They noted that historically there has been a recurring tendency in Ireland to underestimate growth, especially in the Dublin region. Dublin Chamber welcomed that the draft RWRP-EM acknowledges that the Eastern and Midlands region is expected to experience high levels of population growth and economic development reflected in the RSES. The NPF also notes that it will be a key future growth enabler for Dublin and the Greater Dublin Area. They further highlighted that failure to deliver a secure and sustainable water supply an essential infrastructure will hinder future economic growth and has the potential to have a negative impact on the quality of life in Dublin.

Dublin Chamber stressed that their principal concern relates to the urgent need for investment in the Region's water infrastructure to increase supply, thereby improving economic competitiveness and increasing national economic resilience.

Ibec raised concerns of the growth potential of the Eastern and Midlands Region being at risk due to inadequate commitment to providing essential water and wastewater infrastructure. Ibec noted that Census 2022 population figures must be quickly analysed to meet the first targeted review of the NPF, the RSESs and local development plans to support Irish Water in the delivery of a more effective, responsive, and cohesive water supply plan for the region.

Offaly County Council also requested that Irish Water take into account the population and housing target figures as set out in their submission during the life of the CDP.

7.3.2 Response Population and Growth Feedback

Irish Water welcomes the feedback in relation to population and growth considered in the draft RWRP-EM. Irish Water's approach to population forecasts is set out in more detail in Section 4.3.2.1 of the Framework Plan. As set out in Section 2 of the draft RWRP-EM, a key objective of the RWRP-EM is to ensure that water infrastructure can support the proposed growth policies at national, regional and county level. Irish Water confirms that growth projections

used within our draft RWRP–EM were based on best available data from the National Planning Framework (NPF) and Regional Spatial Economic Strategies (RSES's) at the time of compiling our draft RWRP–EM. Irish Water also notes that a workshop was held with each local authority planning and water services section to review data and information in advance of the publication of the draft RWRP-EM.

It should be noted that planning settlements are not exactly aligned with the existing water supply asset base, as our water supplies can serve large areas covering urban and rural settlements through an interconnected asset base. Where this is the case, we have attributed the differing growth rates to the proportion of the supply that is in the urban and rural settlements, in order to ensure that the overall growth is aligned with the figures obtained from the RSES and with the NPF. We recognise the ongoing work between the Regional Assemblies and the local authorities over the course of the development of the Local Authority Development Plans. As these plans are finalised, Irish Water will incorporate the increasingly refined growth rates into our demand forecasts through the monitoring and feedback process set out in Section 8.3.8 of the Framework Plan.

We also confirm that there are structured protocols and interface points for population growth updates through Irish Water's Forward Planning Team. The team Lead manages the stakeholder interface with the OPR and there is an Irish Water forward planning Lead assigned to interface with each of the three regional assemblies.

It is Irish Water's objective to meet future customers' needs in line with growth rates and land zoning as set out in the RSES, NPF and Local Authority Development Plans. Irish Water is satisfied that these growth projections represent the best available information at the time of writing, for the purposes of a plan level assessment.

Clare County Council pointed out a typo in the Study Area Technical Report for Study Area 8. The population in the Study Area 8 is now corrected to 233,560.

In response to the CCC-SEIU question on the lack of inclusion of certain key towns on maps, Irish Water notes that it was not possible to include all settlements and strategic development zones on maps providing an overview of the Eastern and Midlands region. Key towns as set out in the RSES were included to provide the reader with an understanding of the spatial scale of the region. There are 14 key towns in the Eastern and Midlands region, which are, Athlone, Carlow, Ennis, Limerick, Nenagh, Tullamore, Portlaoise, Naas, Maynooth, Navan, Drogheda, Swords, Bray and Wicklow.

Summary text is provided alongside these maps to provide the reader with a high-level overview of the area. This text outlines the most populated key towns in the region which are Dublin, Limerick and Drogheda.

Within our Framework Plan and RWRP-EM, we recognise that growth does not always result in an increase in non-domestic demand, and even though the population and economy are forecast to grow considerably over the coming years, we have limited non-domestic water demand to the regional Cities. We have also capped non-domestic growth within other settlements. In these areas, we will try to facilitate growth in non-domestic water use via efficiency improvements and water conservation. We will review policy and trends in relation to this over the coming years and refine our forecasts as per the monitoring and feedback process set out in section 8.3.8 of the Framework Plan.

As outlined in Section 4.4 of the Framework Plan, we acknowledged there may be some uncertainty in our estimation of future growth. Therefore, we have included a headroom allowance in our estimation of demand. Headroom is the safety margin which is applied to demand forecasts to allow for uncertainties in our calculations on both the demand side and the supply side. The allowance is calculated and added to estimated demand to provide a buffer in the supply demand balance and to ensure that the preferred approach is sized appropriately to meet future required needs.

The RWRP-EM determines a preferred approach to resolve need at Water Resource Zone (WRZ) Level. Metropolitan Areas and Strategic Development Zones, such as the Limerick-Shannon Metropolitan Area and the South Clare/University of Limerick Economic Strategic Development Zone, form part of the WRZ. Irish Water can confirm that growth projections for these areas are included in the WRZ growth projections. Details of local infrastructure required to service these areas will be considered in more detail at project level. To provide clarity on this point we have provided reference to Metropolitan Areas and Strategic Development Zones in Section 2 and provided additional text in Section 6 with regard to project level assessments.

A key objective of the NWRP is to determine solutions to address need at WRZ level. More specific detail relative to the WRZ, such as local reservoirs and populations served from them, or existing infrastructure condition, will be considered at project development stage. This is Ireland's first NWRP, with over 530 WRZs and a very significant challenge in terms of historic underinvestment in water infrastructure to date. There are no specific guidelines for water resources planning in this jurisdiction. Irish Water investigated the approach taken in England, Scotland and Wales and conducted significant stakeholder consultation in the development of the draft RWRP-EM. We are satisfied that we have utilised the best possible methodologies, considering the condition and

stage of evolution of the public water supply in Ireland, and that we have ensured that the draft RWRP-EM was as comprehensible as possible.

The EPA referenced a typo in relation to existing Limerick population this will be corrected in the final RWRP-EM.

Clare County Council's Physical Development Directorate noted a typo between the populations in SA8 in the Regional Plan and the number provided in the Technical Report. This is now corrected in the final version of the RWRP-EM.

7.4 New Shannon Source

7.4.1 Summary of New Shannon Source Feedback

A stakeholder noted that, as a landowner on the proposed route for the Shannon to Dublin water pipe, they would consider the proposed development to be against the principles of balanced regional development. They commented that the assumption that the GDA (Greater Dublin Area) is set to grow to a figure approaching two million people in the coming decades needs to be questioned in the context of balanced regional development with regards to the western half of the country. The stakeholder noted that, in their opinion, the development and enlargement of the cities of Cork, Limerick and Galway represents a more sustainable pattern of development for the state outside the GDA. They also noted that fresh water, as a natural resource of the midlands and west of Ireland, should be used as a resource for the development of the Mid-West region instead of extracting it and transferring it to the Dublin region, which is already facing congestion and overdevelopment.

The Stakeholder noted that water shortages in the GDA could be addressed by fixing the water leaks in the current water pipe network. The stakeholder commented that the laying of a pipeline across farming land and the permanent wayleaves that are expected will have a negative impact on the value of the farmland affected into the future, as well as not being able to build in the area near the pipe, or to consider farm forestry as an alternative land use option. They further noted that the disruption during the construction phase of this proposed project and the permanent damage to the soil profile of the land affected is a significant negative aspect of the proposed project.

A stakeholder queried whether desalination plants on the East coast have been considered as an alternative option. They noted the issues associated with water transfer from the Shannon to the East coast such as lowering the level of the Shannon waters, property acquisitions, rights of way, archaeological issues, environmental impact, landowner cooperation/buy-in, legal issues, contractor

access and egress issues.

Westmeath County Council (WmCC) agreed with the New Shannon Source (NSS) as the optimum solution for the Mullingar WRZ but remarked that the six approaches technique used to justify the proposal underestimates the financial, environmental, political and delay risks of a project of the scale of NSS. They considered it critical that a low-risk deliverable interim solution should accompany any recommendation to rely on the NSS and highlighted that many of the risks that apply to NSS are outside the control of Irish Water.

Clare County Council's Killaloe Municipal District stated they were opposed to the proposed use of the River Shannon as a main source of supply for the Eastern and Midlands region. They highlighted that the River Shannon is by far the greatest single natural resource in the Midlands and Mid-West of Ireland and its contribution to Tourism, employment, leisure, and recreation. They noted that any project which has the potential to interfere or undermine this asset should not proceed.

Future Proof Clare noted the River Shannon Protection Alliance and their concerns of how much water can be taken from the Parteen River Basin during the summer low flow conditions and they felt that any large-scale extraction, such as the proposed Shannon Pipeline, would have a detrimental effect on the ecosystems relying on the river and should be avoided.

Ibec commented that the New Shannon Source (NSS) and the Water Supply Project for the Eastern and Midlands Region must be advanced at the earliest opportunity. Citing that critical infrastructure will underpin new housing provision, the delivery of other key projects being delivered, and ensuring the region continues to secure inward investment. Ibec further noted that Ireland's current planning and consents system makes provision of this vital piece of infrastructure highly unlikely in the short-to-medium term and must be factored into the delivery timetable.

Kildare Chamber agrees that the New Shannon Source is the most suitable and sustainable model.

Wicklow County Council welcomed the New Shannon Source stating that the proposal is critical to ensuring that the capacity of Water Supply in the GDA is ahead of future Water Demand as the region grows and develops.

Councillor Tony O'Brien from Clare County Council raised concerns over the impact of such a project on the River Shannon and recommended that the communities along Lough Derg would need recognition of the impact on the county of such a project.

Meath County Council noted that the RSES highlights that Irish Water will need to consider contingency plans to address any potential delays in the delivery of projects to ensure resilience of water supply for the Eastern and Midlands Region. Meath County Council supported the need to address long-term water supply for the Dublin region as some areas of Meath currently obtain their water supply from these schemes. They noted it as essential that any potential for delays of the projects is considered in the current water supply in the region.

Limerick Greens commented that Irish Water should find sustainable solutions to any forecasted water deficit for the current population of the Greater Dublin Area, rather than the development of the New Shannon Source.

Limerick Greens queried if the New Shannon Source is likely to adversely influence the Planning Authority decisions on granting planning permission for new planning applications in the Limerick, Tipperary and Clare countryside. They highlighted that Zebra Mussels may affect the intake of the proposed pipeline as well as the maintenance operations to keep the opening of the pipeline free of algal growth, aquatic weeds and Zebra mussels, which may impact upon the conservation objectives of the Natura 2000 site.

Limerick Greens referenced the Breaches of the Climate Act 2021 Section 17 and how the new act requires bodies, including Irish Water, to act in a manner consistent with the Climate Action Plan and the National Climate Objective. They commented that building a pipeline will have negative effects on biodiversity as well as increasing emissions during its construction and use in comparison to resolving the issues with leaking pipes and introducing water conservation measures.

Limerick Greens further noted that climate change involves warmer waters, which may have a cumulative negative synergistic effect on biodiversity with the proposed Shannon pipeline abstraction. In addition, they noted that the EPA have projected that in the future period (2041 – 2060) there will be a 20% increase in precipitation in Winter and Autumn months, as well as increase in the number of dry periods during Autumn and Summer of up to 40% as a result of global warming.

They further queried how the proposed pipeline as a landscape feature will meet the objectives of the National Landscape Strategy for Ireland in terms of ecological, economic, social, and cultural identity. Limerick Greens requested that Irish Water outlines the process on which the New Shannon Source pipeline infrastructure will be monitored and maintained within agricultural lands to minimise leakage. Limerick Greens queried which County Council will be the responsible authority for the proposed pipeline project.

Councillor Johnny Flynn raised concerns about the environmental impacts of the proposed Water abstraction from Lough Derg in addition to Climate Change and that consultants would research it in detail prior to any future project Planning application. He suggested that further research on the issue would have to be funded by the Government and dealt with in parallel by independent and/or international Climate Change experts. Councillor Flynn had concerns about the societal impacts on farming practices in East Clare from the proposed Water Abstraction from Lough Derg.

A stakeholder commented that they felt the proposed pipeline project would result in a major carbon footprint and that the project would have a significant impact on biodiversity along with climate change. They felt that the alternatives to this pipeline, as already investigated, should be reconsidered as a matter of urgency.

7.4.2 Response to New Shannon Source Feedback

Many of the submissions under this section relate to the NSS (New Shannon Source), the impact of same and timeframe for delivery. This Consultation Report summarises the consultation conducted between December 14, 2021, and April 08, 2022. It was not a consultation of the Water Supply Project Eastern and Midlands Region, therefore, within this consultation report, we will review the submission in the context of the draft RWRP-EM.

The RWRP-EM has applied the methodology, as adopted in the Framework Plan, and through that process has identified preferred approaches at water resource zone, study area and regional level. Environmental considerations including biodiversity are reflected in the options assessment methodology.

All options identified in the draft RWRP-EM, including the construction elements, are subject to Strategic Environmental Assessment and Appropriate Assessment. As part of our options assessment process, environmental considerations represent 19 of the 33 total assessment criteria that are taken into account. The impacts of pipeline construction are factored into the environmental and social cost aspect of our feasible option's whole life costing. Further details on our assessment criteria can be found in Chapter 8 of the NWRP Framework Plan.

The NWRP assesses future demand based on population growth projections set out in the NPF, RSEs and the Local Authority Development Plans. This estimated future demand informs the size and scale of feasible solutions required and thus informs the Preferred Approach.

The Plan identified a significant deficit for the Greater Dublin Area (GDA) and a pipeline from Shannon to Dublin was identified as the Preferred Approach for Study Area 9 (GDA) and subsequently at a Regional Level. This New Shannon

Source option, when compared to 11 other feasible combinations of solutions, was determined as the solution with the least impact to the environment and more information can be found in Appendix 9 of the RWRP-EM. Desalination solutions were considered as feasible options for the Greater Dublin Area at fine screening, however, were discounted via the option selection process and more information on that can be found in Appendix 9 of the RWRP-EM.

The Regional Preferred Approach allows for interconnectivity between 37 Water Resource Zones (including the GDA). The 37 WRZs would all be balanced off an interconnected network based on sustainable levels of abstraction, improved resilience and wider growth potential across regional towns and villages with low leakage networks. The regional approach will also allow Irish Water to decommission 6 potentially unsustainable abstractions. The delivery of interconnectivity in unison with leakage reduction in these supplies will, for the first time, provide appropriate levels of service in these areas.

The alternative proposed by the consultee is to retain a fragmented supply with no interconnectivity based on unsustainable abstractions, where there is limited flexibility for growth, with low leakage networks. Leakage reduction and the transformation of our supplies should not be seen as competing activities, but instead as a joint requirement.

The draft RWRP-EM has determined that the volume of water required is available from the new Shannon Source, as assessments have been undertaken to establish the allowable abstraction. This is an estimate of the water that can be taken from the source whilst maintaining the required environmental flow and it has followed the methodology set out in Appendix C of the NWRP Framework Plan. At project level, additional more detailed assessments will be carried out.

It should be noted that the River Shannon is the largest river in Ireland and its catchment covers 20% of the island of Ireland. It is a slow-moving water body with significant volumes of storage throughout the catchment due to the presence of lakes. This means that flood events last for long periods, however it also means the water body is less vulnerable to droughts as there is significant storage during dry weather events. It means it is a good source for water supply. The proposed abstraction is from an impounding reservoir / dam, which means it is possible to store water during periods of high rainfall, and during a drought period, the abstraction will be taken from this storage, without impacting on flows downstream of the dam.

The NWRP considers interim options to address critical need as set out in section 8.3.7.6 of the Framework Plan. The potential interim solutions for the GDA include, *inter alia*, increasing output at Leixlip WTP and Ballymore Eustace WTP. These works would be facilitated by optimisation of Storage at

Poulaphouca by works to reduce the level of the abstraction inlet and/or by modifications of existing storage levels. These works have not been considered in the calculation of the Water Available for Use (WAFU) as they do not provide a new source on a long-term basis and therefore, they will not increase the volume of water available for use in a 1 in 50 dry weather event.

As set out in Section 7 of the RWRP-EM, carbon and biodiversity are key criteria considered in the development of the Preferred Approach. The Best AA, which is the approach likely to have the least impact on European Sites (biodiversity) and the Approach with Least Carbon Cost, are considered during the Approach Appraisal stage.

7.5 General Feedback

7.5.1 Summary of General Feedback on Plan

Several stakeholders acknowledged the level of work Irish Water has put into developing the draft RWRP-EM and welcomed the proposals to construct infrastructure to provide a more sustainable and robust water supply to the Greater Dublin and surrounding areas water supply to Dublin.

Ibec noted that during last year's consultation on the draft Framework Plan, Ibec facilitated a series of briefings for members of its Transport and Infrastructure Council (T&IC) and their feedback indicated broad support for the approach being proposed by Irish Water.

County Kildare Chamber agreed with Irish Water, that a more secure, resilient, and sustainable delivery system is needed urgently over the next two decades.

The Southern Regional Assembly (SRA) commended the depth of evidence base analysis and scenario testing undertaken and documented in the draft RWRP-EM including the identification of needs, status of infrastructure and supply, modelling for climate change, option developments across separate 134 Water Resource Zones, nine Study Areas and the development of Regional Options, including technical reports for each study area in the appendices.

The Environmental Protection Agency (EPA) welcomed the comments made in their previous submission at SEA Scoping Stage for the RWRP-EM, which have been considered in preparing the draft Plan and associated SEA. The EPA welcomed that the EPA State of the Environment Report 2020 (SOER) has been considered and acknowledged that Section 5.2 of the SEA ER identifies the key aspects of the SOER that are of relevance to the draft RWRP-EM.

The EPA also acknowledged that the draft Plan clearly identified the water-service related issues and challenges (including the supply of water services

and water quality aspects). They welcomed the existing national programmes, including the source protection programme, reservoir cleaning programme, disinfection programme, lead mitigation programme and trihalomethane reduction works in place to protect and provide for clean and wholesome drinking water.

Tipperary County Council (TCC) welcomed the draft RWRP-EM plan and associated documentation. They also acknowledged the importance of this plan to provide a safe, secure, reliable, and sustainable water supply in County Tipperary for the present and future.

Clare County Council's Strategic Economic Initiatives Unit (CCC-SEIU) noted that as a Local Authority it fully supported the preparation of this draft RWRP-EM Plan, which is coming at a critical time for the county as it moves into a phase of economic recovery post the Covid-19 global pandemic.

The Office of the Planning Regulator (OPR) welcomed the work undertaken to date in preparing the draft RWRP-EM and for the opportunity to comment. The OPR also commended Irish Water for preparing a Non-Technical Summary and an information leaflet. The OPR welcomed the preparation of the draft RWRP-EM, as investment in water services infrastructure is critical to the implementation of the National Planning Framework and the Regional Spatial and Economic Strategies. The OPR further acknowledged the positive working relationship between the OPR, and Irish Water and the thorough assessments Irish Water carries out of local authority statutory plans in its day-to-day work.

Clare County Council's Planning Department, Economic Development Directorate (CCC-PDEDD) welcomed the opportunity to make this submission on the draft RWRP-EM and noted that the development of such a plan-led approach to resource planning of such a critical piece of national infrastructure is commended.

The Commission for Regulation of Utilities (CRU) welcomed this significant milestone publication in the ongoing development of Irish Water's National Water Resources Plan (NWRP). The CRU appreciated that Irish Water's structured review of water supply needs for the Eastern and Midlands Region, as a key component of the NWRP, should enable Irish Water to make better investment decisions while simultaneously improving the transparency of that decision-making process.

A stakeholder remarked they were disappointed with the draft RWRP-EM and commented that it is not a lack of a sustainable supply of raw water, but issues with maintaining current water pipe infrastructure, that is the predominant issue.

Kennedy Analysis (KA) commented that the RWRP-EM is inappropriate and financially wasteful and cited the Kielder Project in the UK (United Kingdom) as an example for reference.

7.5.2 Response to General Feedback on Plan

Most respondents welcomed the opportunity to engage on the draft RWRP-EM and requested further stakeholder engagement and ongoing collaboration with Irish Water. Irish Water will continue to consult with stakeholders and interested parties throughout the development of the RWRPs.

One of the key objectives of the NWRP is to improve transparency. Although it is not a legislative requirement in this country, Irish Water committed to the completion of an NWRP within its Water Services Strategic Plan. A search of published information from other jurisdictions, including publicly available water resource plans in the UK, shows the extent to which Irish Water has sought to provide the correct level of detail as part of our first NWRP to ensure it is understandable such as to facilitate public consultation to the fullest extent possible.

The NWRP is a 25-year strategy to ensure we have a safe, sustainable, secure, and reliable drinking water supply for everyone. The NWRP has involved, and will continue to involve, extensive consultation with relevant authorities, stakeholders, and the public. Irish Water will continually review all policies and consider the impact of these on Ireland's enterprise base.

This is Ireland's first NWRP, with 539 WRZs and a very significant challenge in terms of historic underinvestment in water infrastructure to date. There are no specific guidelines for water resources planning in this jurisdiction. Irish Water investigated the approach taken in England, Scotland and Wales and conducted significant stakeholder consultation in the development of the draft RWRP-EM. We are satisfied that we have utilised the best possible methodologies, considering the condition and stage of evolution of the public water supply in Ireland, and that we have ensured that the draft RWRP-EM was as comprehensible as possible.

Largescale infrastructure projects can be difficult to evaluate using standard cost benefit or net present value assessments, which favour capital deferral as opposed to longer term investment in resilience which can provide benefit to the wider economy, customer base and environment spanning across generations.

These difficulties have been observed historically on all projects. In fact, similar issues were raised at the feasibility stages of the original water supply from Vartry to Dublin in the 1850s. Archive newspaper clippings from the time and parliamentary debates lauded the project was considered to be a "white

elephant” completely un-necessary and a waste of money. The supply successfully served the city for 70 years until the drought in the 1920’s when the scheme was reinforced to include more storage, and the Liffey supplies were commenced in the 1940s.

The entire modern economy of Ireland has been built off these generational infrastructure projects.

7.6 Conclusions on Regional Plan Feedback

Having carefully reviewed the submissions received on the theme of Regional Plan, Irish Water considered that more clarity on certain points should be provided in the RWRP-EM. This change is explained in section 7.6.1 “Clarifications” below.

7.6.1 Clarifications on Regional Plan Feedback

The following section of the Framework Plan has been updated to reflect feedback under the theme of Policy Feedback.

Section 2 - Reference to Metropolitan Areas and Strategic Development Zones is now provided.

Section 6 - Provision of a new section, Section 6.4 Project Level Summary, which discusses how data will be reviewed at project level and how details such as Metropolitan Areas and Strategic Development Zones will be considered at project level.

Appendix 8 Study Area 8 Technical Report - Correction of typo, the population in the Study Area 8 is now corrected to 233,560.

8. Environment

In this chapter, we summarise the key references in submissions to issues under the broad theme of “Environment”. Within the overall Environmental theme, we identified nine sub themes, which we set out in Figure 8.1. We deal with each of these sub-themes in this chapter, setting out first a summary of the relevant mentions in the submissions, followed by our response. The sub-themes are not dealt with in any particular order.

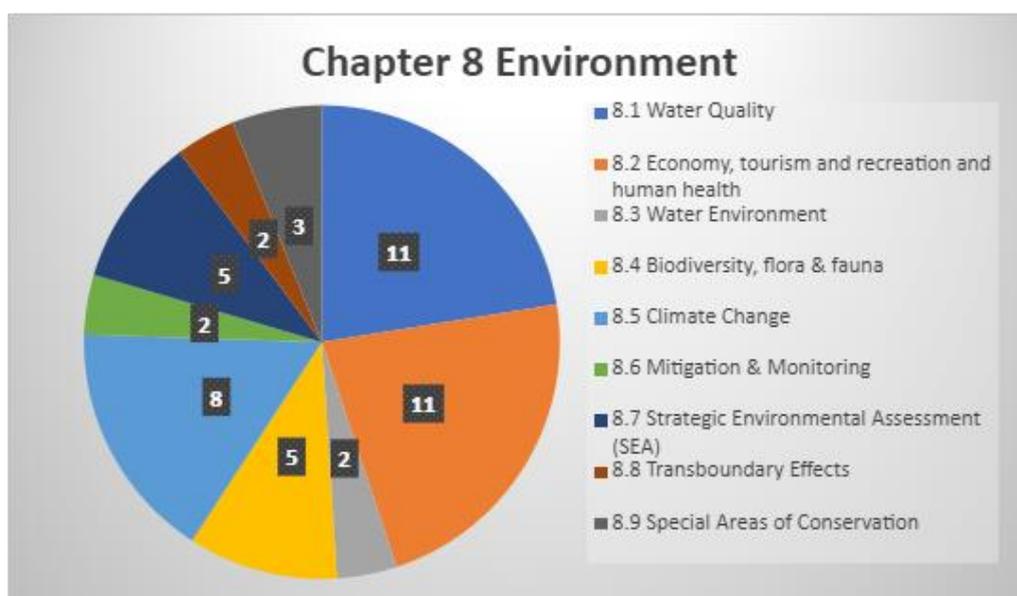


Figure 8.1 Environment

8.1 Water Quality

8.1.1 Summary of Water Quality Feedback

A member of the public commented on the deterioration of water quality in Lough Derg year on year and queries this water source being considered as a new source of supply in the draft RWRP-EM.

Another Stakeholder raised the issue of water quality in the area of Middle Third, Killester, Dublin. The Stakeholder noted previous communication with Dublin City Council and Irish Water and reported the quality of the water, and high level of calcium/mineral deposits. The Stakeholder noted that mineral/calcium deposits has damaged every kettle, coffee machine they have owned over the past number of years.

The stakeholder queried if replacing the lead pipes or even rerouting the water through new pipes in Middle Third, Killester is included in the draft RWRP-EM as it would solve all issues, increase water supply, get rid of lead, and negate the use of calcium to line the pipes.

Wicklow County Council highlighted that there are water quality issues that cannot be dealt with in a local capacity and cited 17 consumers in Ballymorris Public Supply that have been on a Boil Water Notice for over two years and noted that this issue is also on the Environmental Protection Agency's Remedial Action List.

The Southern Regional Assembly promoted the use of Nature Based Solutions for water protection and wastewater treatment, which they commented have a significant potential to deliver biodiversity, improve water quality, reduce flood risk, and create habitats.

The EPA welcomed that Irish Water are committed to fully adhering with the World Health Organisation of source protection and seeks to establish drinking water safety plans across all supplies under Irish Water's remit. They noted it as important for Irish Water to continue to identify and implement actions and mitigations to address those risks identified through the drinking water safety plan approach.

The EPA recommended a reference on page 138 of the draft RWRP-EM to Local Authority Waters Programme (LAWPRO) and queried whether bodies such as Teagasc, in relation to the Agricultural Sustainability and Advisory Programme (ASSAP), have been engaged with to assist in efforts to reduce agriculture-related sources of pollutants in waterbodies used as drinking water sources within the region.

Tipperary County Council (TCC) welcomed Irish Water's Disinfection Programme and is actively engaging with Irish Water in the rollout of same. TCC requests that all Tipperary water supplies be include in this programme.

TCC noted Irish Waters commitments to develop a representative raw water sampling strategy within five years, to develop a live water quality reporting mechanism within an appropriate timeframe and to develop a strategy to improve understanding of supply risk including Source Risk Assessment studies, supply assessments, source surveys, source monitoring and source models to facilitate greater understanding of supplies and the roll-out of appropriate studies.

TCC welcomed that Irish Water have prioritised the preparation of Drinking Water Source Protection Schemes (DWSPs) to protect human health by identifying, scoring and managing the risks to water quality and quantity. TCC welcomed future engagement with Irish Water to protect drinking water.

Councillor Johnny Flynn highlighted that there is currently inadequate treated water storage in Ennis Reservoirs. Councillor Flynn cited the EPA Drinking Water Audit Report (Jan 2008) that reported problems with leakage, lack of

level probes, chemical storage issues, potential ingress of pests and deliberate introduction of any liquids or acts of vandalism in the Distribution System namely the water Reservoirs.

OCC referred to Section 4.5 in the draft RWRP-EM, regarding ongoing works such as the installation of new boreholes at Rathdrum and Jones Well Water Treatment Plant (WTP), upgrades to the Athlone WTP, and distribution network repairs and upgrades across all Study Areas. They highlighted Jones Well WTP has not been progressed to date.

A stakeholder noted that there was no mention in the consultation materials of adjusting the hardness of supplied water. They voiced the opinion that those in areas with hard water, such as Ennis, would contribute towards overall environmental reduction if water hardness were reduced. They added that softer water is less likely to affect water heating apparatus, thus reducing the need to repair or replace these. They added that treating water hardness at the point of use site may be more environmentally costly than treating it at the supply stage. They added that hardwater has a negative impact on the environment, due to the energy needed to heat calcium-rich water, and the chemical production, transport and usage associated with washing and cleaning with hardwater. They also noted the environmental impact of producing and disposing of water filters and softening devices used in removing excess limescale.

8.1.2 Response to Water Quality Feedback

All water supplied by the public water supply must comply with the Drinking Water Directive. Irish Water takes a risk-based approach to our water supplies using the World Health Organisation's drinking water safety plan methodology. This ensures that our water treatment plants are designed based on the type of water abstracted from any given source and the treatment processes put in place are designed to remove all contaminants. Irish Water is currently in the process of completing drinking water safety plans for all supplies. All public water sources, including groundwater and surface water, involve water treatment.

Hardness is a natural characteristic of much of Ireland's drinking water supply. Hard water contains high levels of natural minerals absorbed from rock and soil. Hard water is not harmful to health. In fact, the higher mineral content may offer health benefits above that of soft water.

Irish Water does not chemically soften hard water for the following reasons:

There are no health risks involved in drinking and using hard water

Softening water removes beneficial minerals from hard water

There is no legislative requirement to remove hardness from drinking water

Depending on the technology used, artificially softened water may not be suitable for everyone to drink. For example, increased Sodium levels caused by salt softening may not be suitable for infants or at-risk groups.

Hard water can create an internal protective film on lead pipes or fittings. This can prevent metals such as lead leaching into drinking water supplies.

Irish Water has published suggestions for managing hardwater in domestic appliances, which can be found at <https://www.water.ie/help/water-quality/hard-water/>

The RWRP-EM has determined that there is significant need across the region. This need is associated with the lack of historical investment in water supply. The delivery and implementation of the NWRP will not delay critical asset interventions to address water quality issues across our supplies being delivered as part of Irish Water's National Disinfection Programme, which will continue to be delivered according to the current process. Additional programmes to improve resilience such as reservoir storage and network connectivity will also continue. This is outlined in Box 8.1 in the Framework Plan. The Preferred Approach for Ennis includes the provision of additional storage, and this will be prioritised through future investment cycles.

We note the submission made by WCC (Wicklow County Council) in regard to Water Quality Issues at the Ballymorris Supply. It is noted in the draft RWRP EM and in the Technical Report for Study Area 1 that Ballymorris is on the EPA RAL (Remedial Action List). The Preferred Approach for this supply is to rationalise the WTP to the Arklow supply and we are currently working on the design of this solution.

Irish Water recognises the increasing importance of nature-based solutions and catchment measures in relation to improving water quality and reducing risk across our supplies. Irish Water is an active participant in catchment-based initiatives and where possible will incorporate NBS solutions at project level.

As part of the rollout of the Drinking Water Safety Plans, we will consider catchment measures to reduce source risk to our supplies, and we will actively engage as a stakeholder in catchment initiatives. Further information on our source risk assessment is included in Box 5.2 in section 5.5 and cross referenced in section 5.9 of the Framework Plan.

Implementation of source protection measures will require further collaboration with several stakeholders including, riparian owners, industry groups, the agricultural, forestry and environmental sector and Teagasc. In recognition of

the importance of multi-stakeholder engagement and collaboration in managing shared natural resources, Irish Water are members of an expert group chaired by the Department of Housing Local Government and Heritage (DHLGH) to make recommendations to the Minister regarding a new approach to drinking water source protection as part of the transposition of the recast Drinking Water Directive.

Also, Since 2015, Irish Water has been an active member of the National Pesticides and Drinking Water Action Group (NPDWAG). The NPDWAG is chaired by DAFM and was formed to provide a coordinated and collaborative approach to prevent the ongoing prevalence of pesticides in catchments used for the abstraction of drinking water. Members include Teagasc, the IFA (Irish Farmers Association), ICMSA (Irish Creamery Milk Supply Association), APHA (Animal and Plant Health Association) and local authorities among others more information on source protection and catchment management activities can be found in Box 2.4 of the RWRP EM.

Reference to LAWPRO, Teagasc and the Agricultural Sustainability and Advisory Programme (ASSAP) and their role in source protection measures has now been provided in Section 5.4 of the RWRP EM.

8.2 Economy, tourism and recreation and human health

8.2.1 Summary of Economy, tourism and recreation and human health feedback.

Clare County Council Killaloe Municipal District highlighted that the River Shannon is the greatest single natural resource in the Midlands and Mid-West of Ireland and as such is a major Tourism attraction that should not be put at risk. Killaloe District outlined that the River Shannon's contribution to not only tourism, but also to employment, leisure and recreation is enormous and that any project with the potential to interfere or undermine this asset should not proceed.

Kennedy Analysis (KA) commented that Irish Water's economic projections give the assumption that Dublin will be among the fastest growing developed cities in the world and that Covid will have little impact, despite the increased popularity of remote working. KA supported that Dublin would experience economic growth but requested that where Irish Water is already aware of Covid implication, that these must be accounted for where it concerns Dublin's economic growth.

The Inland Waterways Association of Ireland (IWAI) noted the omission of any reference to the canals as a contributor to tourism and recreation in Section 2.2.4 of the draft RWRP-EM. The IWAI stated that all users of the canals and their towpaths have the potential to contribute to the economic development of canal side regions. They also stated that canals raise the tourism profile of these waterways and are aligned closely with the Fáilte Ireland's tourism programmes Ireland's Hidden Heartlands and Ireland's Ancient East. IWAI welcomed the recognition by Irish Water of the importance of the Lough Owel supply to the Royal Canal and that reinstatement of this supply to maintain canal water levels will further drive tourism development in the midlands in years to come.

Fáilte Ireland noted that the draft RWRP-EM touches on all four regional experience brands; Wild Atlantic Way Region, Dublin, Ireland's Ancient East and Ireland's Hidden Heartlands. Fáilte Ireland requested that the draft RWRP-EM takes account of the needs of tourism and visitors. Fáilte Ireland highlighted its role to advocate for the sensitive development of Ireland's natural, built and cultural assets, which form the cornerstone of Irish tourism, and where appropriate, to support the protection of key tourism assets and amenities in the context of development proposals.

Fáilte Ireland noted the impact of insufficient water infrastructure on tourism such as; a negative impact on the image of Ireland as 'clean green' destination, the development and promotion of on water and in water activities, prevention of further development of tourism infrastructure such as accommodation due to lack of capacity in areas, as well as the potential negative implications for the tourism industry whereby additional visitor numbers are putting additional pressure on an already inadequate, or absent treatment systems.

The Environmental Protection Agency (EPA) noted in Section 2.2.4 Tourism and Recreation in the draft RWRP-EM to consider referring to the Waterways Ireland Tourism Masterplan for the Shannon.

The Office of the Planning Regulator requested assurance that that future housing and other development is aligned with existing and planned water supply infrastructure.

Clare County Council Planning Department Economic Development Directorate noted that in County Clare water demand is hugely influenced by peak tourism season and maintaining a secure water supply to customers must be a critical function of Irish Water. Clare County Council requested that the associated increase in tourism demand on the water supply must be reflected in the Irish Water Supply Demand Balance.

Limerick Greens highlighted that the Parteen basin area has a scenic wild landscape that is frequently utilised by anglers and queried the extent to which the introduction of an abstraction point and the WTP at Ballina could change the visual amenity and natural aesthetics of the landscape.

Limerick Greens further queried if the traditional boating navigational routes to local fishing spots will be impacted by lower water levels in the lake due to the cumulative impact of abstractions with the Shannon Pipeline project. They also queried how Irish Water will obtain feedback from boat users on Lough Derg to ensure these stakeholders are not affected if the preferred approach proceeds.

A Stakeholder commented that fresh water as a natural resource of the midlands and west of Ireland, should be used as a resource for the sustainable development of this region, and not extracted to facilitate the continued unsustainable growth of Dublin. They remarked that industry, employment, and development should be promoted in the Midwest Region which has the water, instead of taking water from it and transferring it to the Dublin region, which is already facing congestion and overdevelopment.

8.2.2 Response to economy, tourism and recreation and human health feedback

The RWRP-EM was subject to plan-level Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA), with a SEA Environmental Report and a Natura Impact Statement (NIS) accompanying the draft RWRP-EM as part of the consultation process. The SEA process concluded at plan level that the implementation of the NWRP that schemes can have both positive and negative potential effects on the water environment, biodiversity, and landscape and visual amenity and potential significant combined negative effects for carbon emissions. The Preferred Approach allows us to move away from existing unsustainable sources which will improve the existing environmental baseline. To address the potential negative effects, mitigation measures and a monitoring framework will be implemented alongside recommended developments. The SEA identified that in the long-term, the plan will bring benefits in terms of greater security of water supply to the population, tourism industry and recreational amenities, human health and the local economy. Additionally, the newer, or upgraded, more reliable assets within the system will result in greater adaptability to the impacts of climate change; with benefits to the water environment from the replacement of abstractions identified as potentially unsustainable for meeting WFD or protected area obligations and will give greater flexibility to respond to future sustainability reductions. The AA process resulted in a determination at plan level that the RWRP-EM would not give rise to adverse effects on the integrity of any European site

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

The RWRP EM determines the feasible Preferred Approach at Plan Level. It is acknowledged within the plan that further site-based assessments will be required at project level. These detailed environmental assessments will take place prior to any planning permission application being made and therefore site-specific questions will be addressed at this stage. More information on project level assessments has been provided in a new section, Section 6.4 to provide clarity on this point.

In planning our water resource infrastructure, we consider the increase in water demands resulting from the influx of tourists, particularly during summer months when local demand is elevated. In cases where the holiday population is high relative to the resident population these demand peaks may be pronounced during hot, dry weather periods in the summer season. We have accounted for the impact of tourism in our water demand forecasts which feeds into the Supply Demand Balance. As our data improves, we are gaining a better understanding of the annual demand across our water resource zones and we have noticed peaking for prolonged periods in summer at certain tourist destinations. We will use this improved data to update the Supply Demand Balance as set out in our monitoring and feedback process in section 8.3.8 of the Framework Plan.

KA's submission noted that Irish Water's economic projections have assumed Covid will have little impact on future demand. This statement is incorrect. In Section 1 of the draft RWRP EM it is noted that Irish Water recognises that data relating to population forecasts, economic trends and tourism are based on information gathered before the Covid 19 pandemic. Therefore, trends and patterns may need to be revised as enough data and information is available to understand the long-term impact of the pandemic. Key considerations will be potential changes to demographics in relation to commercial and office settings, changes in hospitality and tourism impacts. Irish Water will incorporate any future changes as outlined in the monitoring and feedback process summarised in chapter 8 of the Framework Plan. One of the benefits of a more interconnected water supply network will be the flexibility to adapt to changing growth patterns.

Ireland is one of the high growth economies in Europe. This growth has been driven by a strong manufacturing sector and Foreign Direct Investment. The pharmaceutical and manufacturing industries provide large amounts of good employment opportunities and support further service employment across the country. As a testament to the successful work of the IDA and Enterprise Ireland, these industries are spread throughout the country, and coupled with a strong agricultural sector and indigenous agri-food sectors have allowed the

Irish Economy to recover in the aftermath of the collapse of the Celtic Tiger and the Covid-19 crisis.

Text has been provided in Section 2.2.4 noting the canals as a contributor to tourism and recreation.

The NWRP assesses future demand based on population growth projections set out in the NPF, RSEs and the Local Authority Development Plans. This estimated future demand informs the size and scale of feasible solutions required and thus informs the Preferred Approach.

8.3 Water Environment

8.3.1 Summary of Water Environment Feedback

Department of Agriculture, Food and the Marine (DAFM) noted concerns about the possible impacts the outflows of desalination plants may have on fisheries and coastal nursing and spawning species. They highlighted that hypersalinated outflows would need to be treated appropriately to avoid any adverse impact on fish stocks. DAFM noted that if there were large losses of fish and fish eggs, this would be a major cause for concern.

The DAFM requested that the evaluation of potential impacts on any commercial sea fishing activities needs to be given consideration as part of any planning/proposal process and during the development process itself.

Inland Fisheries Ireland (IFI) requested that the draft RWRP-EM should fully consider and make appropriate reference to and provision for aquatic biological diversity, the fisheries resource and relevant stakeholder interests. IFI asked that this document should recognise that protection of the aquatic environment and habitat not only requires the protection of water quality, but also necessitates the protection and maintenance of physical habitat, hydrological processes and regimes and broader biological diversity. IFI advocated that such plans and policies prioritise maintenance and where possible restoration of ecological status in surface waters.

IFI commented that the protection of the aquatic environment must imply a greater commitment than just preventing fish mortality or protecting water quality or quantity. IFI highlighted that the sustainable management of hydrological regimes is necessary to safeguard the fisheries resource and avoid potential negative impacts on habitat and biological functions. They further highlighted that the maintenance and improvement of aquatic habitat is a particularly important IFI objective and forms part of the broader remit of other environmental authorities and Water Framework Directive objectives.

IFI requested the potential negative impacts of the draft RWRP-EM on aquatic habitats be addressed and noted that such pressures may be further exacerbated by climate disruption impacts reflected in an increased likelihood of drought conditions as seen in 2018 and 2020. IFI highlighted that 'backwash' discharges to natural waters from WTPs can potentially contain polluting matter that can be damaging to the receiving waters and should be subject to a licensing or consent mechanism.

8.3.2 Response to Water Environment Feedback

The RWRP-EM was subject to plan-level Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA), with a SEA Environmental Report and a Natura Impact Statement (NIS) accompanying the draft RWRP-EM as part of the consultation process. The SEA process concluded at plan level that the implementation of the NWRP that schemes can have both positive and negative potential effects on the water environment, biodiversity, and landscape and visual amenity and potential significant combined negative effects for carbon emissions. To address the potential negative effects, mitigation measures and a monitoring framework will be implemented alongside recommended developments. The SEA identified that in the long-term, the plan will bring benefits in terms of greater security of water supply to the population, tourism industry and recreational amenities, human health and the local economy. Additionally, the newer, or upgraded, more reliable assets within the system will result in greater adaptability to the impacts of climate change; with benefits to the water environment from the replacement of abstractions identified as potentially unsustainable for meeting WFD or protected area obligations and will give greater flexibility to respond to future sustainability reductions. The AA process resulted in a determination at plan level that the RWRP-EM would not give rise to adverse effects on the integrity of any European site

The assessment of desalination options has taken account of potential environmental impacts from their associated brine discharge on the aquatic environment and biodiversity including potential impacts on fisheries. No desalination options are included in the Preferred Plan approach so have not been assessed further in terms of impact on commercial fisheries.

Protection of the aquatic environment has been a core part of the assessment process which has aimed to ensure all proposed options meet sustainable abstraction requirements in relation to the WFD. The wider WFD and biodiversity objectives are also embedded in SEA objectives and are to be taken forward through the mitigation and monitoring framework.

The RWRP EM determines the feasible Preferred Approach at Plan Level. It is acknowledged within the plan that further site-based assessments will be required at project level. These detailed environmental assessments will take

place prior to any planning permission application being made and therefore site-specific questions will be addressed at this stage. More information on project level assessments has been provided in a new section, Section 6.4 to provide clarity on this point.

The RWRP-EM has considered all feasible options to resolve the need identified within the plan. IW can confirm that desalination while a feasible option for some water resource zones is not considered as part of the Preferred Approach for the region.

Irish Water will be required to apply for licenses for abstractions through the proposed abstraction license legislation. The EPA as the licencing regulator will review our existing and proposed abstractions and determine if they are feasible considering all other abstractions in the catchment and the impact of the abstractions on the ecology of the waterbody. The Supply Demand Balance will be updated based outcome of the licensing process, in accordance with the feedback and monitoring process set out in section 8.3.8 of the Framework Plan.

8.4 Biodiversity, Flora and Fauna

8.4.1 Summary of Biodiversity, Flora and Fauna Feedback

Councillors from Killaloe Municipal District in Clare County Council raised concerns around the implications for local industries, agriculture and forestry from the RWRP-EM plan.

Inland Fisheries Ireland (IFI) highlighted that the long-term environmental sustainability of any activity that may impact the status of fish species, their habitats, fisheries or the recreational angling and related commercial activities that may utilise these resources is of primary concern to IFI.

IFI noted it has a role in making policies, plans or programmes relevant to surface waters in Ireland and highlighted those critical and sensitive habitats and species, both designated and otherwise, must be protected. IFI detailed several fish species and associated habitats that are protected under European Directives in Ireland and from an IFI perspective, all fish species and associated habitats within its remit require protection and management for conservation and development. IFI advocated for the application of the precautionary principle when considering the fisheries resource and aquatic ecology in the draft RWRP-EM.

The Southern Regional Assembly (SRA) in their submission asked that Irish Water build and manage infrastructure responsibly so that ecosystems are protected, and where possible enhanced.

The SRA asked for the implementation of the Irish Water Biodiversity Action Plan, which ensures that in association with the provision of water and wastewater services, biodiversity and the natural environment are conserved, protected and where practical, enhanced through responsible stewardship, sustainable water services and strong partnerships. The SRA supported Irish Water projects that integrate Nature Based Solutions that include reduction in energy usage, carbon sequestration, and amenity use for local communities.

The SRA welcomed the positive commitment to adopt Green Blue Initiative, Nature Based Solution, and Ecosystem Services that protect and enhance Biodiversity through the Irish Water Biodiversity Action Plan and noted that this needs to be a priority action for the unified NWRP. The SRA supported and encouraged further collaborative projects for Sustainable Urban Drainage Systems, wetlands, basins and ponds, reedbeds, buffer strips and hedges and forest riparian buffers.

The Department of Housing, Local Government and Heritage National Parks and Wildlife Services (DHLGH-NPWS) noted that the draft RWRP-EM will result in the decommissioning of 66 Water WTPs. When decommissioning WTPs, DHLGH asked Irish Water to consider that there may be scope to decommission weirs, which are forming a barrier for fish migration. DHLGH-NPWS noted improvement of the passage of migratory fish species is an action under the National Biodiversity Action Plan, the EU Biodiversity Strategy for 2030 and would also support Special Area of Conservation Site Specific Conservation Objectives for Qualifying Interest fish species. DHLGH-NPWS advised Irish Water to include removal of barriers to fish migration due to weirs when decommissioning WTPs, where applicable.

Limerick Greens highlighted that modified water bodies within the Lough Derg sub-catchment are affecting hydromorphology and include many barriers to fish migration in sub catchment tributaries and drained channels, which results in an extensive lost habitat. Limerick Greens queried if the proposed Shannon Pipeline would affect these modified waterbodies and change the natural geomorphology of the lake and its associated biodiversity, making it even more difficult for them to achieve good ecological potential.

Limerick Greens asked if there would be an increase of statutory compensation flows to Fish Passes that would also routinely mimic flood and spring flows to accommodate species of flora and fauna.

Limerick Greens commented the draft RWRP-EM does not comply with the Habitat's Directive, particularly the obligations arising under Article 6(3) and 6(4). They remarked that the proposed Regional Preferred Approach will have negative implications, which cannot be mitigated for in Annex 1 Habitats and

Species. Limerick Greens stated that Irish Water has failed to undertake the required assessment of “alternative solutions” to avoid such damage the focus on building the proposed New Shannon Source pipeline, rather than fixing existing pipes, through which vast amounts of treated water is lost, is in clear breach of these obligations.

The Environmental Protection Agency commented that there is merit in considering the use of the Environmental Sensitivity Mapping webtool to help inform any potential environmental sensitivities within each WRZ (or Study area) to be considered

8.4.2 Response to Biodiversity, Flora and Fauna Feedback

The RWRP-EM was subject to plan-level Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA), with a SEA Environmental Report and a Natura Impact Statement (NIS) accompanying the draft RWRP-EM as part of the consultation process. The SEA process concluded at plan level that the implementation of the NWRP that schemes can have both positive and negative potential effects on the water environment, biodiversity, and landscape and visual amenity and potential significant combined negative effects for carbon emissions. To address the potential negative effects, mitigation measures and a monitoring framework will be implemented alongside recommended developments. The SEA identified that in the long-term, the plan will bring benefits in terms of greater security of water supply to the population, tourism industry and recreational amenities, human health and the local economy. Additionally, the newer, or upgraded, more reliable assets within the system will result in greater adaptability to the impacts of climate change; with benefits to the water environment from the replacement of abstractions identified as potentially unsustainable for meeting WFD or protected area obligations and will give greater flexibility to respond to future sustainability reductions. The AA process resulted in a determination at plan level that the RWRP-EM would not give rise to adverse effects on the integrity of any European site

As part of our unconstrained options assessment, we carry out desk-based assessments on the potential impacts on the environment. This analysis is part of the Strategic Environmental Assessment (SEA) and Appropriate Assessment process applicable to the draft RWRP-EM.

Environmental considerations including biodiversity are also reflected in the options assessment methodology set out in the Framework Plan. Where we consider there is the potential for an impact and if no mitigation measures can be found, we screen these types of options out.

For the options that remain, we must have a clear understanding of mitigation measures. As plan level approaches progress to project level, we carry out the

required environmental assessments at a site level, including surveys and investigations, as part of the statutory consenting process.

All options identified in the draft RWRP EM, including the construction elements, are subject to Strategic Environmental Assessment and Appropriate Assessment. As part of our options assessment process, environmental considerations represent 19 of the 33 total assessment criteria that are taken into account. The impacts of pipeline construction are factored into the environmental and social cost aspect of our feasible option's whole life costing. Further details on our assessment criteria can be found in Chapter 8 of the NWRP Framework Plan.

The draft RWRP sets out proposed preferred approaches, which will have to go through their own consenting process and for projects that included significant length of trunk main, this will include a route selection process.

Irish Water has referenced the EPA-supported Environmental Sensitivity Mapping Webtool (www.enviromap.ie) to assist in the identification of sensitive receptors and areas of environmental sensitivity when screening options and have referred to this in chapter 4 of the SEA Statement. The source information used in the EPA tool has been used in the GIS tools supporting the options assessment process so that the information can be analysed with the indicative option locations. The process of checking source data is part of the quality control process to use the latest data available in the assessment process.

The RWRP EM determines the feasible Preferred Approach at Plan Level. It is acknowledged within the plan that further site-based assessments will be required at project level. These detailed environmental assessments will take place prior to any planning permission application being made and therefore site-specific questions will be addressed at this stage. More information on project level assessments has been provided in a new section, Section 6.4 to provide clarity on this point.

In projects where the Preferred Approach includes the decommissioning of a WTP and associated abstractions, to reduce risk to our customers the existing abstractions and associated infrastructure will not be decommissioned until the commissioning phase of the new project is completed and an abstraction license for the new or existing alternative source has been obtained. Many of our existing abstractions are facilitated by the presence of structures such as a weir or dam and these can create obstacles for fish passage. When we decommission abstractions facilitated by structures the possibility of removing these structures will be considered; however, many of these structures are not owned or operated by Irish Water. Text has been provided in Section 6.4 to provide clarity on the process for decommissioning abstractions.

A project level the options will be developed to ensure all potential opportunities that can be afforded by the solution are realised and this might include an augmentation of the Option in line with our Biodiversity Action Plan or our Energy Efficiency Plan. Text has been provided in Section 6.4 to outline how the Biodiversity Action Plan will be considered at project level. IW is committed to the implementation of the Biodiversity Action Plan more details on the plan can be found in <https://www.water.ie/projects/national-projects/biodiversity/>

Irish Water will be required to apply for licenses for abstractions through the proposed abstraction license legislation. The EPA as the licencing regulator will review our existing and proposed abstractions and determine if they are feasible considering all other abstractions in the catchment and the impact of the abstractions on the ecology of the waterbody. Mitigations measure such as minimum compensation flows and variability of compensation flows may be required to ensure fish passage. These measures will be specific to each abstraction. The Supply Demand Balance will be updated based outcome of the licensing process, in accordance with the feedback and monitoring process set out in section 8.3.8 of the Framework Plan.

8.5 Climate Change

8.5.1 Summary of Climate Change Feedback

Inland Fisheries Ireland (IFI) noted that climate disruption is expected to have diverse and wide-ranging impacts on Ireland's environment, society and economic development, including managed and natural ecosystems, water resources, agriculture and food security, human health and coastal zones.

IFI highlighted the most immediate risks to Ireland which can be influenced by climate change are predominantly those associated with changes in extremes, such as droughts and floods. IFI requested that these factors should be integrated in every decision made when planning for surface and groundwater management in the draft RWRP-EM.

Future Proof Clare requested that Irish Water incorporate Climate-smart Urban Design in the NWRP and actively engage in research, promotion, design and investment in Climate Adaption Strategies. Future Proof Clare cited three examples of cities around the world are dealing with this in different ways: Urban rainwater Catchments in Singapore, Floodable Water Square in Rotterdam and a Rainwater harvesting tower in San Jose.

Kildare Chamber highlighted that as of March 2020 it has signed up to a new charter supporting the UN Sustainability Goals (SDGs) and the issue of sustainable water supply is particularly importance as it is a critical element to their Climate Action responsibility.

Kildare Chamber noted that preparation for Climate Change needs to be central to the decision making and the risk assessment processes of Irish Water. Kildare Chamber highlighted that increased volatility and variability of the weather over recent decades, which is likely to become significantly worse over the coming ones, will negatively impact the safety and capacity of existing and potential sources of water. Kildare Chamber raised concerns that their supply is reliant on existing assets performing beyond their sustainable operational capacity and dependence on treated water storage to meet short term deficits.

The Southern Regional Assembly requested Irish Water develop a carbon neutrality roadmap to highlight key sustainability objectives for climate change.

An Forum Uisce (AFU) noted that Irish Water must support water services for at least 100 years and therefore must carefully consider various climate change scenarios. AFU noted that a fundamental aspect in the current draft RWRP-EM and the planned options refer to infrastructure upgrades, replacement or new ones. These infrastructure works are long-term investments, going beyond the 25-year horizon of the draft plan. AFU recommend that a level of futureproofing is considered into the plan, particularly in the face of climate change, either as part of the design studies of those works (or as part of the options' development and their evaluation. They highlighted that this would have multiple benefits, economically and environmentally, and related to the future resilience of the infrastructure assets. AFU advised that the consideration of sea level rise, should be included in Irish Water's planning processes for water transfers, reservoirs and upgrades of water treatment plants in Study Areas 1, 3 and 9, to ensure that the draft RWRP-EM supports resilient water services in the long term.

AFU recommended that an urgent action is added to the draft RWRP-EM to develop Drought Management Plans in line with EC recommendations, and subsequently review and assess the proposed water transfers and reservoir optimisations. They further requested that such Drought Management Plans be made publicly available and indicate how much capacity there is throughout the region during extended drought periods.

AFU recommended the same review and assessment should be carried out with respect to the Flood Risk Management Plans, to ensure the provision of resilient water services. And furthermore, AFU asked Irish Water that consideration of sea level rise be included in planning processes for water transfers, reservoirs and upgrades of water treatment plants. AFU advised that cooperation with Met Eireann and academics will be essential to consider actual climate change scenarios in the Plan.

AFU suggested the use of historic time-series data covering the Eastern and Midlands Region could be used to estimate the temperature and precipitation

changes following the climate changes scenarios (Representative Concentration Pathways – RCPs) as proposed by the IPCC (Intergovernmental Panel on Climate Change) in its 5th Assessment Report (AR5) in 2014 (IPCC, 2014).

AFU noted that these scenarios are consistent with a wide range of possible changes in future anthropogenic greenhouse gas (GHG) emissions and could be a great resource for addressing significantly larger uncertainty areas in the future planning and preferred options, as different situations are taken into account such as mild, intermediate, and extreme changes. AFU suggested that detailed hydrological assessments for the WRZs, in combination with planning for a number of climate change scenarios would enhance the validity of the forecasts to determine how climate change will impact both water demand and water availability.

AFU raised concerns that the draft RWRP-EM lacks detail on the environmental sustainability of the proposed plans. AFU noted while it is understood there will be an environmental assessment carried out as part of the planning process, AFU suggested Irish Water should indicate the environmental implications of the proposed projects in the draft RWRP-EM. AFU advocated that Irish Water should have more emphasis on their 'green agenda', illustrating how they are aligning their plans with both national policies, such as the Climate Action Plan, and international policies, such as the EU Green Deal, Paris Agreement and the UN Sustainable Development Goals.

AFU noted while Irish Water included an option for 'Lowest Carbon' in their decision-making criteria, AFU suggested that more transparency is included in the final plan as to how Irish Water will align with the Climate Action Plan, given that the Regional Preferred Approach, despite being the best option for lowest cost, most resilient and the environment, was the worst option for lowest carbon. AFU recommended that Irish Water presented the absolute difference in CO₂ between Combination 1 (worst option for carbon) and Combination 2 (best option for carbon).

AFU highlighted that as Irish Water are already the largest consumer of electricity in Ireland, Irish Water should assess how they could reduce their national carbon footprint by this amount and further recommended that Irish Water should present where they will have access to renewable energy for the pumping of treated water for any new water transfers.

The Environmental Protection Agency (EPA) acknowledged that in Section 5.9 Climate Change of the draft RWRP-EM the key relevant national plans and programmes and legislation are set out. They further noted that in Table 5.7 – climate change risks identified by counties in the core baseline area, the key risk areas for each county covered.

The EPA also welcomed the intention to continue with source protection and catchment management activities over the lifetime of the Plan and acknowledged the inclusion in the draft RWRP-EM of aspects related to climate change including droughts and flooding considerations, efforts to reduce carbon footprint and improve energy efficiency and biodiversity.

Tipperary County Council (TCC) noted that the key climate change risk areas for Tipperary are flooding and drought and noted that Irish Water's adaptation measures and future monitoring measures to support environmental resilience to climate change will benefit supply resilience. TCC noted that Irish Water has commenced its source rationalisation programme in Tipperary to reduce the amount of water supplies through amalgamation. TCC supported this programme as it reduced the level of treatment and source protection activities required.

8.5.2 Response to Climate Change Feedback

Irish Water has considered the impact to climate change on our sources and on our water demands and climate changes is also allowed for in the headroom allowance applied to our demand estimates to allow for any uncertainties in our understanding of the impact of climate change.

Climate change factors were applied to the estimated yield from our sources. These climate change factors were determined further to our extensive research with the Irish Climate Analysis and Research Units (ICARUS) Department in NUI, Maynooth, under the Climate sensitive catchments project. This project has used the latest climate change projections and a best practice risk-based approach to assess the impacts of climate change on flows in 206 catchments in Ireland. Full details of how climate change factors were considered are outlined in Appendix F of the Framework Plan.

The impact on climate change on water usage has also been considered as customers also use more water during dry weather such as droughts and we considered this in a dry year critical period peaking allowance.

When considering the Preferred Approach, we assessed the resilience of each option to climate change by considering the available yields from the proposed new source in the future and considering the location of our infrastructure in relation to flood zones. The flood zones were informed by the OPW flood risk maps which provide estimates of fluvial and coastal flooding and provide an overview of potential flood risk considering the impacts of climate change and sea level rise.

Further to this the Preferred Approach was assessed against adaptability under the following headings - Sustainability, Climate Change, Demand Growth and

Leakage Targets. The details of this sensitivity analysis are included in the Study Area reports and the SEA Environmental Report. Further assessment of the impacts of climate change will be carried out at project level through hydrological and hydrogeological modelling work.

The objective of the report is to provide the information in a manner that can be accessed and understood by the public. The assessments at plan level are based on desktop information. All assessments are carried out in a uniform and consistent manner and the purpose of the assessments are to allow a comparison between solutions, rather than an absolute evaluation of a proposed solution, as further evaluations of solutions will be provided at project level. Therefore, we have provided a comparison of the scoring information by providing a colour variation to differentiate the performance and of the solutions against each criteria and cost of each solution relative to each other.

One of the objectives of the plan is to reduce our carbon output therefore carbon cost of each solution was considered and inform the decision of the preferred approach during the approach development stage as set out in Section 7 of the RWRP EM. Further opportunities to reduce the carbon output of a project will be considered at the Project development stage where the options will be developed to ensure all potential opportunities that can be afforded by the solution are realised and this could include an augmentation of the option in line with our Biodiversity Action Plan and/or Energy Efficiency Plan.

Drought plans will be developed for each WRZ, and it is planned to provide this detail in the next iteration of the NWRP. These drought plans will be developed in line with the abstraction legislation and note measures required for different water levels at our sources. The drought plans will be unique for each supply.

Irish Water will continue to review its carbon reduction policy in line with national and European policy and the NWRP will be updated in line with any update to carbon reduction policy as set out in the monitoring and feedback process in section 8.3.8 of the Framework Plan.

8.6 Mitigation and Monitoring

8.6.1 Summary of Mitigation and Monitoring Feedback

The Environmental Protection Agency (EPA) noted the inclusion of Table 10.2 Monitoring Plan: Indicators and Targets and welcomed the link between the Plan and SEA regarding monitoring the implementation of the draft RWRP-EM. The EPA acknowledged that the identified SEA mitigation measures have been integrated into the draft RWRP-EM and show a clear linkage between the draft

Plan and SEA.

The EPA advised it is important that monitoring of the significant environmental effects of the implementation of the draft Plan are carried out. The EPA suggested clarity for the information presented in Section 10 – Mitigation and Monitoring Plans and request that it be reorganised.

The EPA recommend Irish Water screen any future amendments to the draft Plan for likely significant effects, using the same method of assessment applied in the “environmental assessment” of the draft Plan. The EPA welcomed the commitment in Section 10 that Irish Water will prepare a region-specific monitoring and mitigation plan for the Eastern and Midlands Region and acknowledged that it will be based on the approach set out in the SEA Statement of the National Water Resources Framework Plan. The EPA further acknowledged the integration between the SEA and the Plan and noted the integration of the proposed mitigation measures, identified in the SEA.

The EPA noted that in Section 9.3 – Mitigation refers to the SEA related mitigation measures established and noted that Section 10 of the SEA Eastern Region summarised the areas for further study and the necessary actions required. The EPA advised that the monitoring programme for the draft Plan should be robust enough to monitor how effectively the mitigation measures required are being implemented over the lifetime of the Plan.

The EPA noted that the Monitoring Programme should be flexible to take account of specific environmental issues and unforeseen adverse impacts should they arise during implementation of the Plan. They also advised it should consider and deal with the possibility of cumulative effects and that monitoring of both positive and negative effects should be considered. The EPA requested that the monitoring programme set out the various data sources, monitoring frequencies, responsibilities, and reporting.

The EPA further commented that if the monitoring identifies adverse impacts during the implementation of the Plan, Irish Water should ensure that suitable and effective remedial action is taken. The EPA advised that the implementation of the Plan should include provisions for annual or bi-annual reporting on implementation of the Plan commitments and Plan implementation, monitoring and reporting should be aligned with the environmental monitoring and reporting required under the SEA legislation. They advised this will assist in evaluating the environmental performance of the Plan and noted guidance on SEA-related monitoring is available on the EPA website.

The EPA requested that Irish Water take into account, once adopted, the relevant aspects of the Draft Water and Planning Guidelines, currently being prepared by the Department of Housing, Local Government and Heritage (DHLGH) in Section 4 – Review of Relevant Plans, Policies and Programmes of

the draft RWRP-EM. The EPA further noted that the European Union Water Policy and Abstractions Registration Regulations 2018 should be referred to in Section 4.

The Department of Housing Local Government and Housing (DHLGH-NPWS) noted that the NWRP implementation is an action of the National Biodiversity Action Plan 2017 – 2021 (Action 4.2.2 - Irish Water to implement its Water Services Strategic Plan 2015-2040), In particular, its objective to protect and enhance the environment. DHLGH-NPWS advised that the performance indicator 'environmental monitoring of the implementation of the plan' must be provided for in the plan which must monitor the effects of the plan implementation the environment.

8.6.2 Response to Mitigation and Monitoring Feedback

Monitoring plans for regional level and project level are provided in the SEA environmental report section 10. Actions to be taken where issues are identified include additional mitigation or variation to proposals. The monitoring plan has been reorganised in response to the EPA comments and is provided in two parts. Part 1 is plan level monitoring and Part 2 provides a monitoring framework for project level implementation.

8.7 Strategic Environmental Assessment (SEA)

8.7.1 Summary of Strategic Environmental Assessment (SEA) Feedback

Roscommon County Council acknowledged that both the Strategic Environmental Assessment and the Natura Impact Assessment for the draft RWRP-EM are quite comprehensive.

The Environmental Protection Agency (EPA) welcomed the comprehensive methodology undertaken during the consideration and selection of alternatives in the SEA and acknowledged that transboundary impacts have also been considered.

The EPA acknowledged the consideration of cumulative effects, as provided in Chapter 9, which looked at regional cumulative effects both within the draft Plan and between the draft Plan and other plans and programmes. The EPA also welcomed that the EPA guidance 'Good Practice Guidance Note on Cumulative Effects in Strategic Environmental Assessment' (EPA, 2020) has been considered.

The EPA welcomed the extent to which the SEA has been integrated into the draft Plan, from providing an environmental summary of resources and

pressures within the region, inclusion of references to the option assessment methodology and mitigation and monitoring considerations.

The Environmental Protection Agency (EPA) recommend that in finalising the draft Plan and integrating the findings of the SEA into the draft Plan, the recommendations, key issues and challenges described in their State of the Environment Report Ireland's Environment – An Integrated Assessment 2020 (EPA, 2020) should be considered, as relevant and appropriate. They further advised that this should also be considered, in finalising and implementing the draft Plan and SEA.

The EPA recommended that once the Plan is adopted Irish Water should prepare an SEA Statement that summarises:

- How environmental considerations have been integrated into the Plan;
- How the Environmental Report, submissions, observations and consultations have been considered during the preparation of the Plan;
- The reasons for choosing the Plan adopted in the light of other reasonable alternatives dealt with;
- The measures decided upon to monitor the significant environmental effects of implementation of the Plan.
- The EPA suggested a copy of the SEA Statement with the above information should be issued to any environmental authority consulted during the SEA process.

Clare County Council's Physical Development Directorate noted it as essential that cumulative and/or negatively synergistic impacts are assessed between plan areas. They noted that there is some reference to this in the draft RWRP-EM in section 1.2, 1.3 & 6.1 and an acknowledgement that assessment was to the extent that data was available. However, Clare County Council highlighted that if sufficient data was not available, then further investigation and assessment is warranted in particular for County Clare as the County is split over two plan areas.

Clare County Council Physical Development Directorate remarked that Section 1.1, of the SEA Objective under Water Quality and Resources needs to be further strengthened to ensure that Water Framework Directives (WFD) requirements are met. They have suggested adding the following text;

Prevent deterioration of the WFD status of waterbodies with regard to both water quality and quantity due to Irish Waters activities. Contribute towards the "no deterioration" WFD condition and where possible to improvement of waterbody status for rivers, lakes, transitional and coastal waters, and groundwater to at least Good status and to not undertake any new action or

activity which would further restrict or limit the ability of a Waterbody to achieve “Good” status.

An Forum Uisce (AFU) acknowledged that a Strategic Environmental Assessment (SEA) and an Appropriate Assessment (AA) must be developed as part of the draft RWRP-EM. AFU recommended that both the SEA and the AA should be based on hydrological balances, to ensure any water abstractions do not have a negative environmental impact. AFU further recommended that any of the proposed water transfers or new abstractions must comply with the WFD. AFU recommended that both the SEA and the AA should be based on hydrological balances to ensure any water abstractions do not have a negative environmental impact.

8.7.2 Response to Strategic Environmental Assessment (SEA) Feedback

The SEA process concluded at plan level that the implementation of the NWRP that schemes can have both positive and negative potential effects on the water environment, biodiversity, and landscape and visual amenity and potential significant combined negative effects for carbon emissions. To address the potential negative effects, mitigation measures and a monitoring framework will be implemented alongside recommended developments. The SEA identified that in the long-term, the plan will bring benefits in terms of greater security of water supply to the population, tourism industry and recreational amenities, human health, and the local economy. Additionally, the newer, or upgraded, more reliable assets within the system will result in greater adaptability to the impacts of climate change; with benefits to the water environment from the replacement of abstractions identified as potentially unsustainable for meeting WFD or protected area obligations and will give greater flexibility to respond to future sustainability reductions. The AA process resulted in a determination at plan level that the RWRP-EM would not give rise to adverse effects on the integrity of any European site.

Hydrological balances have been factored into the SEA and AA. The options assessment is underpinned by a hydrological review of sustainable abstractions, and this is described in the SEA Environmental report in section 6.

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

The RWRP-EM has applied the methodology, as adopted in the Framework Plan, and through that process has identified preferred approaches at water resource zone, study area and regional level.

Each of the four RWRPs, together with their respective SEA Environmental Reports and Natura Impact Statement will ensure that consideration is given to the cumulative impacts and in-combination effects of the other RWRPs, and adjustments will be made to fully address those impacts possible based on all available information.

Irish Water have referred to the EPA State of the Environment Report Ireland's Environment – An Integrated Assessment 2020 (EPA, 2020) as relevant and appropriate in the SEA Environmental Report.

8.8 Transboundary Effects

8.8.1 Summary of Transboundary Effects Feedback

The Department of Communities in Northern Ireland Historic Environment Division noted that given the Spatial coverage of the draft RWRP-EM there are unlikely to be significant effects on the Historic Environment in Northern Ireland.

The Department of Agriculture, Environment and Rural Affairs (DEARA) Northern Ireland Environment Agency (NIEA) National Environment Division welcomed that transboundary effects have been considered for Northern Ireland in the Environmental Report. NED acknowledged that the plan area lies approximately 20km from the boundary between the Republic of Ireland and Northern Ireland and that no transboundary effects have been identified.

NED welcomed that in the Natura Impact Statement designated sites in Northern Ireland were assessed for transboundary effects. NED advise should transboundary issues be identified as the plan progresses then consultation with the relevant Northern Ireland bodies should be undertaken.

8.8.2 Response to Transboundary Effects Feedback

The RWRP-EM did not identify any scope for transboundary impacts. Future RWRPs will also be subject to transboundary effects assessments.

8.9 Special Areas of Conservation

8.9.1 Summary of Special Areas of Conservation Feedback

Roscommon County Council commented that potential adverse impacts need to be assessed in the development of additional ground water sources at Lisbrock, Killeglan and Mount Talbot and advised that the connectivity between the proposed additional groundwater sources and Lough Funshinagh which is a Special Area of Conservation should be determined.

Inland Fisheries Ireland (IFI) noted that the 1997 Habitats Regulations and Special Areas of Conservation (SAC) Directive do not extend to the inclusion of all aquatic habitats of fish bearing importance/biodiversity significance or of amenity value and advised that the reliance on the draft RWRP-EM on these designations alone will exclude significant numbers of waterways which require consideration and protection. The IFI recommended a comprehensive approach to impact assessment necessitates looking beyond any one suite of designated sites.

Limerick Greens queried what effect does this reverse flow at Ardnacrusha have on the ecology of the Parteen basin which is part of the Lower Shannon SAC where the three species of lamprey and Salmon are qualifying interests. They queried whether the proposed New Shannon Source abstraction have a synergistic positive or negative effect on biodiversity within the Natura 2000 site and a long-term negative direct impact to the integrity of this Natura 2000 site, and aquatic species of conservation interest.

8.9.2 Response to Special Areas of Conservation Feedback

The RWRP-EM was subject to plan-level Strategic Environmental Assessment and Appropriate Assessment, with a Strategic Environmental Assessment Environmental Report and a Natura Impact Statement accompanying the draft RWRP-EM as part of the consultation process.

The SEA process concluded at plan level that the implementation of the NWRP that schemes can have both positive and negative potential effects on the water environment, biodiversity, and landscape and visual amenity and potential significant combined negative effects for carbon emissions. To address the potential negative effects, mitigation measures and a monitoring framework will be implemented alongside recommended developments. The SEA identified that in the long-term, the plan will bring benefits in terms of greater security of water supply to the population, tourism industry and recreational amenities, human health and the local economy. Additionally, the newer, or upgraded, more reliable assets within the system will result in greater adaptability to the impacts of climate change; with benefits to the water environment from the replacement of abstractions identified as potentially unsustainable for meeting WFD or protected area obligations and will give greater flexibility to respond to future sustainability reductions. The AA process resulted in a determination at plan level that the RWRP-EM would not give rise to adverse effects on the integrity of any European site

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

The RWRP-EM has applied the methodology, as adopted in the Framework Plan, and through that process has identified preferred approaches at water resource zone, study area and regional level.

The RWRP-EM sets out the proposed Preferred Approach at Plan level. Further site-based assessments including environmental assessments will be carried out at project level to determine the yield available, connectivity with any other waterbodies and any ensure the proposed approach does not impact the water levels of adjacent waterbodies and hence impact SACs hydraulically connected to new sources of supply. To provide clarity on project level assessment an additional section, Section 6.4, on project level assessments has been provided in the RWPR EM.

8.10 Conclusions on Environment Feedback

Having carefully reviewed the submissions received on the theme of Environment, Irish Water considered that more clarity on certain points should be provided in the RWRP EM and the SEA Environmental Report. This change is explained in section 8.10.1 “Clarifications” below. In addition, some of the points made in the submissions will be taken forward in other ways, as explained in section 8.10.2 “Recommendations” below.

8.10.1 Clarifications on Environment Feedback

The following sections of the RWRP EM has been updated to reflect feedback under the theme of Environment Feedback:

Section 2 - Text has been provided in Section 2.2.4 noting the canals as a contributor to tourism and recreation.

Section 5 -Reference to LAWPRO, Teagasc and the Agricultural Sustainability and Advisory Programme (ASSAP) and their role in source protection measures has now been provided in Section 5.4 of the RWRP EM.

Section 6 - Provision on new section, Section 6.4 Project Level Summary which discusses how a further data review, yield assessments and environmental assessments will be reviewed at project level.

Section 6 – Text has been provided in Section 6.4 to provide clarity on the process for decommissioning abstractions.

Section 6 - Text has been provided in Section 6.4 to outline how the Biodiversity Action Plan will be considered at project level.

The SEA Environmental report was updated to reflect feedback under the theme of Environment Feedback and more information on this can be found in the SEA statement.

8.10.2 Recommendations on Environment Feedback

1. Irish Water will update the Supply Demand Balance to take into account improved data on tourism demand. Updates to the Supply Demand Balance will be incorporated via the monitoring and feedback process in section 8.3.8 of the Framework Plan
2. Drought plans will be developed for each WRZ, and it is planned to provide this detail in the next iteration of the NWRP
3. At project level options will be developed to ensure all potential opportunities that can be afforded by the solution are realised and this could include an augmentation of the option in line with our Biodiversity Action Plan or our Energy Efficiency Plan.
4. Irish Water will continue to review its carbon reduction policy in line with national and European policy and the NWRP will be updated in line with any update to carbon reduction policy as set out in the monitoring and feedback process in section 8.3.8 of the Framework Plan

9. Need

In this chapter, we summarise the key references in submissions to issues under the broad theme of “Need”. Within the overall Need theme, we identified five sub themes, which we set out in Figure 9.1. We deal with each of these sub-themes in this chapter, setting out first a summary of the relevant mentions in the submissions, followed by our response. The sub-themes are not dealt with in any particular order.

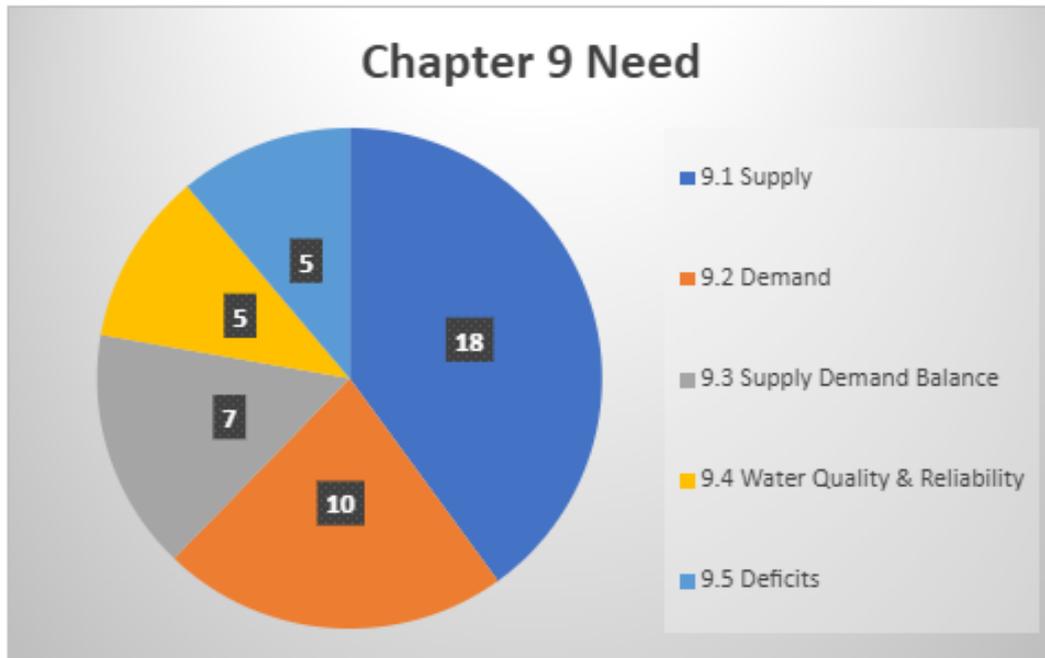


Figure 9.1 Need

9.1 Supply

9.1.1 Summary of Supply Feedback

Several stakeholders mentioned that the water supply in Trim needed an upgrade. They highlighted that the current supply is inadequate and that there are too many outages. A stakeholder requested a new water reservoir for Ballivor in County Meath due to continued outages and lack of supply.

A stakeholder noted that there is currently no public water supply in the Cadamstown, Broadford area in Kildare and that houses in the area pump their own water from privately drilled wells.

Councillor Eddie Fitzpatrick recommended that pressure and flow rates should be adequate to fill demand during normal and peak times. Councillor Fitzpatrick queried what do Irish Water consider normal working pressure and flow rates

and whether there is enough pressure at peak times to supply the end user. Councillor Fitzpatrick also sought further clarification on whether pressure is modulated to suit higher supply demand.

Ibec noted that the capacity constraints on the current water and wastewater infrastructure are already apparent. Ibec commented that there are acute pressures on ensuring continuity of supply to meet demand from the current population and enterprise base and that infrastructure investment is urgently needed to address this. Ibec commented that inadequate water infrastructure directly impacts housing construction. They noted that the Housing for All scheme contains specific actions to expand the water network to support housing delivery and recommended that these should be reflected in the RWRP-EM.

An Forum Uisce (AFU) noted that the primary scope for their submission aims to balance the need for urgency around actions that increase the water supply and resilience in the Eastern and Midlands Region, with the need for Irish Water to gradually improve the way of planning and delivering these actions.

AFU recommend that Irish Water should present emergency action plans for the Eastern and Midlands Region to illustrate resilience against extreme drought or interruption to supply and Irish Water should include details of reservoir capacity (litres per day) and present in the final Plan.

Councillor Cillian Murphy from Clare County Council requested clarity on what percentage of water supply comes from rivers and lakes versus ground water. Cllr Murphy queried if there was a desirability within Irish Water going forward to incorporate more water from rivers and lakes and noted that the latter has more of a risk of being polluted. Councillor Murphy further queried what were the risks in moving away from groundwater going forward.

The Environmental Protection Agency (EPA) noted the challenges facing Irish Water, to provide a safe, secure, resilient, and reliable supply. The EPA acknowledged in Section 3.6 of the draft RWRP-EM the summaries of the aspects to be addressed over the lifetime of the Plan. Additionally, the EPA also acknowledged the inclusion of Section 3.3.1 - compliance with the EPA regulations. They recommended that the title of this sub-section, and any references to “EPA regulations”, should be amended to refer to the correct names of the relevant regulations.

Councillor Johnny Flynn highlighted that the Ennis Drinking Raw Water Source is vulnerable. Councillor Flynn noted that Drumcliffe Springs has operated as the raw water source for over 30,000 people living in Ennis town and environs of Barefield, Crusheen, Clarecastle and Doora since the 1940s. Councillor Flynn cited the EPA Drinking Water Audit Report which stated that the source of the Ennis public water supply is located in a karst area and therefore water is

heavily influenced by surface water and subject to rapid fluctuations in quality and thus the supply is highly vulnerable.

Kildare Chambers noted the immediate interests of Kildare businesses which are dependent on the essential and continuous supply of water to keep their operations open, but also noted the long-term interests in Kildare to become an increasingly sustainable and environmentally robust economy.

Dublin Chamber noted that Ireland's economic competitiveness depends on a stable, resilient, sustainable, and competitively priced water supply, that is sufficient in meeting both current and future demand from the industrial, commercial, and residential sectors, and have sufficient headroom to cope with a crisis. Dublin Chamber highlighted that water supply in Dublin is currently significantly over-reliant on the Liffey. They also noted that Dublin is particularly vulnerable to the impacts of climate change as it relies heavily on rainfall for its water supply.

Dublin Chamber further highlighted that certainty and resilience of water supply are essential both to attract foreign direct investment and to allow existing businesses to plan their future investment decisions in particularly those in the pharmaceutical and ICT (Information and Communications Technology) sectors.

9.1.2 Response to Supply Feedback

In the context of the RWRP-EM, the identified deficits across our 134 water supplies in terms of quality, quantity, reliability, and sustainability are referred to as "need." Many of our current and future issues with water quality, quantity and sustainability are driven by issues with our existing water sources and treatment processes. Ibec noted that issues with our supplies are becoming a challenge in terms of provision of housing and employment and maintaining security of supply. Within the NWRP we strive towards achieving improved security of supply by setting a level of service for interruptions to supply of 1 in 50 years, which will in turn provide capacity in the system for development.

Growth projections used within the RWRP-EM are based on best available data from the National Planning Framework (NPF) and Regional Spatial Economic Strategies (RSES's). We recognise the ongoing work between the Regional Assemblies and the local authorities over the course of the development of the Local Authority Development Plans which will include consideration of government policy such as Housing for All. As these plans are finalised, Irish Water will incorporate the increasingly refined growth rates into our demand forecasts through the monitoring and feedback process set out in Section 8.3.8 of the Framework Plan.

We note the EPA's feedback in relation to Section 3.3.1. This section has now been renamed Water Quality Compliance and reference to the European Union (Drinking Water) Regulations 2014, as amended (Drinking Water Regulations (DWR) is now provided.

We acknowledge that there are issues with the existing infrastructure in Trim and Ballivor. Interim solutions for these supplies as noted in Appendix 6 Study Area 6 Technical Report include a WTP upgrade at the Trim WTP and the provision of storage in the Ballivor supply.

In regard to issues in Cadamstown, Broadford, the challenge with providing supply to properties in the area is the distance of the properties in relation to the public network. When properties are located long distances from our public mains development of individual domestic wells, or a group water scheme may be more appropriate. Grants are available for upgrade works to private wells <https://www.gov.ie/en/publication/1d9d8-private-wells/> and details on group water schemes can be found at the following website. <https://nfgws.ie/>

Normal working or operating pressures can vary from one point in the network to another due to numerous factors such as, location of the main in relation to the storage and water levels in the storage reservoirs. Irish Water aim to provide a minimum residual pressure of 15m (1.5bar) at the customer meter box or property boundary where possible.

A key objective of the NWRP is to determine solutions to address need at WRZ level. More specific detail relative to the WRZ such as reservoir capacity will be considered at project development stage. This is Irelands first NWRP, with over 530 WRZs and a very significant challenge in terms of historic underinvestment in water infrastructure to date. Drought plans will be developed for each WRZ, and it is planned to provide this detailed in the next iteration of the NWRP.

In reference to a submission made about groundwater, Irish Water has considered potential groundwater sources for every water supply if available. In the RWRP-EM all options considered were compared against each other using the options assessment methodology set out in Section 8 of the Framework Plan. As part of this assessment, the resilience of all options was determined and each option was given a score, which considers the potential impact of climate change. The storage capacity, sustainability and size and scale of the abstraction relative to the size and scale of the waterbody influenced this score.

Due to the natural geology of Ireland, largescale ground water storage is not available in all areas and in general groundwater is more applicable to smaller supplies in Ireland (80% of our small supplies are from Ground Water sources).

There are areas of gravel and karst aquifers with good productivity, and we are utilising these in Co. Laois, Roscommon and Ennis within the RWRP-EM.

We must also consider the environmental impact of groundwater abstractions. Some of the most productive aquifers in the Eastern Midlands region, such as the Curragh gravels, support sensitive groundwater dependent habitats, or others support baseflow into the rivers Barrow and Boyne. As a result, we give consideration to the status of the water body, or neighbouring water bodies during our options assessment.

All drinking water must comply with the Drinking Water Directive, whether the source is groundwater or surface water. IW takes a risk-based approach to our water supplies using the World Health Organisation's drinking water safety plan methodology. This ensures that our water treatment plants are designed based on the type of water abstracted from any given source and the treatment processes put in place are designed to remove all contaminants. All public water sources provided by Irish Water, including groundwater and surface water, involve water treatment.

The current preferred approach for Ennis in the RWRP-EM is to increase the existing abstraction from a highly productive aquifer at Drumcliffe. IW proposes to carry out further capacity checks on this groundwater body over the coming year as set out in Section 6.4 of the RWRP-EM. Further to the results of these capacity checks, there is an option within the plan to augment the Ennis supply from the Limerick regional supply if necessary.

9.2 Demand

9.2.1 Summary of Demand Feedback.

Ibec noted that Irish Water acknowledges the need to refine its supply demand projections as added information becomes available. Ibec raised concerns given the large and growing Needs deficit identified for the most densely populated areas of the Eastern and Midlands region.

Meath County Council (MCC) noted in Section 3.2.6.3 the draft RWRP-EM allows for a growth in non-domestic demand only in towns and cities identified for growth in the National Planning Framework. In all other areas the draft RWRP-EM assumes no significant increase in non-domestic demand. MCC noted that the draft plan considers it likely that any increase in demand in these areas would be offset by the ambitious leakage reduction targets and that significant high-water demand growth is confined within a small number of WRZs (Water Resource Zones), which mitigates the effect of such increases, when using regional averages.

MCC noted that this conclusion raises significant concerns for the Council as this approach may result in a lack of available capacity to accommodate development arising out of the implementation of the Council's Economic Strategy and settlement and growth strategy over the current and subsequent periods of the County Development Plan. This may arise in the case of significant new non-domestic / FDI, and those with greater demands on water services.

The Office of the Planning Regulator (OPR) highlighted the assumption in the RWRP-EM that growth in non-domestic demand will be offset with efficiency measures outside of the Greater Dublin Area and regional growth centres. This assumption needs to be assessed against the Eastern Midlands Regional Assembly and Southern Regional Assembly RSES. The OPR suggested that the RWRP-EM needs to ensure it allows for policies in the RSES to support significant employment growth in MASP settlements outside the immediate city area in locations such as Bray, and in some 'Key Towns' such as Carlow and Ennis.

The Southern Regional Assembly noted that, of the 134 Water Resource Zones in the draft RWRP-EM, two thirds record a Supply Demand Deficit, meaning existing supplies do not meet current or future needs in terms of source availability, water treatment plant capacity or demand growth requirements. The SRA commented that without infrastructure intervention, it means Irish Water will have difficulty supporting projected growth and economic development.

An Forum Uisce (AFU) recommended increased transparency in Irish Water's role on regulatory control of growth, development, and expansion of activities. That is Irish Water's capacity to refuse new domestic and non-domestic connections depending on the necessary infrastructure required to allow their optimum water allocation, to ensure their sustainable operation and provision of high-quality water services. AFU highlighted this would ensure there is transparency and accountability for water sustainability in the planning process.

The Commission for the Regulation of Utilities (CRU) highlighted it as important that stakeholders and the public can understand how the calculations of household demand forecasts have been derived for the GDA and other areas. The CRU noted that several examples of demand calculations are provided in the various tables within the draft RWRP-EM and considered it helpful if these calculations demonstrated to stakeholders and the public how the Per Capita Consumption has been multiplied by population to provide the household demand forecast. The CRU also noted the high non-household growth forecast for the GDA since 2019 and considered it necessary for stakeholders and the public to fully understand how the non-household demand forecast has been derived.

Clare County Council's Planning Department, Economic Development Directorate highlighted there are several major strategic plans and projects in the County which are identified as key economic drivers and will generate significant non-domestic demand. Clare County Council requested that Irish Water must ensure a water supply that has the capacity to serve future demand for non-domestic use.

Future Proof Clare noted that the base year used by Irish Water in the development of the NWRP is 2019. They added that since then, significant changes have happened both worldwide and in Ireland, noting that a new assessment might be needed to include the COVID-19 pandemic, the current housing crisis and the latest IPCC 6th Assessment Report, including the Climate Change 2022, published on the 28th of February 2022.

Future Proof Clare added that the Central Statistics Office Population and Labour Force Projections 2017 – 2051 indicate that the population will continue to grow, having already surpassed 5 million last year.

Future Proof Clare and Kennedy Analysis noted that the impacts of Covid 19 should be considered in demand forecast projections.

Future Proof Clare noted that the COVID-19 pandemic demonstrated that the East Coast of Ireland will not necessarily continue to grow exponentially compared with other parts of the country.

Kennedy Analysis (KA) commented that Irish Water's messaging about water consumption in Dublin is misleading. KA's view is that consumption of water in Dublin, both domestic and non-domestic demand, is going down and that leakage is going up. KA claims that Irish Water has used incorrect data and inappropriate methodology. An example of the feedback provided by KA is that in IW's previous projection, we had overestimated demand and underestimated leakage.

KA argued that the latest projections of Dublin's water demand contained errors. KA noted that Irish Water has not accounted for two upcoming water projects for Dublin in the SDB (Supply Demand Balance) (Leixlip WTP and Poulaphouca). KA stated that the projected water deficit for Dublin is over-stated due to the use of 22-hour output and outage in the SDB projections, as well as the application of peaking to headroom and the boosting of safety buffers to a level above international best practice.

KA highlighted that Irish Water formally stated to the press that a 7%-8% growth in demand in the Greater Dublin Area (GDA) and that current demand has outmatched supply. KA claimed that this statement was misleading.

KA referenced figures and notes that demand between 2007 and 2017 increased by less than 3%. KA asserts that the only reason demand has increased is due to an increase in network leakage.

KA voiced concerns that Irish Water's latest projections rely on a fresh non-domestic demand report produced by Ernst and Young (E&Y), which they note, unlike the previous non-domestic demand reports, is not published in full. KA added that their concerns arose as they had previously identified a major anomaly between the 2015/2016 projections and the underlying non-domestic demand report upon which those 2015/2016 projections were based. KA reported that, despite being dated September 2020, the E&Y report highlights that it relies on pre-Covid data and takes no account of the potential impacts of Covid. They add that the E&Y report produced several non-domestic demand projections, including one based on the "Oxford Economics" macroeconomic forecast modelling, an E&Y "base case" and various scenarios assuming accelerated growth combined with additional allowances (of 50Mld) for "contracted demand".

KA included a table comparing 2050 non-domestic demand projections for the GDA as per the E&Y report. They noted that the projection selected as the basis of the SDB for the GDA results in a 2050 non-domestic demand projection that is nearly double that produced using the "Oxford Economics" model. They added that this is based on what E&Y calls an "accelerated growth" scenario, with a growth trajectory that would put Dublin amongst the fastest growing developed cities in the world.

KA also noted the allowance of 50Mld for "contracted demand" (as notified to E&Y by Ervia).

KA argued that it is vital that Ervia and Irish Water verify whether any of the previously notified "contracted demand" is already known to be reduced as a result of Covid, given that the E&Y report did not take account of the likely long-term impacts of this on industry in Dublin.

9.2.2 Response to Demand Feedback.

This consultation is on the RWRP EM, which uses the supply demand balance set out in the Framework Plan. The Framework Plan set out the methodology that Irish Water would use for all 539 Water Resource Zones that make up the public water supply in Ireland. 134 of these Water Resource Zones are in the East and Midlands Region.

The public consultation is not on a specific project, nor does it include a critique of projections carried out as part of other consultations. Significant parts of the Kennedy Analysis submission related to material that was not published as part

of the consultation on the draft RWRP EM. Therefore, parts of the submission are out of scope for this consultation and are noted in Section 16 of this report.

Demand for water distribution input is the amount of water that needs to be input into the top of a distribution network to meet customer needs at the ends of the networks. Therefore, demand includes accounted for water and unaccounted water, some of which is leakage within the distribution network. In the draft RWRP EM we use the standard International Water Association approach to estimate the water balance across each individual water resource zone. This same methodology is used across most of the UK and Europe. However, when we are calculating future demand, we only grow our forecast for “accounted for water”. Therefore, when we estimate demand increase over time, we do not increase leakage. As leakage targets for the GDA have been applied to the Supply Demand Balance, the leakage component of the SDB will reduce from 214MI/d in 2019 to 122 MI/d in 2044, a net leakage saving of 92 MI/d

In response to the KA point that domestic demand has been reducing; this is not the case. Although there was a period of relatively flat demand growth between 2007 and 2014, due to the severe economic contraction following the collapse of the Celtic tiger, since 2014 demand in the GDA has been growing steadily. Based on metered data, average demand in the GDA has increased from 528 MI/d in 2012 to 571MI/d in 2020.

Kennedy Analysis proposes that the increase in demand between 2007 and 2017 was caused by an increase in leakage, and that water used by domestic and non-domestic users has increased by less than 3%. It should be noted that the population in the GDA increased by approximately 300,000 between 2005 and 2020. Therefore, even if the additional population were low water users by international standards (122 l/p/d (litres per person per day)) , such a population would be expected to use approximately 30-40 MI/d of domestic water alone. The Kennedy Analysis submission does not consider an increase of 300,000 people using water as a logical reason for an increase in water demand, but instead assumes that such a population would use practically no water, and that the increase in demand is as a result of increase in leakage.

The Kennedy Analysis assumption that leakage is the sole driver of demand increase is not based on any data, and the sole basis of the hypothesis is the comparison of a leakage estimate developed by Dublin City Council in 2005 (not within the scope of this consultation), compared to one prepared by Irish Water in 2019.

These two estimates are based on an entirely different water balance as Dublin City Council had practically no domestic meter data when developing their water

balance estimate, whilst Irish Water had access to approximately 50% meter coverage.

The points raised by KA in the consultation submission noting that Irish Water have not accounted for two upcoming water projects for Dublin in the SDB are misleading and incorrect. These projects are interim options do not provide any medium to long term additional supply to the GDA, as they involve a proposed temporary increase abstraction from the same source (the river Liffey), that is already in use, and cannot meet the 1 in 50 Level of Service standard set out in the Framework Plan. The permanent infrastructure required to facilitate the interim options is required irrespective of the outcome of the preferred approach, in order to address water quality and capital maintenance issues, and therefore investment in these assets represents “no regrets” infrastructure

The two existing transfer mains between Ballymore Eustace and Saggart are critical assets which operate continuously with no redundancy. As these trunkmains are in continuous operation, even short 24-hour shuts can take significant planning. As such they are identified as critical assets and single points of failure for large areas of the network. A duplicate main is therefore required between Ballymore Eustace and Saggart, irrespective of the of the outcome of the Preferred Approach, and will provide additional network resilience, particularly during short duration events.

Similarly, the capacity upgrade at Leixlip is to address water quality risk and to assist in balancing operations between Ballymore Eustace and Leixlip Water Treatment Plants.

In the draft RWRP EM, the interim option proposal is to seek permission to increase abstraction from the existing supplies until the preferred approach is in place. The increase in abstraction from the river Liffey will be subject to a statutory consent process. It is clearly highlighted in both the Study Area 9 Technical Appendix and SEA Environmental Report for Study Area 9, that any such consent would be highly likely to be temporary in nature and would not resolve the level of service issues in the GDA, and that is why it is an interim measure only.

In response to the claim that using the 22-hour output in our WAFU calculations overestimates deficit. The limiting factor in the GDA supply availability is source (raw water and source level of service), therefore this point is not applicable.

The maximum throughput of our WTPs, the 24-hour capacity, is the maximum volume of water that can be produced based on the hydraulics of the plant and is the maximum volume of water we can treat during a period of peak need. This output cannot typically be maintained for periods longer than 24 - 48 hours without potentially impacting output water quality. Running the plant at 24-hour

output capacity results in the suspension of the backwash process, which is a critical preventive maintenance process. The suspension of this process leads to water quality issues and can result in a reduction of the hydraulic capacity of the plant and damage to filter media over time. The period of time full output can be maintained is dependent on the treatment processes and the raw water quality.

Therefore, when considering the sustainable treatment capacity element of the supply assessment we need to limit the WTP output to the volume of water the WTP can sustainably treat while maintaining the required water quality standards.

When we state 20-hour production in NYAA, we are referring to the rate of throughput of a water treatment plant, i.e., the flowrate through the plant is 20 hours/24 hours. The WTP is running at a sustainable throughput over 24 hours.

In our standard designs we optimise a throughput of 20/24 hours in normal conditions. This is standard design and allows WTPs to increase output above optimum operational to refill strategic storage levels after a planned or unplanned outage, or to recharge the networks after they have been drawn down to allow for a repair

An outage allowance is an allowance to account for planned or unplanned outages. The duration of a planned or unplanned outage can be considerable. For example, replacement of filter might take place over the course of a number of months. The water treatment plants could not work at 24-hour period for such an extended period, and therefore both sustainable production and outage allowance are required in our plan, and the use of both is not double counting.

An outage allowance is applied to the Water Available For Use to allow for unplanned and planned outages in the network which maybe ongoing during a planning scenario event such as the DYCP. A outage event can happen at the same time as a drought scenario (DYCP), so therefore we cannot factor that 22 hour output will be available at all of our water treatment plants. In a typical WRZ it is never assumed that all plants can run at sustainable output all of the time. Output will need to be reduced for servicing and upgrading components of the WTPs for example replacing filter beds that have come to end of life or complete replacement of WTPs. These upgrade works can extend for periods of months or years depending on the work involved. For example, when the Vartry WTP upgrade works were being carried out, output at the plant had to reduce by 30MI/d for 10 months from Feb 2021 to Nov 2021. If we had experienced a dry weather event in 2021 that 30MI/d would not have been available for supply and therefore an outage allowance is required to be applied to the estimated

WAFU. Box 3 of Appendix 9 of the RWRP EM provides more examples of the requirement for outage allowance.

Ireland is one of the high growth economies in Europe. This growth has been driven by a strong manufacturing sector and Foreign Direct Investment.

The pharmaceutical and manufacturing industries provide large amounts of good employment opportunities and support further service employment across the country. As a testament to the successful work of the IDA and Enterprise Ireland, these industries are spread throughout the country, and coupled with a strong agricultural sector and indigenous agri-food sectors have allowed the Irish Economy to recover in the aftermath of the collapse of the Celtic Tiger and the Covid-19 crisis.

Due to its size and complexity, the non-domestic demand forecast for the GDA was developed by independent economic analysts. A summary of this analysis forms part of the RWRP EM documents, Appendix 9, and was made available during the draft RWRP EM consultation period.

The medium profile from this economic analysis was included in the supply demand balance and it projects non-domestic demand in the GDA to grow from 139MI/d to 232 MI/d from 2019 to 2044, which is a 67% increase in non-domestic use. The “accelerated growth” scenario has not been used.

In response to Future Proof Clare’s comment, in which they said that the regional Preferred Approach outcome of the plan allows for greater flexibility in terms of this growth provision, the associated interconnectivity means that Irish Water could support such growth anywhere within the wider Regional Water Resource Zone. This provides significant benefits for balanced regional development. For example, if the IDA or Enterprise Ireland are talking to an industrial user, they can promote areas with a lower land cost that have strategic water supply infrastructure in the vicinity.

In response to the CRU’s submission on domestic growth in Dublin. The supply demand balance for the Greater Dublin Area (GDA) is set out in the Framework Plan. As noted in the Framework Plan the Per Capita Consumption (PCC) estimated in 2019 is maintained in our estimation of 2044 PCC, however, an allowance for population growth has been provided in our estimation of future demand. The population growth figures are in line with national forecasts, which have been taken from the NP, RSES and the Local Authority National Development Plans. It should be noted that population growth is significant in Ireland and that household occupancy rates are falling which can in turn generate an upward pressure on PCC. More information on demand projections is provided in Section 4.3.2.1 of the Framework Plan.

As set out in Section 4.2.2 and Table 4.4 of the NWRP Framework Plan, we estimated domestic usage in the GDA to be 122 l/p/day (litres per person per day) in 2019. It is also noted in the NWRP Framework Plan that we have an estimated 1.7 million customers in the GDA in 2019, this equates to an estimated domestic demand of 207 Ml/d as set out in Table 4.7 of the NWRP Framework Plan. This domestic demand forms the baseline of the SDB which has been used to inform the need for the GDA WRZ in the RWRP-EM. The same method has been used to determine the PCC for all WRZs and details of the estimated PCC across the WRZs are provided in Table 4.4 for example the PCC for Galway city is 147 l/p/day.

Within our Framework Plan and RWRP-EM we recognise that growth does not always result in an increase in non-domestic demand, and even though the population and economy are forecast to grow considerably over the coming years, we have limited non-domestic water demand to the regional Cities. We have also capped non-domestic growth within other settlements. In these areas we will try to facilitate growth in non-domestic water use via efficiency improvements and water conservation. While KA expressed concerns in regard to inflated non-domestic demand, we acknowledge concerns raised by MCC, CCC, the OPR and the SRA that this approach may result in a lack of available capacity to accommodate development. One of the benefits of the Preferred Approach for the region is that it facilitates an interconnected supply system which will allow flexibility in the location of future non-domestic demand.

We note the ongoing work between the Regional Assemblies and the local authorities over the course of the development of the Local Authority Development Plans. As these plans are finalised, Irish Water will incorporate the increasingly refined growth rates into our demand forecasts.

We will review policy and trends in relation to this over the coming years and refine our growth forecasts as per the monitoring and feedback process set out in section 8.3.8 of the Framework Plan.

To ensure we can support growth while transforming our supplies, we also include interim measures within our NWRP. These measures are intended to address critical need, as set out in Section 8.3.7.6 of the Framework Plan.

In response to the submission from Future Proof Clare, as set out in Section 3.7 of the Framework Plan, our WAFU forecast considers the impact of climate change on our existing sources by adjusting the future hydrological yield of each source using Ireland-specific climate change factors, which were developed by the ICARUS (Irish Climate Analysis and Research Unit) Department of NUI Maynooth in 2008. The work involved assessing nine catchment types across Ireland to develop seasonal adjustment factors that could be applied to hydrological yield. The central estimate of the impact of climate change on water availability has been included within the SDB for each WRZ.

The base year used by Irish Water in the development of its NWRP is 2019, as 2018 was a significant drought year, and a National Water Conservation Order was issued for much of the summer period. Similarly, in 2020, restrictions related to Covid-19 may have altered the baseline demand figures for that year. We are satisfied 2019 remains an appropriate base year to have used for the NWRP.

Long term impacts of external factors such as Covid-19 and Brexit on demand will be assessed over the coming years before significantly altering forecasts. At present, Irish Water is satisfied that the 25-year forecasting is appropriate. The Framework Plan has a continuous feedback and monitoring process (as set out in section 8.3.8 of the Framework Plan) to allow for incorporation of emerging, policy and data. As further data becomes available, we will incorporate it into the NWRP as required.

9.3 Supply Demand Balance

9.3.1 Summary of Supply Demand Balance Feedback

Tipperary County Council recognised that the Supply Demand Balance (SDB) and barrier scores are evolving, and that Irish Water is committed to updating these as more data are available through assessments and upgrades.

Kennedy Analysis (KA) argued that the SDB tables contain errors. KA highlighted that in Irish Water's projections peaking is being inappropriately applied to "total demand" which includes headroom which results in an inappropriately inflated headroom provision increasing headroom by 7Mld which KA stated is a very significant volume in the context of this project.

KA noted that both they and the CRU flagged this issue in their submissions on the Framework Plan consultation for this project and that they consider that IW's response document did not address the point in any detail. KA argued that Irish Water's response fails to address the very specific issue raised, but also because, in their view, it directly contradicts the statements/methodologies set out in the original consultation document. KA noted that the consultation document stated explicitly that "headroom" forms part of "total demand", and that "headroom factors are applied to the SDB for each Weather Event Planning Scenarios described in section 2.3.2 in order to derive the total demand" and later "total demand is the sum of the components of water use plus headroom".

KA stated that in the SDB tables the "Total" fields do not reflect the total of the cells. They argued that fields that should contain identical figures are incorrect,

and some rows are repeated noting that each of these errors has an impact on the findings of the analysis.

KA raised concerns over the SDB table for the GDA in comparison with the SDB table for the 'new' GDA region as outlined in the RWRP-EM. KA noted that the demand projections in the SDB for the new GDA region are higher than those in the SDB for the GDA as it is a wider region than the original GDA. KA highlighted however that the supply projections for the GDA region should also be higher since there are now nine additional WTPs within the GDA region.

However, KA highlighted Irish Water's Water Available For Use (WAFU) cited for the Normal Year Annual Average (NYAA) and for the Dry Year Critical Period (DYCP) scenarios for each of the years other than 2044 are identical to the figures for the original non-expanded GDA. KA commented that these figures imply that the GDA region is currently operating with a greater deficit than it is, and the same applies to every year up to 2040.

Kennedy Analysis argues that the SDB tables for the GDA are opaque and incomplete. KA highlighted the SDB tables should contain a line for distribution input; domestic demand; non-domestic demand; leakage; Per Capita Consumption and show how each of these elements grows or reduces, at 5-year intervals. KA noted this as vital to allow for proper public and independent scrutiny of Irish Water's calculations.

KA noted that Irish Water's previous SDB tables in its 2015/2016 reports contained the breakdown as outlined in the UK guidance on SDB tables but has not done so in the SDB tables for the draft RWRP-EM. KA noted that in the SDB table for the GDA the figures for WAFU/outage are not provided which they noted are key figures to the SDB analysis. KA noted that Irish Water failed to previously publish the WAFU/outage figures because WAFU was generated using a complex model called "Aquator". KA commented they are not querying the method by which the WAFU figures are calculated but asking Irish Water to publish the figures that their modelling produced - the ones that were used for the purposes of calculating the deficit. KA requested Irish Water publish the figures that their modelling produced and noted that failure to do so raises concerns of transparency and accountability.

KA claimed that Irish Water has failed to take account of the "spare" treatment capacity at Dublin's WTPs in the SDB. KA noted that the SDB lists the following WTPs for the GDA: Ballymore Eustace, Leixlip, Vartry, Srowland, Ballyboden, Rathangan Wellfields, Monasterevin, Bog of the Ring, Cronroe, Roundwood Well and Glenealy and the total 24-hour output of these WTPs is 687Mld.

However, KA argued that this 687Mld is not the total treatment capacity of these WTPs – and contended that multiple WTPs have (or will soon have) treatment capacity considerably higher than the figures set out in the SDB.

KA cited Ballymore Eustace as an example, which has treatment capacity of 400Mld but only 312Mld is referenced in the SDB. KA debated that if 312Mld represents the level of water that can be sustainably produced in the DYCP due to abstraction limitations –it is correct to say that in the summer only 312Mld can be treated - but that is not to say that the other 88Mld of treatment capacity should be ignored altogether. KA noted that this 88Mld spare capacity should then offset the “outage” provision at Ballymore Eustace and negates Irish Water’s proposal to assume 22-hour output based on 312Mld. KA further reasoned that, in the winter critical peak scenario or WCP raw water availability is not a constraint – so, in an emergency during the WCP, the full 400Mld treatment capacity of WTPs could be called upon. This should clearly be reflected in the projections for the WCP – but, even for the WCP scenario, the SDB states that Ballymore Eustace only has 312Mld treatment capacity.

KA claimed that there is a lack of transparency on provisions for “outage” and climate change. They maintained that in previous SDBs for the GDA the “outage” provision was reported within the “demand” projections in a transparent manner, with the exact size of the outage provision in Mld stated for every year within the projection table. KA disputed that Irish Water now provides for “outage” on the supply side (it is deducted from WAFU) but nowhere in the SDB for the GDA does Irish Water state how large the outage provision actually is in Mld. This is unacceptable. The “outage” provision is a key figure. To redact it is opaque, and does not allow for proper scrutiny

Similarly, Kennedy Analysis noted that for Climate Change in previous SDBs for the GDA the “headroom” provision was deemed to cover all implications of climate change but highlighted in the most recent SDB for the GDA Irish Water, as well as providing for climate change through the “headroom” provision is making an additional provision for climate change by making a deduction to Water Available For Use (WAFU). KA further argued that there is an additional provision for climate change through the 1/50yr yield provision. KA noted that the SDB table does not state what deduction is made in Mld to WAFU for climate change and details about the 1/50yr yield provision in the SDB are unclear. KA requested that the full extent of climate change provisions for the GDA must be published.

Ibec noted it as encouraging that the next cycle of Water Resources planning will model the country’s SDB as a single region, rather than four separate ones.

The Environmental Protection Agency (EPA) commended the comprehensive approach taken to looking at both aspects including quality and quantity and SDB across the region and within each Study Area. The EPA commented that this provides a useful mechanism to inform prioritisation of works, as well as supporting sustainable land use planning considerations by local authorities. The EPA recommended to work with local and regional planning authorities to ensure that this type of information supports their respective forward planning considerations.

Tipperary County Council (TCC) recognised that the SDB and barrier scores are evolving, and that Irish Water is committed to updating same as more data are available through assessments and upgrades. TCC advised they will actively engage with Irish Water on this.

TCC noted that Irish Water has identified current and future water quantity issues in the Newport-Ballina, Lorrha, Terryglass, Upperchurch and Borrisokane Water Supplies in its SDB calculations. TCC commented that insufficient capacity in any drinking water supply is of concern and particular as its role as planning authority through the realisation of the county's growth potential, the attraction of employment and the provision of housing opportunities.

The Commission of the Regulation of Utilities (CRU) noted as Irish Water's economic regulator, Irish Water's assessment of the supply demand balances across the country and how these direct and drive investment decisions is of particular interest to the CRU. CRU highlighted how it will help to evaluate the effectiveness of Irish Water's expenditure and help to ensure that Irish Water is able to provide citizens and businesses with a secure supply of water.

CRU noted that integral to Irish Water's assessment are the core assumptions on how much water it can sustainably abstract from the natural environment and forecast changes in demand arising primarily from people, businesses and from losses on the system, most notably through leakage. In addition, the CRU highlighted that Irish Water's assumptions on risk and seasonality, through its headroom and peaking calculations, can have a big impact on the assessment of need and on Irish Water's ability to deliver a secure supply of water. Where Irish Water identifies a need for investment to meet supply-demand deficits, the CRU requested that Irish Water consider that it is important that it is appropriately appraising the potential solutions and prioritising delivery of those solutions in a consistent and objective manner.

The CRU noted that Supply demand balances are typically constructed as a combination of Water Available For Use, outage, the demand forecast and target headroom. The CRU further noted that it would be helpful for Irish Water to clarify some apparent inconsistencies between the appendices for the GDA in

the final framework and GDA Region in the draft Eastern and Midlands Regional Water Resources Plan.

An Forum Uisce AFU recommended that the Regional Plan should consider actual climate change scenarios, in cooperation with Met Eireann and other climate experts, in order to better estimate supply demand balances and provide for better planning towards resilient systems. They noted that collaboration with Met Eireann, and continuous cooperation with Irish Climate Analysis and Research Units, would allow such revisions to be incorporated in the plan.

9.3.2 Response to Supply Demand Balance Feedback

This consultation is on the RWRP EM, which uses the supply demand balance set out in the Framework Plan. The Framework Plan set out the methodology that Irish Water would use for all 539 Water Resource Zones that make up the public water supply in Ireland. 134 of these Water Resource Zones are in the East and Midlands Region.

Within the Framework document, for this iteration of the NWRP, we have set a 1 in 50 Level of Service standard for all of our supplies. This equates to a 2% probability of failure or the reliability we require from our supply sources. In practical terms a large abstraction from a small supply source would have a lower level of service than a small abstraction from a large supply source. In most European Countries, and UK utilities, the Level of Service ranges from 1 in 100 year to 1 in 500 year for large urban supplies. Therefore, Irish Waters initial target to improve the resilience of all of our supplies is by no means inflated.

The public consultation is not on a specific project, nor does it include a critique of projections carried out as part of previous consultations.

The points raised in the consultation submission from KA on the interim GDA options are incorrect. The interim options do not provide any medium to long term additional supply to the GDA, as they involve a temporary increase abstraction from the same source (the river Liffey), that already does not meet the 1 in 50 Level of Service standard set out in the NWRP Framework Plan. The infrastructure required to facilitate the interim options is required irrespective of the outcome of the preferred approach, in order to address water quality and capital maintenance issues.

The interim option proposal is to seek permission to increase abstraction from the existing supplies until the preferred approach is in place. It is clearly highlighted in both the Study Area 9 Technical Appendix and SEA Environmental Report for Study Area 9, that any such permissions would be

highly likely to be temporary in nature and would not resolve the level of service issues in the GDA.

In the consultation submission from KA the GDA Regional Supply Demand Balance is flagged as being incorrect, as some of the existing supply sources have not been included in the combined SDB. Note the deficit in the draft RWRP-EM of 194MI/d has reduced to 183 MI/d further to the adoption of higher leakage targets for the WRZ see Section 4.12.6. The observation raised, misunderstood the purpose of the GDA Regional SDB Table. The table was generated to consider the theoretical SDB after the preferred approach has come into effect. Because of this issue raised, in the final RWRP EM we will only publish this table for 2044, in order to avoid any further misunderstanding.

As set out in the Framework Plan, differing sizes of Water Resource Zones have different factors and allowances for peaking, headroom and outage. In smaller WRZs the factors are larger, due to increased uncertainty, in larger WRZs such as the GDA and Mullingar, these factors are lower. This is a very good example of the benefits in merging WRZ's where suitable. It will ultimately reduce the amount of supply required as there is more resilience in the system than a smaller more isolated supply would contain.

The GDA Regional Preferred Approach, results in a large, interconnected water supply zone that has subsumed 36 smaller supplies. Therefore, if the deficits for all of these individual WRZs were simply added together, the outcome could result in an over inflation of the deficit (due to the small zones having higher allowances). For this reason we recalibrated all of the SDBs for the small water resource zones downwards to reflect the fact that they would be part of a larger supply.

The net effect of this exercise was to reduce the deficit need that the preferred approach would need to facilitate and not increase, as suggested by the KA submission. It also allowed us to subtract the full leakage targets i.e. the volume of water we would need to save to get down to 21% and to remove the unsustainable supplies and those that would be decommissioned as part of the preferred approach.

For this exercise we used the standard SDB table, which shows five-year increments from 2019-2044. However, obviously the 36 supplies are not interconnected at present and the existing supply sources are in place. The sole purpose of the table was to understand the outcome of the preferred approach and the deficit that would need to be resolved in 2044 when the supplies are interconnected and some of the existing supplies decommissioned. This appears to have caused some confusion. As a result, in the final RWRP EM Appendix 10 will be reproduced to just show the 2044 outlook.

There are only two safety factors included in our supply demand balance, an Outage allowance applied to the deployable output of our supplies (Water Available for Use) and a Headroom factor applied to demand to account for uncertainty in forecasts.

For the Greater Dublin Area, the outage allowance amounts to 5% of the Deployable output and is applied to the Supply-side calculation and a headroom of 8% applies to the Demand-side calculations.

The submission from KA on this topic mistakenly associates peak water use as a safety buffer. It is not. Peaking is a normal occurrence in all water supplies, in the same way as it is in energy supply. Peaks happen on a daily basis, with more water used in the morning and evening than at night. In some supplies with manufacturing, there can be a seasonal profile. In high tourist areas there can be peaks for an entire summer. Demand in most water supplies peaks during drought periods. Peaking is applied to the total demand for each planning scenario.

As the water is essential for public health, we must ensure continuity of supply and must therefore design our supplies to withstand peak periods, such as those that occur between night and day. For short term peaks lasting 24-36 hours we utilise network storage of treated water. For longer peaks, seasonal peaks and multi-seasonal peaks we require raw water storage. Peaking is observed above total demand and not on individual aspects of the water balance, as it is an event that occurs. For example, an energy transmission company would observe a peak in demand for electricity between 5pm and 7pm. They would report that peak as a value above the total estimated average demand. They would not break down how much energy was lost to through the transmission network and then recalculate the peak based on an estimate of what may have been consumed.

It is exactly the same for water supply. For example, In the GDA we can observe that on an average day 570 MI/d was recorded flowing through our meters while on a peak day that volume can increase to 630 MI/d. The volume measured is the total demand, and the value estimated over coming years is the total demand (that includes headroom).

As leakage is reduced over time, peaking can become more pronounced. It is not an error to apply peak factors to total demand, and a review of published water resources plans for other jurisdictions/utilities will show the same methodology being used.

In response to the feedback from KA regarding the output capacity at Ballymore Eustace WTP. As set out in Appendix 9 of the draft RWRP EM, the design capacity of Ballymore Eustace WTP is 400MI/d, however sustainable output is 310 MI/d due to network constraints and planning conditions on the intakes.

Additional capacity from the WTP cannot be utilised for outage as, currently, it is physically impossible to provide this supply to our customers due to network constraints. However, irrespective of the infrastructure or planning constraints, the WAFU (water available for use) for the GDA is limited by the volume of raw water available in a 1 in 50 year dry weather event. Therefore, in reality the water available for use is not limited by the network or the WTP output but instead the water source.

The land area (catchment) that directs water to Poulaphuca reservoir is approximately 300 square kilometers in area. The water stored at Poulaphuca reservoir is not only required to support abstraction into Ballymore Eustace WTP, it is also required to provide statutory compensation flows releases at Poulaphuca, Golden Falls and Leixlip Reservoirs, water for abstraction at Leixlip WTP and assimilative capacity for the wastewater discharges below Leixlip Reservoir. By comparison, the catchment size supporting the water supply for Paris, is 35,000 square kilometres, the catchment supporting the public water supply in Lisbon is 80,000 square kilometers. Therefore, the resilience issues for the Greater Dublin Area supplies are driven by the fact that the catchment and waterbody are too small to support the scale of water abstraction required to meet SDB. Irrespective of whether leakage is 20% or 10%, or whether the WTP output at BME is 300 MI/d or 400 MI/d, this problem remains. In this first iteration of our NWRP we have utilised a 1 in 50 year Level of Service. In other jurisdictions the Level of service can be set at 1 in 100 year and even up to 1 in 500 year. We have used a 1 in 50 year level of service as a reasonable standard to set across our supplies.

An outage allowance is applied to the WAFU to allow for unplanned and planned outages in the network which maybe ongoing during a planning scenario event such as the DYCP. In a typical WRZ it is never assumed that all plants can run at sustainable output all of the time. Output will need to be reduced for servicing and upgrading components of the WTPs for example replacing filter beds that have come to end of life or complete replacement of WTPs. These upgrade works can extend for periods of months or years depending on the work involved. For example, when the Vartry WTP upgrade works were being carried out, output at the plant was reduced by 30MI/d for 10 months from Feb 2021 to Nov 2021. If we had experienced a dry weather event in 2021 the 30MI/d would not have been available for supply and therefore an outage allowance is required to be applied to the estimated WAFU. Box 3 of Appendix 9 of the RWRP EM provides more examples of the requirement for outage allowance.

Note the WAFU figures provided in the SDB for the planning scenarios are outputs from the Aquator model with the 5% outage allowance applied, no information has been redacted. We have provided a version of the GDA SDB with the updated leakage targets in Appendix 10.

Leakage outside of the GDA is prioritised on an annual basis as part of the National Leakage Reduction Programme therefore leakage targets are not automatically applied to the supply demand balance calculations. This allows Irish Water's leakage reduction programmes to be flexible and targeted, to meet specific emerging needs. However as set out in Section 4.3.3 of the Framework Plan leakage targets for 2019 were applied to priority supplies based on: supply demand deficit, existing abstractions with sustainability issues, and drought impacts. For supplies within the Eastern and Midlands region, leakage targets of 3 MI/d were included in the supply demand balance for 2019 only and it was noted that leakage targets for further years would be allocated to supplies to meet specific emerging needs. This does not mean that only 3MI/d will be applied for the region between 2019 and 2033 but rather that we committed to a figure for 2019 in the supply demand balance for specific areas. We are fully committed to achieving the overall leakage reduction target by 2033, but not applying this target to specific water resource zones simply allows for flexibility in the first years of the plan.

The purpose of Appendix 10 of the RWRP EM is to provide a representation of the new WRZs when the proposed Preferred Approach is in place, thus allowing for downward adjustment of the peaking and headroom factors, based on the larger Water Resource Zone. The appendix is a theoretical exercise, with the purpose of understanding the revised overall deficit in 2044 for the overall DYCP Weather Planning Scenario, in order to inform the development of the Preferred Approach in the RWRP EM. To address this misunderstanding Appendix L in the Final version of the RWRP EM will be modified to only include figures representing 2044, instead of including a profile up to 2044. As set out in section 4.4 of the Framework Plan, Headroom is a factor applied to demand side calculations to address uncertainty in forecasts.

Headroom is not a forecast, but instead it is an uncertainty factor applied to a forecast. For example, with our forecast demand might be +/- 5%, while our sub-component data might be +/- 10%. A headroom assessment looks at uncertainty collectively across all of the supply demand balance components that contain forecast assumptions. It does not simply add all of these together as that would create an artificially high headroom, but instead it uses a statistical analysis to run thousands of scenarios of how the individual uncertainties might interact with each other, for example +ve uncertainties reacting with -ve uncertainties. The output of the model, for the GDA gives a headroom of 8%. As a quick sanity check, the headroom allowance used by Thames water is 6%. Given that this is Irish Waters first National Water Resources Plan and that most utilities would have refined their forecasts and datasets over the past 25-years, the 8% used within the GDA Supply Demand Balance would appear to be reasonable.

Therefore, we do not provide for climate change impact through headroom. We forecast what the climate change might do to our supply sources and demand

calculations, as part of an SDB calculation, we then apply a headroom to address collective uncertainty across all forecasts.

For the GDA, in this iteration of the NWRP we did not forecast any increase in per capita consumption over the duration of the plan, as we anticipated that increases in demand due to reduced occupancy rates would be offset by water conservation measures. Similarly, we did not include any forecast for climate related increase in demand for water over time. This is something we may review as part of future iterations of the NWRP should empirical data become available.

In our supply side calculations, we accounted for climate change by including a climate change coefficient in the Aquator model for the GDA. This coefficient is based on the 1.5 degree temperature increase by 2050, which is the basis of the Paris Accord. Unfortunately, globally trends would indicate that this target might be exceeded before 2030. The model will be adjusted if required in future iterations of the NWRP to address this.

Irish Water currently provides detailed information on water services and information regarding projects in our capital investment plans. This information is used by Local Authorities in the development of the Local Authority Development Plans. We have also developed a ten-year capacity register that enables us to interface with the Regional Assemblies and the local authority planning departments during the delivery of our Plan. The capacity register enables growth based on no deterioration of the current Level of Service, which in most cases is below the target Level of Service.

As identified in the Framework Plan, the NWRP is the framework for delivering the objectives set out in Irish Water's Water Services Strategic Plan. Two of the objectives are "Support Social and Economic Growth" and "Invest in our Future". However, it should be noted that there are significant legacy issues across our supplies, and it will take many capital investment cycles to resolve these issues.

To ensure we can support growth while transforming our supplies, we also include interim measures within our NWRP. Interim measures will be progressed to support growth as part of our current regulated investment cycle.

However, it should be noted that such measures do not improve Levels of Service, they prevent current levels from deteriorating further.

9.4 Water Quality & Reliability

9.4.1 Summary of Water Quality & Reliability Feedback

Roscommon County Council (RCC) requested continuous raw water monitoring of applicable parameters in Killeglan, Lisbrock and Mount Talbot water resources to assess how they perform in extreme weather events, and that such data should feed into future water resource planning. RCC noted that the balance needs to be struck between water quality and cost of treatment. RCC also noted that careful consideration should be given to the use of surface water sources and the resulting cost to treat this water to drinking water standards.

RCC noted that the NWRP framework plan and policy objectives are high level and long term and added that if forthcoming abstraction licencing allows and hydrological yields are determined, quantity and resilience can be achieved by the interconnectivity of water supply zones and rationalisation of poor unreliable sources in the short to medium term.

RCC noted that additional ground water resources are available at Killeglan & Lisbrock to enhance the quality and resilience of the sources in the medium to long term.

Ibec commented that the RWRP-EM must place appropriate focus on the needs of non-domestic users, in addition to the needs of households and the access to a reliable, resilient, and sustainable supply of quality water.

Meath County Council noted that to sustain balanced economic, social, and residential growth, it is essential that sustainable, reliable, secure, and sufficient water capacity is made available into the future.

Tipperary County Council (TCC) has noted that there are reliability issues in the Nenagh Regional Water Supply Scheme and in the Lorrha-Rathcabbin, Borrisokane and Cloughjordan water supplies and the critical infrastructural upgrades required to address these issues. TCC requested that Irish Water accelerates early capital investment to address these issues in these areas.

9.4.2 Response to Water Quality and Reliability Feedback

The purpose of the NWRP is to ensure quality, quantity, reliability, and sustainability of all water supplies. The RWRP EM identifies significant need across all our supplies in the region.

There are significant legacy issues across our supplies, and it will take many capital investment cycles to resolve these issues.

Quality and chemistry of raw water is considered through the DWSP assessments that will be carried out for each water supply over the coming years.

The NWRP uses the barrier assessment, see Section 5 of the NWRP Framework Plan, to determine the treatment process required for each existing a new source and this information has been used in the development of the NPV costs. Therefore, this information informs the selection of the preferred approach. Over the years as more data on the costs associated with treating different classes of raw water will be collected and Irish Water will further develop their understanding of the costs associated with treating raw water with differing properties. This information will be used to inform further iterations of the NWRP.

Within our Framework Plan and RWRP-EM we recognise that growth does not always result in an increase in non-domestic demand, and even though the population and economy are forecast to grow considerably over the coming years, we have limited non-domestic water demand to the regional Cities. We have also capped non-domestic growth within other settlements. In these areas we will try to facilitate growth in non-domestic water use via efficiency improvements and water conservation.

To ensure we can support growth and address critical water quality risk and supply reliability issues while transforming our supplies, we also include for interim measures within our NWRP, as set out in Section 8.7.3.6 of the Framework Plan. Interim measures will be progressed to support growth as part of our current regulated investment cycle. However, it should be noted that such measures do not improve Levels of Service, they prevent current levels from deteriorating further.

9.5 Deficits

9.5.1 Summary of Deficits Feedback

Ibec commented that Irish Water's projections of Water Available for Use against likely future annual or peak period demand suggest a substantial and growing deficit when benchmarked to the internationally accepted 1-in-50-year standard. They further noted that only half of the WRZs meet this threshold, implying supply risks to various degrees for over two million domestic users as well as thousands of businesses in the Eastern Midlands region, particularly Study Areas 4 Mullingar and 9 Greater Dublin Area.

Kennedy Analysis (KA) commented that the projected 2044 deficit as detailed in the draft RWRP-EM for Dublin is due to the inclusion of safety buffers. KA noted their support of the GDA having a safety buffer that is in line with international best practice but highlighted it as vital that Irish Water is not permitted to demand a spare capacity that is inappropriately high. KA argued that to do so

would result in the Shannon pipeline being built unnecessarily when better and less expensive alternative solutions are available.

KA further commented that if Irish Water's SDB figures for the GDA had adopted a 35% safety buffers in line with what Irish Water previously published as international best practice, in its last report in 2016 then the safety buffers would amount to 158Mld and the projected 2044 deficit for the GDA would be just 103Mld instead of 194Mld.

KA argued that Irish Water has introduced new safety buffers in a very opaque way in the draft RWRP-EM and made it very challenging to extract data from the SDBs and cited how Irish Water presented the safety buffers as a percentage figure, but it does not make clear what they are a percentage of. Kennedy Analysis highlighted that in previous reports, they were a percentage of "accounted for water" alone (excluding leakage and excluding the strategic industrial allowance), whereas now they are a percentage of "accounted for water" plus leakage plus the strategic industrial allowance of 50Mld which increases the safety buffers significantly.

Offaly County Council noted that there are water deficiencies for County Offaly, and list these in their submission.

Roscommon County Council requested that the breakdown of the deficit figures in Table 2.3 WRZ SDB Dry Year Critical Period Estimated Deficits in Appendix 5 Study Area 5 Technical Report should be provided.

9.5.2 Response to Deficits Feedback

The methodology Irish Water used in for developing our supply demand balance is set out within the NWRP Framework Plan www.water.ie/NWRP. Within the Framework document, for this iteration of the NWRP, we have set a 1 in 50 Level of Service standard for all of our supplies. This equates to a 2% probability of failure or the reliability we require from our supply sources. In practical terms a large abstraction from a small supply source would have a lower level of service than a small abstraction from a large supply source. In most European Countries, and UK utilities, the Level of Service ranges from 1 in 100 year to 1 in 500 year for large urban supplies. Therefore, Irish Waters initial target to improve the resilience of all of our supplies is by no means inflated. If we had utilised 1 in 100 year or 1 in 200 year levels of service the sustainable supply would be less and the deficits would increase.

In response to the submission from KA, Irish Water confirms that the estimated deficit in the GDA is not inflated due to the inclusion of safety buffers. There are only two safety factors included in our supply demand balance, an Outage allowance applied to the deployable output of our supplies (Water Available for

Use) and a Headroom factor applied to demand to account for uncertainty in forecasts.

For the Greater Dublin Area, the outage allowance amounts to 5% of the Deployable output and a headroom of 8% applies to the demand side calculations.

The submission on this topic mistakenly associates peak water use as a safety buffer. It is not. Peaking is a normal occurrence in all water supplies, in the same way as it is in energy supply. Peaks happen on a daily basis, with more water used in the morning and evening than at night. In some supplies with manufacturing, there can be a seasonal profile. In high tourist areas there can be peaks for an entire summer. In dry periods peaks can be for a dry summer, or even multi-seasonal. For example, in West Cork in 2022, rainfall rates were significantly below average for 9 of the last 10 months. As water sources did not replenish over the winter/spring period, and local sources have failed, demand has been persistently high for much of summer 2022. This may continue through the autumn.

Demand in most water supplies peaks during drought periods. Peaking is applied to the total demand for all planning scenarios. All water utilities show peaks based on total demand (i.e. the peak that occurs in the total water supplied

As the water is essential for public health, we must ensure continuity of supply and must therefore design our supplies to withstand peak periods, such as those that occur between night and day, we utilise network storage of treated water. Peaking is observed above total average demand, as it is an event that occurs. For example, an energy transmission company would observe a peak in demand for electricity between 5pm and 7pm. They would report that peak as a value above the total estimated average demand. They would not break down how much energy was lost to through the transmission network and then recalculate the peak based on an estimate of what may be being consumed.

It is exactly the same for water supply. For example, In the GDA we can observe that on an average day 570 MI/d was recorded flowing through our meters while on a peak day that volume can increase to 630 MI/d. As leakage is reduced over time, peaking can become more pronounced.

We acknowledge IBEC's comment on the existing deficit and risks to supply. There are significant legacy issues across our supplies, and it will take many capital investment cycles to resolve these issues. To ensure we can support growth while transforming our supplies, we also include interim measures within our NWRP. Interim measures will be progressed to support growth while protecting supplies to our existing customers. They will be completed as part of

our current regulated investment cycle. However, it should be noted that such measures do not improve Levels of Service, they prevent current levels from deteriorating further.

A summary of the deficits in each WRZ is provided in the technical reports. A more detailed breakdown of the supply demand balance is provided in Appendix L of the NWRP Framework Plan https://www.water.ie/projects/strategic-plans/national-water-resources/NWRP_FP-Appendix-L-Merged-final.pdf and a detailed breakdown of how the supply demand balance is calculated is provided in Sections 3 to 6 of the NWRP Framework Plan. Reference to Appendix L is provided in the technical reports in the text explaining the table which contain the WRZ deficit summary.

9.6 Conclusions on Need Feedback

Having carefully reviewed the submissions received on the theme of Need, Irish Water considered that more clarity on certain points should be provided in the RWRP EM. This change is explained in section 9.6.1 “Clarifications” below. In addition, some of the points made in the submissions will be taken forward in other ways, as explained in section 9.6.2 “Recommendations” below.

9.6.1 Clarifications on Need Feedback

The following sections of the RWRP EM has been updated to reflect feedback under the theme of Need Feedback:

Section 3 - Section 3.3.1 has been updated to reference to the European Union (Drinking Water) Regulations 2014, as amended (Drinking Water Regulations (DWR) ins now provided.

Appendix 10 - Appendix 10 has been updated to only include figures representing 2044, instead of including a profile up to 2044.

9.6.2 Recommendations on Need Feedback

As noted in Section 8 Environment drought plans will be developed for each WRZ and it is planned to provide this detailed in the next iteration of the NWRP.

10. Solutions Methodology

In this chapter, we summarise the key references in submissions to issues under the broad theme of “Solutions Methodology”, these are submissions about the methodology used to find a preferred solution. Within the overall Solutions Methodology theme, we identified seven sub themes, which we set out in Figure 10.1. We deal with each of these sub-themes in this chapter, setting out first a summary of the relevant mentions in the submissions, followed by our response. The sub-themes are not dealt with in any particular order.

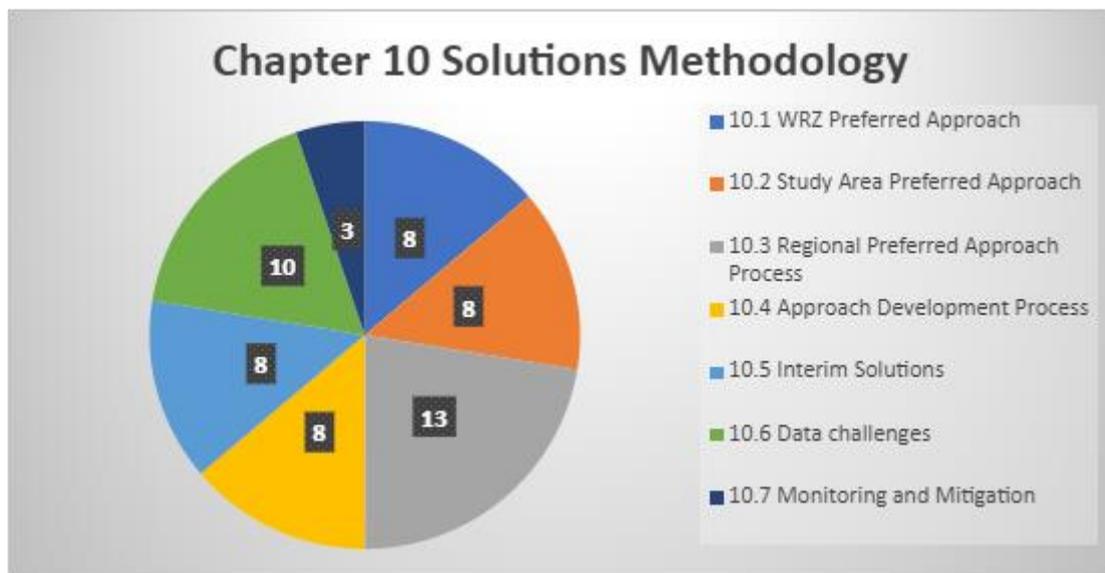


Figure 10.1 Solutions Methodology

10.1 WRZ Preferred Approach

10.1.1 Summary of WRZ Preferred Approach Feedback

Clare County Council’s Physical Development Directorate (CCC-PDD) reflected on Irish Water’s proposed increased abstraction at Castlelake as the Preferred Approach. CCC PDD stated that this cannot be compared with the option for a connection to the Limerick supply without further data being provided by Irish Water on its decision-making scoring. CCC-PDD questioned what the plan would be if increased abstraction is not feasible at Castlelake. CCC-PDD questioned how long Irish Water’s assessment of the abstraction capacity at Castlelake would take, and whether the decisions to regionalise supply to Limerick towns could be impacting on available capacity for future exports of Limerick water to Shannon and Sixmilebridge, should this be needed. They added that further data is required to support increased abstraction from the Ennis source, to support Irish Water’s chosen strategy and asked when such a study would take place.

CCC-PDD noted that Group Water Schemes in east Clare are fed from Castl lake Water Treatment Plant (WTP) and added that this should be factored into the data showing volumes drawn down. The CCC-PDD added that the approach Irish Water was taking to many of the supplies in East Clare was based on abstracting more from untested sources and restoring the use of previously abandoned boreholes, indicating they did not think this was a good approach.

CCC-PDD flagged that additional boreholes were drilled at supply locations in East Clare during the 2018 drought, but additional capacity was not available. They added that according to their knowledge, no additional water is available at the Mountshannon water supply scheme source – as evidenced during recent drought conditions.

CCC-PDD also asked what the fall-back plan would be if the preferred solution was not able to be realised, now that Croom is considered for rationalisation due to a lack of alternative supply and inadequate groundwater yield.

CCC-PDD noted that Irish Water considered the supply of small schemes in Limerick from the Limerick City WTP and found that they were not the optimal option individually but succeeded as a regional scheme (Study Area combination 20). CCC-PDD argued that regionalisation of Limerick city water to Ennis, Sixmilebridge and all East Clare Water Resource Zone's (WRZ) should be considered for feasibility. Or alternatively, a WTP with a source at Lough Derg should be considered to regionalise supply for East Clare WRZ's.

Wicklow County Council (WCC) noted its concerns about Estimated Maximum Deficits in the following WRZs:

- Aghrim Annacuragh Redcross Conary
- Avoca Ballinaclash
- Laragh Annamae

WCC flagged that the Rathdrum Public Supply is highly vulnerable to failure or low yields during periods of extreme hot weather which has been a regular feature in recent years in Ireland and likely to worsen with climate change issues. WCC also noted in Rathdrum that the ongoing capacity issues mean that the Council may not be able to grant planning permission for development.

WCC also highlighted that the Housing growth target for Rathdrum in the emerging 2022-2028 County Development Plan (CDP) is 330 units between 2016 and 2031, which indicates that further population and housing growth is targeted for this town and the Council is keen to ensure that all zoned lands can be serviced. WCC further highlighted that under the Emerging New County Core Strategy in the Wicklow CDP 2022-2028, which is due to be adopted by Q3 2022, Rathdrum is identified among other towns as a 'self-sustaining town' as defined in the RSES for the Eastern and Midlands Region. WCC commented that arising from ongoing concerns with the current WTP in Rathdrum and also considering the future development strategy as envisaged under the current and soon to be adopted 2022-2028 CDP, the Council requested that the delivery of the Preferred Approach be prioritised or that the interim solution of refurbishing the existing borehole, upgrading the WTP to Irish Waters standards and a containerised solution be implemented.

WCC noted its concerns about the vulnerability of the Laragh Annamae Public Supply as this includes the Glendalough Area which has a large tourism sector. They commented that major investment is required to bring Glenmacnass WTP up to Irish Water standard and specification. They also welcomed the proposed connection between Laragh Annamoe Public Supply and Roundwood Public Supply, which will result in the rationalisation of Laragh Annamae Public Supply to the new Vartry WTP and result in a secure reliable drinking water supply being available.

WCC highlighted that the Kirikee Public Supply is a small supply with a low yield but is also located next to a river and floods frequently. WCC noted that the RWRP-EM has identified a new ground water source borehole at the existing site along with an upgrade to the WTP as the Preferred Approach. The Council requested a more secure WTP set back further from the river to reduce flooding risk.

WCC welcomed the proposed Group 3 Preferred Approach to rationalise Avoca Ballinaclash Public Supply (PS), Ballinteskinn PS, Laragh Annamore PS, Rathdrum PS and Redcross Conary Public Supply to the new Vartry WTP to form part of the GDA WRZ.

WCC also welcomed the proposed Group 14 Preferred Approach to rationalise Ballymorris PS and Aughrim Annacuragh PS to Arklow PS. The Council requested that these works be prioritised as Ballymorris PS has serious water quality issues that cannot be dealt with locally, including with the 17 consumers in Ballymorris PS have been on a Boil Water Notice for over two years. It is also on the EPA's RAL.

WCC noted that the Dry Year Critical Period (DYCP) deficits are a concern in significant settlements in Wicklow including Baltinglass Public Supply which

supplies Drinking Water to the largest settlement in the Study Area. The Council is concerned about significant Estimated Maximum Deficits in the following WRZs:

- Baltinglass PS
- Dunlavin PS
- Hollywood Donard PS

WCC noted there were several issues relating to the quality of raw water in Baltinglass Public Supply in 2021 and that Irish Water is looking at a number of short-term solutions in the interim.

WCC outlined the Housing growth target for Baltinglass in the emerging 2022-2028 County development Plan (CDP) and that further population and housing growth is targeted for this town and the Council is keen to ensure that all lands have a secure water supply. Under the Emerging new County Core Strategy in the Wicklow CDP 2022-2028 Baltinglass is identified among other towns as a 'self-sustaining town' as per definition in the Regional Spatial Economic Strategy for the Eastern & Midlands Region.

WCC welcomed the proposed Group SA2-01 (noted in Table 5.9 of the draft RWRP-EM) Preferred Approach to develop a new Groundwater source with a deeper borehole 3km from Baltinglass. WCC want this project to be prioritised due to the aforementioned issues in 2021 and soon to be adopted 2022-2028 CDP and ongoing concerns about raw water quality.

WCC highlighted that the Dunlavin Public Supply is very vulnerable to failure or low yields during periods of extreme hot weather, which is likely to worsen with the impact of climate change. They noted that the existing water source in Dunlavin is vulnerable and is a shallow spring with no UV treatment or crypto barriers. They further noted that the existing WTP and storage reservoir are in privately owned farmland so unfettered access is not available. This is combined with ongoing water quality issues and the poor condition of the storage reservoir. The Council flagged they have been lobbying Irish Water for an alternative supply and that the ongoing capacity issues may shortly lead to the Council having to refuse a grant of planning permission for development.

WCC noted that the Housing growth target for Dunlavin in the emerging 2022-2028 CDP is 54-80 units between 2016 and 2031 with further population and housing growth targeted for this town. WCC noted in view of concerns about the existing WTP and reservoir and considering current and emerging planning

policy, the Council requested that the delivery of the Preferred Approach be prioritised as the Interim Solution if new boreholes failed to provide a satisfactory yield.

WCC noted that Irish Water currently have a proposal to lay a new Water Main between a recently constructed Pumping Station located at Brannockstown and Dunlavin by the end of 2024, which rationalises Dunlavin Public Supply to the GDA WRZ at a tie in point on the recently constructed water main between Srowland and Ballymore Eustace supplies.

Clare County Council Killaloe Municipal District noted the proposal to reduce the number of WRZ from 134 to 93 and acknowledged that the proposal of a new interconnecting system appears to allow water to be distributed between the remaining WRZs. They expressed their concern that should there be difficulties or outages at any of the other plants, the default plan would be to take even more water from the Shannon. They stated that this would not adhere to the abstraction figures given.

Longford County Council (LCC) highlighted the significant water supply issues facing County Longford and the Ballymahon Water Supply Zone (WSZ). LCC pointed out that the time horizon for the proposed Eastern and Midland scheme does not align with the short and medium-term water supply needs of the Ballymahon area in County Longford. LCC requested that Irish Water develop separate measures that will meet the water supply needs of the area as a matter of urgency. LCC noted that the Ballymahon WSZ has a considerable number of important commercial customers such as C&D Foods and Center Parcs and the capacity to meet their current water supply needs is giving rise to significant concern. LCC highlighted that any future commercial or domestic growth in this area will not be possible for more than 10 years unless other supply solutions are developed for the Ballymahon area. LCC further noted that with effectively no resilience in the Longford Central supply, operations have no option on occasion but to resort to night-time shutdowns to ensure adequate supply. LCC highlighted that the quantity and resilience are intrinsically linked and without resilience it is impossible to increase quantity in times of need.

Offaly County Council agreed with how the Preferred Approach is identified at WRZ and Study Area Level.

Councillor Johnny Flynn remarked that the Ennis Public Water Supply single raw groundwater source at Drumcliffe Springs is recognised as having extreme vulnerability to contamination. Councillor Flynn added that both the Environmental Protection Agency and the Geological Survey of Ireland have recognised this. Cllr Flynn argued Ennis WRZ option Study Area 8 - 001 that proposes to use an adjacent aquifer and the same existing single WTP is not

appropriate or prudent. Cllr Flynn recommended instead the option of augmenting the water supply from a different treatment plant using a different raw water source - namely a connection to Castlelake WTP in Sixmilebridge and further strengthened by connection onto the Regional Treatment Plant supply at Clareview in Castleconnel. Councillor Flynn supported and urged early implementation of the proposed Ennis WRZ option – Study Area 8 -172, of Advanced Leakage Reduction, reiterating the critical supply issues in the region and the 10% plus deficit of raw water for abstraction experienced during the 2018 summer drought. Councillor Flynn added that, as a long-time climate activist, he is aware of the expected and predicted increases in the frequency of drought conditions as a result of the impact of climate change.

Westmeath County Council noted the acknowledgement in Appendix 4, Study Area 4 Technical report of the challenges Portloman WTP faced in being able to service the town and environs of Mullingar during the summer of 2018. They further agreed with Irish Water's concern over the ability of this WTP to continue to service this WRZ.

Tipperary County Council acknowledged Irish Water's aim to provide a minimum LoS of 1 in 50, but noted that Templederry, Terryglass, Lorrha and Borrisokane Water Supplies currently have a LoS less than 1 in 10 in the Dry Year Critical period. They highlighted that this is extremely low and affects the growth and development potential of these areas. They recognised that it would take multiple investment cycles to achieve LoS of 1 in 50 in all Tipperary supplies and requested that Irish Water provides early capital investment in these areas which is critical to improving reliability of supply going forward.

10.1.2 Response to WRZ Preferred Approach Feedback

As noted in Section 8 of the RWRP-EM, the development of the Preferred Approach is progressed via a workshop attended by engineering, environmental scientists, ecology, hydrology, and hydrogeology experts, operational teams, and local authority operators to ensure the appropriate outcome for a given supply. All Preferred Approaches are considered feasible at plan level; however, it is noted that further project level site-based assessments will be required to determine if a Preferred Approach is feasible. These site-based assessments will include yield assessments of the proposed sources.

Climate change impacts and adaptation are considered within the Framework Plan. Reduction factors are applied in our WAFU calculations and adaptation is one of the considerations in the options assessment process applied in the development of the RWRP-EM.

We note several queries that relate to clarity on how the site-based assessments will be carried out and have provided a new section, Section 6.4,

which outlines the project development process. This will detail the level of site-specific assessment that will be required prior to the development on any solution. It notes that environmental assessments, including an Appropriate Assessment (AA) screening, Environmental Impact Assessment (EIA) screening and WFD assessments will be carried out at project level.

If at Project Level it is determined that a Preferred Approach is not feasible, consideration will be given to other Feasible Options outlined in the draft RWRP-EM. If there is a change to the Preferred Approach, but this impacts a single WRZ, then there is no variation to the RWRP-EM; however, the change will be assessed at Project Level. This envisages a situation where refinements to a single project, or closely related project within a WRZ, will be considered within their own environmental assessments. The change would not have any systemic impacts on the wider RWRP-EM.

In response to the points made by Clare County Council's Physical Development Directorate (CCC - PDD), the Preferred Approach for Croom is to rationalise the WRZ to the Limerick City WRZ. If at project level this option is considered unfeasible, we would consider the 6-alternative feasible WRZ level options for Croom, such as a new abstraction/wellfield from Kilmeeady groundwater.

Again in response to CCC-PDD assertion that group water schemes that are supplied by Irish Water should be accounted for, we have allowed for the continuation of these exports in the Supply Demand Balance.

In reference to the prioritisation of Preferred Approaches, these will be prioritised on a national basis and progressed through Irish Water's Capital Investment Plans. The phasing and timeframes for the delivery of individual projects will be determined through the capital investment process.

When prioritising projects through Irish Water's Capital Investment Plans, we will ensure that these decisions are based on dialogue with the RSES and local authority housing and planning functions.

Irish Water has also set out a process for developing interim options to address critical water quality and quantity issues while we deliver our Preferred Approaches through the coming investment plans. Box 8.1 in the Framework Plan reflects this.

We welcome the site-specific information provided by Wicklow County Council and this information will be considered at project level. For example, when carrying out the upgrade to the Kirikee WTP, we will consider solutions to protect the WTP from flooding at project level.

In response to the issues raised by CCC-DPP, the current Preferred Approach for Ennis in the draft RWRP-EM is to increase the existing abstraction from a highly productive aquifer at Drumcliffe. IW proposes to carry out further capacity checks on this groundwater body over the coming year as set out in Section 6.4 of the RWRP-EM. Further to the results of these capacity checks, there is an option within the plan to augment the Ennis supply from the Limerick regional supply if necessary.

Further data collection will be carried out at project development stage as set out in Section 6.4 which will include determination of yields from groundwater source. If the proposed yields are not available from Castlelake or Drumcliffe Springs alternative feasible options will be considered

Similarly, the current Preferred Approach for Shannon/Sixmilebridge in the RWRP-EM is to increase the existing abstraction from Castlelake. IW proposes to carry out further capacity checks on this surface water body over the coming year as set out in Section 6.4 of the RWRP-EM. Further to the results of these capacity checks, there is an option within the plan to augment the Shannon/Sixmilebridge supply from the Limerick regional supply if necessary.

The security of supply across interconnected systems would be managed by the provision of strategic storage across the networks and the delivery of new WTPs in treatment streams. The provision of storage will limit the impact of outages to customers. The provision of treatment streams will reduce the impact of an outage at the WTP to customers. For example, a 150MI/d WTP could provide treatment via three parallel 50 MI/d plants. An outage at one of the plants will reduce output from one WTP only thus reducing impact to customers. Provision of treatment in streams will also allow planned maintenance works which will reduce the risk of unplanned outages.

We recognise the ongoing work between the Regional Assemblies and the local authorities over the course of the development of the Local Authority Development Plans. As these plans are finalised, Irish Water will incorporate the increasingly refined growth rates into our demand forecasts. The information including MASP, SDZ and core strategies will also be used to stress test models of our networks.

10.2 Study Area Preferred Approach

10.2.1 Summary of Study Area Preferred Approach Feedback

Roscommon County Council (RCC) noted the Study Area Preferred Approach Summary of the Technical Report for Study Area 5 detailed options descriptions for Killeglan, Lisbrock and Mount Talbot/Four Roads Water Supply Zones (WSZ) and requested that consideration be given to increasing the Water

Treatment Plant (WTP) capacity at Mount Talbot in addition to providing additional ground water abstraction

RCC requested that a review of the available headroom at both Killeglan and Lisbrock should be undertaken to determine if Plant upgrades are required to meet demand projections. RCC suggested that an upgrade of Killeglan should be considered to address quality issues due to raw water variability, in comparison to the raw water source at Lisbrock which is much more stable.

RCC noted that with growth predictions consideration should be given to increasing the treated water storage on Killeglan WSZ as currently there is approximately only 18 hours' storage. Furthermore, RCC requested a review of the available headroom at both Killeglan and Lisbrock be undertaken to determine if WTP up grades are required to meet demand projections

The Department of Agriculture, Food and the Marine (DAFM) noted that a desalination plant is considered as one of the options for Study Area 9. They noted concerns of the possible impacts that outflows from a desalination plant may have on fisheries and coastal nursing/spawning species as the hypersalinated outflows would need to be treated appropriately to avoid any adverse impact on fish stocks. In the event that there were large losses of fish and fish eggs, DAFM noted this would be a major cause for concern.

Ibec noted that the study area analysis does not result in a table of directly comparable scores but entails a series of comparisons of the Preferred Approach against alternatives that perform well against one or more of the Approach Category rankings. Ibec agreed with this process however noted that the final Preferred Approach could also depend on the sequencing of subsequent comparisons against the Quickest Delivery, Lowest Carbon, Most Resilient, and Best Environmental alternatives. Ibec further noted that on review all Approach Categories show robust outcomes at WRZ level also.

Ibec noted a potential disadvantage of the iterative evaluation process adopted is its limited flexibility for fine-tuning. Ibec noted it would be challenging in terms of time and resources for Irish Water to undertake regular reviews of the feasible WRZ options as more data becomes available on demand management, leakage reduction, and/or abstraction licence constraints and that such reviews could only be justified if they seemed likely to impact on the Preferred Approach at Study Area level.

WCC welcomed and supports the proposal for Study Area 9 to improve connectivity between Srowland and Ballymore Eustace supplies and noted that the works were completed during 2021. They noted this new connection will

allow for increased output in Srowland and potentially increase the availability of Drinking Water supply for Dunlavin Public Supply and the Hollywood Dona Road Public Supply. The proposed Dunlavin Public Supply /Hollywood-Donard Public Supply scheme can tap into this new water main

WCC outlined that, of the three remaining WTPs which were and have been operated by WCC, Roundwood Well WTP is the only Ground Water source WTP, and works are currently in progress to connect Roundwood Public Supply to the new Vartry WTP. The Cronroe WTP is now no longer in use since the new Vartry WTP plant came on stream but has a continuing role with water storage and secondary chlorination. Going forward WCC noted there will be two operating WTPs in the Study Area 9 part of County Wicklow in the near future namely the new Vartry WTP and Glenealy WTP.

WCC outlined that the Glenealy WTP has a Surface Water Source where water is abstracted from the Barnbawn River which as a source is unreliable and is susceptible to THM issues which are outlined on Table 2.8 of the Study Area 9 Technical Report. WCC noted there are proposals to lay a water main between Glenealy and Rathnew under the Mid Wicklow Water Supply Scheme and this will allow the Glenealy Public Supply to become part of the Wicklow Regional Supply. WCC highlighted that there will be only one of the three small WTPs in use by the end of 2022 and this is the Glenealy WTP which subject to funding may be decommissioned in the next few years as part of Mid Wicklow Water Supply Scheme. Once Glenealy WTP is decommissioned all of the Drinking Water supplies within the Study Area 9 part of County Wicklow will be supplied from large sized WTPs.

WCC noted that under Approach Option SA9-87 of the Preferred Options outlined Section 5.3, Figure 5.17 and Table 5.4 of the SA9 Technical Report; the rationalisation of Roundwood Well WTP and Glenealy WTP to new Vartry WTP is identified as an intervention required to improve supply resilience and supply and they welcome the suggested rationalisation of these two WTPs and inclusion of the local WRZs as part of the GDA WRZ. The Council expects that these projects will be delivered within the next few years.

Wicklow County Council supported and welcomed the proposed GDA Wicklow network improvements identified among preferred options on Figure 5.17 of the Study Area 9 Technical Report:

- New Reservoir and network for Bray and Environs.
- New Reservoir and network for North Wicklow which will be in the Newtown Mount Kennedy Area.
- New pipeline in Wicklow Town.

WCC highlighted that the drinking water network in Newtown Mount Kennedy is part of the Newtown Newcastle Public Supply, and the Drinking Water supply is fed directly off the Trunk Mains Supply between New Vartry WTP and Dublin. Since parts of the Newtown Mount Kennedy network are in high elevations which are difficult to supply when issues arise on the Trunk Mains WCC are anxious that the new reservoir is located at a suitable location to overcome these problems. Furthermore, WCC noted that Newtown Mount Kennedy is identified among other towns as a 'self-sustaining towns' under the Emerging new County Core Strategy in the Wicklow CDP 2022-2028 and requested that the construction of the new reservoir is prioritised so that the WCC is able to facilitate development in Newtown Mount Kennedy.

WCC commented that the emerging GDA Drinking Water network as outlined in the draft RWRP-EM will consist of large WTPs only. WCC noted that as previously attended GDA meetings where the issue of security of supply and Study Areas has been discussed it was suggested that various parts of the GDA should have drinking water supply availability from two or more supply areas. WCC noted that at present there are parts of north Dublin City which are supplied from three supply areas; Ballymore Eustace WTP, Leixlip WTP and new Vartry WTP and parts of County Wicklow that are within Study Area 9 will shortly be supplied by one supply area. WCC outlined for areas west of the Wicklow Mountains like Blessington Public Supply the Drinking Water supply comes from Ballymore Eustace WTP while the various Drinking Water supplies on the opposite side that includes the highly populated eastern coastal strip between Wicklow and Bray will soon be supplied from the Vartry WTP only. WCC is concerned about an absence of proposals within the Study Area 9 part of the RWRP-EM to deal with this. It is suggested that the Study Area 9 Technical Report be revised to include a Chapter with discussions on this critical topic.

The Southern Regional Assembly noted that the main recommendations emerging from the Preferred approach process are of relevance for the Southern Region and the implementation of the RSES.

The Environment Protection Agency acknowledged the approaches tested in terms (Best AA, Least Cost, Quickest Delivery, Best Environmental, Most Resilient, Least Carbon, Approach Comparison) which when compared and assessed have led to the Preferred Approaches being established for each of the study areas covered by the Plan.

Tipperary County Council (TCC) noted the content of Section 8 of the draft RWRP-EM. TCC remarked that part of the Regional Approach, Irish Water has looked at the two alternative Regional Approaches that do not allow for Cross

Study Area transfers. Combination 2 Approach for Newport WRZ provides for a new groundwater abstraction and WTP near Coolross and TCC would like clarification on this proposal.

Offaly County Council noted that they agreed with how the Preferred Approach is identified at WRZ and Study Area Level.

10.2.2 Response to Study Area Preferred Approach Feedback

As noted in Section 8 of the Framework Plan the approach development is progressed via a workshop attended by engineering, environmental scientists, ecology, hydrology, hydrogeology experts to ensure the appropriate outcome for a given supply. The step process set out in Figure 7.2 previous a template for the process and Step 6 requires us to look at the best approaches in the round to confirm the Preferred Approach.

To provide clarity on the project level assessments a new section, “Section 6.4” has been provided which sets out the level of site-specific assessment that will be required prior to the development on any solution. It notes that environmental assessments, including an Appropriate Assessment (AA) screening, Environmental Impact Assessment (EIA) screening and WFD assessments will be carried out at project level.

At project level, we will also carry out a review of population forecasts having regard to the most recent LA projections and will review infrastructure requirements such as requirements for local storage as noted by Wicklow County Council for the Newtown Newcastle Public Supply and Roscommon County Council for the Killeglan supply.

In response to RCC statement, the Preferred Approach for the Mount Talbot WSZ is to increase ground water abstraction at Mount Talbot Spring to supply deficit and upgrade of WTP for quality and capacity purposes. Text in the SA5 technical report has been updated to provide clarity on this point. The Cloonlaughnan WTP provides supply to the Mount Talbot and Four Roads WRZ. The interim solution for this WTP as set out in the RWRP-EM is to refurbish the existing borehole and upgrade the WTP to IW Standards.

The preferred approach for Mount Talbot is to increase ground water abstraction at Mount Talbot Spring to supply the deficit to refurbish the existing borehole and upgrade the WTP for quality and capacity purposes to IW Standards.

The Preferred Approach for Lisbrock and Killeglan is a new ground water source at Lisbrock and an upgrade of WTP for quality and capacity purposes

and new ground water source at Killeglan and upgrade of WTP for quality and capacity purposes. Text in the SA5 technical report has been updated to provide clarity on this point.

In response to DAFMs comment, a desalination WTP along with a number of other small solutions have been considered as a feasible combination to resolve the deficit in the Greater Dublin Area (GDA). This combination was not considered the Preferred Approach for the GDA, largely due to the potential environmental impacts of such a combination as identified at plan level. This solution would only be considered further if the Preferred Approach for the GDA was considered unfeasible at project level. The Preferred Approach for the GDA is the provision of a new source of supply from the Parteen Basin and as this solution is an “in flight” project, as project level assessments are underway, and the Preferred Approach is considered feasible at project level.

We acknowledge Ibec’s comment in regard to challenges in terms of time and resources for Irish Water to undertake regular reviews of the feasible WRZ Options as more data becomes available on demand management, leakage reduction, and/or abstraction licence constraints. The Supply Demand Balance for all WRZs includes an allowance for Headroom. As defined in the RWRP EM, “Headroom is the term given to a buffer in the SDB. It accounts for the uncertainty with data and the assumptions used in the supply and demand estimates and forecasts.” This provision of headroom ensures that we can move forward with projects as we refine our data. A further review of data will be carried out at the project development stage outlined in Section 6.4 and the NWRP has a 5-year review cycle where we will review the option development process considering the available data at that point in time.

Section 8.3.8 of the Framework Plan sets out the process for reviewing and responding to new data as it becomes available. In certain circumstances, monitoring and feedback will identify the need for a variation of the NWRP - Framework Plan or a RWRP. This assessment will be carried out on a case-by-case basis depending on the materiality of the impact of the relevant new data or change in circumstances.

The Preferred Approach for the Newport WRZ is to provide supply to the WRZ directly from the proposed new WTP at Birdhill. This WTP is part of the larger regional Preferred Approach involving the provision of supply from the New Shannon Source. At regional level, 3 combinations were considered. For 2 of these combinations, local solutions for the Newport WRZ were considered which includes the provision of a new groundwater abstraction and WTP near Coolross.

A local solution for Newport would only be considered further if the Preferred Approach involving a connection to the New Shannon Source was considered unfeasible at project level. As this solution is an “in flight” project, project level

assessments are underway, and the preferred approach is considered feasible at project level.

WCC noted security of supply issues associated with the fact that large areas of Wicklow are completely dependent on Vartry WTP (one supply). Project level assessments will be carried out to determine requirements for local storage to ensure security of supply to the area.

10.3 Regional Preferred Approach

10.3.1 Summary of Regional Preferred Approach Feedback

Roscommon County Council (RCC) noted that the Regional Preferred Approach does not impact on Study Area 5 which contains Water Resource Zones WRZs in South Roscommon.

RCC however suggested there is potential to create a regional transfer from the New Shannon Source to Athlone to improve the sustainable management of Killeglan, Lisbrock WRZs and increase the operational flexibility and resilience.

RCC further noted that this could provide a better solution rather than relying on local less sustainable water supply systems and would build on the opportunities offered by the New Shannon Source.

Blakestown Britonstown Group Water Scheme reported that their scheme has ongoing water treatment issues, including a pH below 6.5 with no feasible method of correction, due to the remote source and treatment plant location. They added that there are ongoing costs, mainly borne by Wicklow County Council (WCC), in attempting to solve the treatment and source protection issues. They added that they requested WCC connect their scheme to the public supply. They reported that the nearest connection point Poulaphouca, near Ballymore Eustace, is 1 km from their pipeline. They viewed this as a public health issue and stated that a connection to the public supply would immediately rectify this

Clare County Council Physical Development Directorate (CCC-PDD) highlighted that in Study Area 8 Option TG4 – SA8-27 is rejected for Killaloe Public Water Supply on the basis that a 2.5 km extension would be required, and the transferring of small quantities of water can affect the quality. CCC-PDD noted that Killaloe was not included in the disinfection programme on the basis that it would be receiving a future supply from the Newport Water Supply Scheme via Ballina. CCC-PDD further noted that the transfer of small quantities of water to

similar sized supply areas in Limerick such as Croom or Adare is considered feasible elsewhere in the draft RWRP-EM over much further distance, despite its source being adequate for future demands. CCC-PDD noted that Option TG4-SA- 27 would require an extension of the Newport Water Supply Scheme supply to Ballina and rationalisation of the Killaloe supply. CCC-PDD commented that there are many examples of 2.5km long pipelines successfully providing 300m³/day on Irish Water's supply networks and that the preferred option of rationalisation to Newport WTP/ new Birdhill WTP should be reconsidered.

Ibec commented that the Regional Preferred Approach performs relatively well compared to all alternatives and appears to be robust to the uncertainties. IBEC noted that it will entail considerable capital costs, some of which will be recoverable through non-domestic tariffs and welcomed that the overall best approach also happens to be the least cost one. Ibec noted the timeline as unfortunate in taking a decade or more to come to fruition. They highlighted the planning and appeals process for the Water Supply Project cannot commence until an appropriate abstraction licence regime is in place and a licence is granted for the proposed New Shannon Source.

WCC welcomed the option to abstract 210 Mega litres/day of Raw Water from the Parteen Basin in County Tipperary construct a new WTP close to Birdhill and deliver a treated Drinking Water supply to the GDA. WCC noted that the proposed project named the Shannon Source Project is critical to ensure that the capacity of Water Supply in the GDA is ahead of future Water Demand as the region grows and develops.

AFU supported the need for additional water supply to the GDA and agree with the proposed Preferred Approach to transfer water from the River Shannon and supply a number of WRZs across the Region, including the GDA.

AFU emphasised the need to address the data gaps to support the accurate decision making and project planning of the proposed water transfer projects in the draft RWRP-EM. AFU recommended that Irish Water include scheduled actions in the draft RWRP-EM to include cooperation with the EPA and GSI in order to assess hydrological balances of drinking water catchments across the Eastern and Midlands Region.

Furthermore, AFU recommended that Irish Water should outline how it will allow for flexibility in the Preferred Approaches of water transfers and additional groundwater abstraction, as more hydrological data becomes available. This flexibility in the final plan will be essential as the development of the Preferred Approach will also be directly impacted by the upcoming Abstractions Bill which may influence how much Irish Water can abstract from different sources.

The EPA acknowledged the inclusion of Table 7.21 Sensitivity Analysis of the Preferred Approach in the draft RWRP-EM, which summarised the sensitivity

criteria used against the study areas and compares the impacts against the study area Preferred Approach to understand how sensitive these options are. The EPA welcomed the clear summary of the proposed approach provided in subsection 7.8 - Summary.

The EPA noted the Regional Level Preferred Approach consists of transfer of water from the River Shannon and recommended that this needs to be carefully considered, designed and implemented to minimise any potential likely significant effects on designated habitats and species, and supporting ecological linkages, to protect the conservation objectives for the various special areas of conservation and special protection areas designated under the Birds and Habitats directives and in accordance with any abstraction licensing legislation which is currently in draft by the Department of Housing, Local Government and Heritage (DHLGH).

The EPA acknowledged the different regional approaches considered and noted the preferred alternative, following the multicriteria assessment, as summarised in subsection 8.5 – The Regional Preferred Approach. The EPA also acknowledged that sensitivity testing has been carried out of the Preferred Regional Approach which considers possible changes to the Supply Demand Balance projections and includes testing of climate change impacts, as well as leakage, sustainability of water abstraction from existing sources as well as demand growth. The EPA suggested that Irish Water should continue to work closely with the Regional Assemblies to ensure proposed development and associated population growth is reflected in the demand growth projections over the lifetime of the Plan and to ensure that the land use planning and water resource planning are integrated and closely aligned.

The EPA welcomed the methodology used to consider and identify the Preferred Approach and noted it as comprehensive and clear that environmental considerations have been taken into consideration throughout the assessment and selection process. The EPA noted the approach set out regarding the Preferred Regional Approach and the reasoning behind its selection is clearly detailed.

Tipperary County Council (TCC) noted the Irish Water preferred and interim upgrade for the Tipperary water supplies which include options and measures under the Irish Water Leakage Reduction programmes and the Preferred Approach to link some Tipperary supplies to the New Shannon Source (NSS). TCC noted Irish Water's promotion of the NSS and the long-term benefits that a secure safe, reliable and sustainable drinking water supply will bring to the areas of Newport, Ballina, Cloughjordan and Borrisokane.

Offaly County Council agreed with how the Preferred Approach is identified at regional level.

Limerick Greens commented that the Regional Preferred Approach will not provide water for Limerick but is a proposal to build an interconnector that crosses three regions – the Mid-West, the Midlands and the Greater Dublin Area.

Limerick Greens further commented on the statement in the draft RWRP-EM that it concerns a “strategic transformation from the existing fragmented supply to a more resilient and sustainable interconnected supply” and noted it as materially incorrect. They commented it is incorrect to suggest that building an interconnector between Limerick and Dublin will transform a “fragmented supply” to a “sustainable interconnected supply” as the water supply of the Mid-West and Dublin are not “fragmented” and in need of interconnection they are entirely different systems on opposite sides of the country and in entirely different regions. Limerick Greens remarked that interconnecting these is not a sustainable solution.

Limerick Greens raised concerns about the statement in the draft RWRP-EM that the development of the proposed interconnector concerns a shift to water “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”. They argued that the correct position is the proposed interconnector, which will involve a shift to water sources that are less environmentally sustainable and will undermine the efforts to adapt to climate change by further incentivising unsustainable population growth in the GDA.

Dublin Chamber highlighted the urgency of delivering a new water supply for Dublin and the Eastern and Midlands Region as the Region is a critical economic area for the State, and reliable water is a national priority. A new supply is also a prerequisite for future growth, and especially for meeting ambitious targets for tourism and foreign direct investment. Dublin Chamber endorsed the findings of the previous studies outlining why a new water source is needed and supported Irish Water’s preferred scheme at the Parteen Basin in Co. Tipperary, which emerged as the preferred option following extensive study and research during which Dublin Chamber contributed to through public consultations. Dublin Chamber noted the Preferred Option would see abstraction levels of between 1-2.5% of the daily flow of the Shannon and noted is as a very positive comparison with current abstraction levels from the Liffey.

The Southern Regional Assembly (SRA) noted the Preferred Approach aligns with Section 8.1.1 of the RSES for Water Supply. The SRA noted that the Regional Policy Objectives (RPOs) 208-210 support the development of the NWRP and seek strategic water services investment and a move towards a sustainable, secure and reliable public water supply in the Southern Region over the 25 years plus horizon while safeguarding the environment. The SRA noted that the RSES recommended Irish Water Investment Plans align the supply of water services with the settlement strategy of the RSES and Metropolitan Area Strategic Plans (MASP). The SRA noted the RSES also

outlined that such infrastructure planning takes into consideration seasonal pressures on critical service infrastructure, climate change implications and leakage reduction. The SRA noted that the Preferred Approach demonstrates that these objectives are being taken into consideration. However, they requested that in the final determination of the Preferred Approach going forward to next stages need to screen that the RSES objectives are met.

Clare County Council Killaloe Municipal District noted the proposal to reduce the number of WRZ from 134 to 93 and acknowledged that the proposal of a new interconnecting system appears to allow water to be distributed between the remaining WRZ. They expressed their concern that should there be difficulties or outages at any of the other plants, the default plan would be to take even more water from the Shannon. They stated that this would not adhere to the abstraction figures given.

10.3.2 Response to Regional Preferred Approach Feedback

Athlone currently obtains water supply from the Shannon Catchment via the Athlone WTP. It is a sustainable source of supply for the area, and therefore we have not considered a connection from the New Shannon Source for the Athlone area in the options development phase. At Study Area level a number of solutions to connect the Killeglan, Lisbrock WRZs to the Athlone WRZ were considered, however, such solutions did not perform as well as the Preferred Approach against the approach criteria.

In regard to CCC-PDD comment on the Preferred Approach for Killaloe, as set out in Section 4.12 of this PCR report further to additional information obtained from our Local Authority partners the Preferred Approach for the Killaloe WRZ was carried out and new Preferred Approach and we now proposing to connect the Killaloe WRZ to the Newport WRZ and to decommission the existing WTP. Killaloe will obtain supply from the proposed Birdhill WTP and form part of the regional Preferred Approach.

The Supply Demand Balance for all WRZs includes an allowance for Headroom. As defined in the RWRP EM, “Headroom is the term given to a buffer in the SDB. It accounts for the uncertainty with data and the assumptions used in the supply and demand estimates and forecasts.” Headroom allows us to move forward with projects despite the uncertainty in data. Further data on yields available from our current and proposed abstractions will be obtained at project development stage as set out in Section 6.4.

We recognise the ongoing work between the Regional Assemblies and the local authorities over the course of the development of the Local Authority Development Plans. As these plans are finalised, Irish Water will incorporate the increasingly refined growth rates into our demand forecasts through the monitoring and feedback process set out in Section 8.3.8 of the Framework Plan.

In reference to AFU's comment on data, Irish Water will progress a five to seven-year data improvement strategy to improve our information and operation of the public water supply. This will include source assessments that will be progressed based on consultation and interface with GSI and the EPA Hydrometrics Department.

The sensitivity analysis carried out as part of the development of the RWRP-EM has taken into account the potential impact of the forthcoming abstraction legislation. Irish Water notes however that the ultimate level of abstraction able to be carried out from a given source will be adjudicated by the EPA and subject to a licence under the new framework. The Supply Demand Balance will be updated based outcome of the licensing process, in accordance with the feedback and monitoring process set out in section 8.3.8 of the Framework Plan.

As part of the NWRP Irish Water looks to resolve existing and future need across all our supplies. Future need is directly correlated to growth in our WRZ, and this is a combination of domestic and non-domestic growth. Growth predictions across the WRZs is informed by the NPF, RSES and Local Authority development plans. The NWRP appraises all supplies consistently.

The regional Preferred Approach to develop a New Shannon Source was demonstrated in the draft RWRP-EM as the most resilient solution with a lower environmental impact than other solutions which considered combination of smaller more localised solutions. The RWRP-EM has been subject to Strategic Environment Assessment and Appropriate Assessment (AA), which included assessment of the Preferred Approach for the GDA. The SEA process concluded at plan level that the implementation of the NWRP that schemes can have both positive and negative potential effects on the water environment, biodiversity, and landscape and visual amenity and potential significant combined negative effects for carbon emissions. To address the potential negative effects, mitigation measures and a monitoring framework will be implemented alongside recommended developments. The SEA identified that in the long-term, the plan will bring benefits in terms of greater security of water supply to the population, tourism industry and recreational amenities, human health and the local economy.

Additionally, the newer, or upgraded, more reliable assets within the system will result in greater adaptability to the impacts of climate change; with benefits to the water environment from the replacement of abstractions identified as potentially unsustainable for meeting WFD or protected area obligations and will give greater flexibility to respond to future sustainability reductions. The AA process resulted in a determination at plan level that the RWRP-EM would not give rise to adverse effects on the integrity of any European site.

It is envisaged that further to the enactment of new abstraction licensing legislation an abstraction licence will be required for the New Shannon Source abstraction. This licence will be regulated by the EPA and conditions will be imposed on this abstraction. As part of the regional Preferred Approach, we are proposing to maintain a number of key WTPs such as the Staleen WTP, Ballymore Eustace WTP and Leixlip WTP. In the event of a significant outage in the network, supplies will be managed using the additional storage proposed as part of the preferred approach and our key WTPs.

We note the request from the Blakestown Britonstown Group Water Scheme to be taken in charge we will consult with the Blakestown Britonstown Group Water Scheme to discuss potential solutions to merge the customers in the scheme to the Greater Dublin Area supply.

10.4 Approach Development Process

10.4.1 Summary of Approach Development Process Feedback

Roscommon County Council (RCC) noted that the methodology used to assess need, quality, reliability and sustainability is detailed. However, some of the inputs used requires detailed assessments. The actual options considered at the coarse and fine screening stages are not presented and are therefore not available for comment.

RCC noted the options assessment process, and the preferred approach development is a standardised process which can be used uniformly across all water supplies and added it is crucial that the information and data used in the approach development is the best available.

Inland Waterways Association of Ireland noted the comprehensive nature of the methodologies presented and has no further additions in respect of this aspect.

A stakeholder suggested that in addition to the environmental cost of production and distribution, the cost of end usage should also be considered by Irish Water, where there are increased populations. The stakeholder noted that small improvements could have a positive impact when scaled in line with population.

Clare County Council Physical Development Directorate (CCC-PDD) noted that in Section 7 of the draft RWRP-EM the sensitivity analysis groups all schemes together and that grouped presentation on multiple schemes with their own sources does not provide adequate information to consider and assess the approach.

CCC-PDD also queried if the deployable output across supplies is reduced based on sustainability limits within the new legislation on abstraction. They felt that this may result in a larger supply demand balance deficit. CCC-PDD commented that this is relevant to Ennis Public Water Scheme (PWS) and to Castl lake PWS for which an increased abstraction plus water conservation are proposed as solutions. However, CCC-PDD noted that the draft RWRP-EM report does not carry out sensitivity analysis for these schemes.

Ibec noted that Irish Water made considerable efforts to compile an exhaustive list of possible Options, over 1100 of which were identified across the EM region. Ibec noted that although the initial coarse screening eliminated half of these as technically infeasible or environmentally unacceptable, the subsequent steps all entailed expert discussion and judgement.

The EPA acknowledged the detailed options and approach to the assessment as presented in section 6.2 of the draft RWRP-EM and noted the assessment methodology, comprising consideration of resilience, delivery / flexibility, progressivity, sustainability and cost criteria.

The EPA further noted that the Plan considers options at WRZ level, Study Area assessment level and at a regional level. The EPA acknowledged the approach taken to developing water resource planning options in preparing the draft RWRP-EM. The EPA commented that it provides a coherent approach to considering and assessing the various options available and the level at which the options might be applicable.

Offaly County Council agreed with the Options Development Process adopted by Irish Water on how the Feasible Options for the WRZs, Study Areas and the Region have been identified. Offaly County Council had no comments on Interim Solutions as a strategy of reducing risk to water supplies while developing the Preferred Approaches. Offaly County Council had no comments on Interim Solutions as a strategy of reducing risk to water supplies while developing the Preferred Approaches.

10.4.2 Response to Approach Development Process Feedback

In response to RCC comment on the availability of assessment data, this is Ireland's first NWRP, with over 530 WRZs and a very significant challenge in terms of historic underinvestment in water infrastructure to date. There are no specific guidelines for water resources planning in this jurisdiction. Irish Water investigated the approach taken in England, Scotland and Wales and conducted significant stakeholder consultation in the development of the RWRP-EM. We are satisfied that we have utilised the best possible methodologies as set out in our adopted National Water Resources Plan Framework, considering the condition and stage of evolution of the public water supply in Ireland, and that we have ensured that the RWRP-EM was as comprehensible as possible and includes the best available data at the time of completing the reports.

The objective of the report is to provide the information in a manner that can be accessed and understood by the public. The assessments at plan level are based on desktop information. All assessments are carried out in a uniform and consistent manner and the purpose of the assessments are to allow a comparison between solutions, rather than an absolute evaluation of a proposed solution, as further evaluations of solutions will be provided at project level. Therefore we have provided a comparison of the scoring information by providing a colour variation to differentiate the performance and of the solutions against each criteria and cost of each solution relative to each other.

Additionally, over the course of the development of the NWRP we have held workshops with LAs where we have reviewed the scoring information and we will continue to engage with LAs in the development of further iterations of the NWRP.

A further review of data will be carried out at the project development stage outlined in Section 6.4 and the NWRP has a 5-year review cycle where we will review the option development process considering the available data at that point in time.

Section 8.3.8 of the Framework Plan sets out the process for reviewing and responding to new data as it becomes available. In certain circumstances, monitoring and feedback will identify the need for a variation of the NWRP - Framework Plan or a RWRP. This assessment will be carried out on a case-by-case basis depending on the materiality of the impact of the relevant new data or change in circumstances.

The rejection register, which is an annex to the technical report appendix, provides details of all unconstrained options which were screened out at the coarse screening and fine screening stage.

The Supply Demand Balance for all WRZs includes an allowance for Headroom. As defined in the RWRP EM, “Headroom is the term given to a buffer in the SDB. It accounts for the uncertainty with data and the assumptions used in the supply and demand estimates and forecasts.” Headroom allows us to move forward with projects despite the uncertainty in data. Further data collection will be carried out at project development stage as set out in Section 6.4.

For all options we considered the costs of delivering the options and the cost of the future operation of proposed solutions. This approach allows us to consider the cost of end usage of all proposed solutions.

In reference to the CCC-PDD comment on the impact of the abstraction legislation, while the Sensitivity analysis is carried out at Study Area level, a breakdown of the potential impact of the abstraction legislation, for surface water sources, is provided at WRZ level in Section 2.4 of the technical reports. In Section 2.4 we provide details of abstractions that may not meet sustainability guidelines during dry weather flows. However, under the proposed regulatory regime, this will be adjudicated by the EPA.

10.5 Interim Solutions

10.5.1 Summary of Interim Solutions Feedback

Roscommon County Council (RCC) noted that smaller, localised interventions may be required on an interim basis to secure need in existing supplies in County Roscommon until the Preferred Approach can be delivered. RCC noted in Appendix 5 Study Area 5 Technical Report there are interim options listed for both Killeglan and Lisbrock but no interim options listed for Mount Talbot and Four Roads Water Resource Zones (WRZs).

Westmeath County Council (WmCC) noted in the draft RWRP-EM to employ the New Shannon Source (NSS) as the long-term solution for Mullingar WSZ but request that Irish Water consider the use of Athlone Water Treatment Plant (WTP) to supply Moate and North West of Westmeath and revisit the proposal to supply the Royal Canal from Lough Ennell. WmCC considered it critical that a low-risk deliverable interim solution should accompany any recommendation to rely on the New Shannon Source (NSS). WmCC also noted that many of the risks that apply to NSS are outside the control of Irish Water. WmCC noted that the draft RWRP-EM does list the need for an interim solution for Portloman but describes it as “Upgrade WTP to IW standards”. WmCC highlighted a cost-effective interim solution that has not been listed or considered in the analysis is the use of the current Athlone Water Treatment Plant (WTP) to supply up to 3Ml/day to supply Moate, Moyvore, Ballinacarrigy and all the settlements served by the Frewin low level reservoir.

WmCC highlighted the proposed Interim solution to supply the Royal Canal from Lough Ennell and hence reduce the demand on Lough Owel and noted that this plan was extensively designed and considered between 2014 and 2017 and was the subject of public hearings but was subject to issues with the drawdown levels in the An Bord Pleanála Inspector's final report that will need to be reviewed. The Council requested that this project be revisited as it has the potential to provide the ultimate solution for Portloman to ensure that there will be long term sustainable supply from Lough Owel into the future.

WmCC noted the refurbishment works made to the trunk network main in Athlone to accommodate future expansion of the network to serve Moate. They claimed that more refurbishment works on the Athlone plant would create a further 6Ml/day headroom once completed. They further noted that a new watermain and a service reservoir at Moate would also be required, reducing the demand on Portloman by 20% and improving the resilience of the network in Westmeath.

WmCC further remarked that it would also mean that there eventually would be a network connection between Athlone and Mullingar which would facilitate future expansion and flexibility in the local networks while also reducing carbon and energy usage.

Kildare Chambers raised concerns about the timeline between current service levels and the operational establishment of the NSS and that significant interim measures will be needed within the Greater Dublin Area (GDA) in the intervening years before this new supply comes onstream.

An Fóram Uisce recommended that Irish Water ensure sufficiently trained personnel to manage infrastructure and to provide the best possible services are included as a key interim solution of the plan.

The Environmental Protection Agency (EPA) acknowledged the national investment programmes already established to address reliability and water quality which shows the ongoing commitment to continue to address the challenges in addressing water related issues within the remit of Irish Water and in collaboration with other key stakeholders. The EPA recommend that Irish Water should also continue to address issues related to supplies currently on the EPA's Remedial Action List and any future additions, as applicable. The EPA noted the draft RWRP-EM sets out the reasoning behind the need for interim solutions to be provided prior to full implementation of all the aspects of the Plan. The EPA noted that while implementing these interim solutions, human health and environmental protection should continue to be critical components during this phased move to implementing the preferred approaches.

The EPA welcomed the proposed interim measures as they should ensure that solutions are in place while the preferred water supply and network options are being developed. However, the EPA remarked that although the solutions may be temporary, any new abstractions and/or increases at existing abstractions will still be required to get permissions through the legislative and licensing process and the appropriate planning process before they can proceed.

Tipperary County Council (TCC) also supported the interim and preferred options in the draft RWRP-EM and requested that Irish Water provides early capital investment in these areas.

TCC noted the potential water sustainability impacts of pending abstraction legislation on groundwater and surface water abstractions especially from the Little Brosna River serving Roscrea and the Mulkear River serving Newport and Ballina. TCC noted that while there will be a transition period to the new abstraction regime existing supplies need to be maintained and alternative sources are likely to be needed. TCC requested that Irish Water puts plans in place early to mitigate against the potential impact in order to allow these areas to achieve their growth potential.

TCC noted that Irish Water preferred and interim upgrade for the Tipperary water supplies which include measures under the Irish Water Leakage Reduction programmes. TCC noted Irish Water's promotion of the NSS and the long-term benefits that a secure safe, reliable and sustainable drinking water supply will bring to the areas of Newport, Ballina, Cloughjordan and Borrisokane.

Meath County Council (MCC) noted that section 7.6 of the RWRP-EM sets out interim, short term capital maintenance solutions that have been identified for all WTPs and will be utilised when needed. MCC noted it should be acknowledged that these solutions could also be subject to delay. Irish Water's Investment Plan 2020-2024 includes several programmes, and projects targeted at providing for growth. One such programme is the Small Towns and Villages Growth Programme (STVGP) which will provide funding for Water and Wastewater Treatment Plant growth capacity in smaller settlements which are not otherwise provided for in the Capital Investment Plan 2020 to 2024. The STVGP is focused on supporting growth in areas already served by Irish Water infrastructure but where current or future capacity deficits have been identified. Irish Water have engaged with Local Authorities across the country to ensure that the investment is made appropriately in accordance with the relevant County Development Plan. The inclusion of Ballivor (SA3) is welcomed.

Wicklow County Council highlighted that the Kirikee Public Supply is a small supply with a low yield but is also located next to a river and floods frequently. WCC noted that the draft RWRP- EM has identified a new Ground Water source borehole at the existing site along with an upgrade to the WTP as the Preferred Option. The Council requested a more secure WTP set back further from the river to reduce flooding risk.

Kennedy Analysis (KA) claimed that two upcoming interim solutions will significantly improve Dublin's water supply and are not accounted for in the draft RWRP-EM. KA highlighted that groups challenging the Shannon pipeline have argued that by optimising storage at Poulaphouca, the water that would be cheaply, safely and resiliently

available for the GDA at Ballymore Eustace could be considerably increased.

Kennedy Analysis noted that Irish Water plans to significantly increase the water available to the GDA through two major projects in the coming few years; add an additional 50Mld of treatment capacity at Leixlip WTP and provide the GDA with an additional 70Mld/ 100Mld of raw water by “optimising storage” at Poulaphouca, lowering the level of the abstraction inlet and building a new trunk main from Ballymore Eustace to Saggart.

However, KA accuses Irish Water of misleadingly referring to these two projects as “interim solutions” even though the draft RWRP-EM notes that this new infrastructure - and the additional water that it will provide will be permanent. KA further argued that IW takes no account of this additional 120Mld – 150Mld of water in its calculation of the future water deficit for the GDA. KA argued that this serves to artificially elevate the projected 2044 deficit for the GDA. KA further argued that if these two new projects are accounted for in the Supply Demand Balance (SDB) for the GDA on the basis that the full 120-150Mld is available during the winter critical period (WCP) scenario, and only 70-100Mld is available during the Dry Year Critical Period (DYCP) then the projected 2044 GDA deficit would be reduced from 166Mld to just 16Mld-46Mld (for the WCP) and from 194Mld to 94Mld-124Mld (for the DYCP).

In addition to this, KA claims that IW proposes to use these two new water sources as an additional “safety buffer” for the GDA in the long term – but that it is not accounting for them in any of the figures and is not offsetting them against the outage/peaking allowances in the SDB and stated it as entirely inappropriate and invalidates the findings of the SDBs.

10.5.2 Response to Interim Solutions Feedback

As it will take a number of investment cycles to deliver the Preferred Approach across all Water Resource Zones, Irish Water must continue to deliver safe, secure, and reliable water supplies to meet customers’ needs and enable growth in the region. Therefore, within our draft RWRP EMR we have identified interim solutions for all Water Treatment Plants that will be utilised when needed. These solutions will allow Irish Water time to deliver the Preferred Approach, while at the same time, maintaining a sustainable water supply. These interim solutions are generally smaller in scale and rely on existing infrastructure.

In response to the query from WmCC, the proposal to divert areas of Moate, Moyvore and Ballinacarrigy from the Portloman supply to the Athlone supply is

currently being developed by our Asset Planning team and the interim solutions for Portloman will be updated to reflect this proposal.

The proposal to abstract water from Lough Ennell as an alternative solution for Mullingar was determined unfeasible as the volume of water required is not available from the source and Lough Ennell is a designated SAC.

In response to AFU's comment on having trained operatives, the operation of assets is currently provided by our Local Authority partners through a service level agreement (SLA). All staff are appropriately trained to manage our WTPs, networks, reservoirs and all other assets. Irish Water offers continuous training to staff to ensure staff are kept up to date with required training.

Irish Water acknowledges Kildare Chambers concerns that the New Shannon Source (NSS) will take some time to deliver. As a result, Irish Water is progressing interim measures to ensure that adequate water supply is provided to meet the needs of the region. These interim measures are outlined in Section 6 of the Technical Report for Study Area 9 and include capacity upgrades to existing water treatment plants. These interim measures and continued investment in the leakage reduction programme will provide allowance for growth prior to the development of the NSS.

In response to the EPA assessment that public health be a priority and as well as addressing WTPs on the Remedial Action List (RAL), critical projects and programmes to address potential public health issues are on-going and not impacted or delayed by the delivery of the NWRP. Section 7.6 of the RWRP outlines the process for developing interim options to address critical water quality and quantity issues while we deliver our Preferred Approaches through the coming investment plans. Using this process interim, short term capital maintenance solutions have been identified for all WTPs and these solutions are referred to in Section 6 of the Study Area Technical Reports.

Also as set out in Section 9 Preferred Approaches will be reviewed in the event of any changes to the Drinking Water Directive and Irish Drinking Water Regulations to ensure that any additional or revised obligations such as further treatment requirements are accounted for. All Preferred Approaches will also be required to comply with the forthcoming abstraction legislation once it is enacted, with abstraction licences being applied for, as necessary.

The Preferred Approaches identified through this process will be prioritised on a national basis and progressed through Irish Water's Capital Investment Plans. The phasing and timeframes for delivery of individual projects will be determined through the capital investment process. When prioritising projects through Irish Water's Capital Investment Plans, we will ensure that these decisions are based on dialogue with the EPA and ensure improvement in water quality is a key metric that feeds into the prioritisation of projects.

The KA assertion that we are not including the water that will be produced by the interim measures, is incorrect. The interim options do not provide any medium to long term additional supply to the GDA, as they involve a proposed temporary increase abstraction from the same source (the river Liffey), that already cannot meet the 1 in 50 Level of Service standard set out in the NWRP Framework Plan. The infrastructure required to facilitate the interim options is required irrespective of the outcome of the Preferred Approach, in order to address water quality and capital maintenance issues.

The interim option proposal is to seek permission to increase abstraction from the existing supplies until the Preferred Approach is in place as highlighted in both the Study Area 9 Technical Appendix and SEA Environmental Report for Study Area 9, that any such permissions would be highly likely to be temporary in nature and would not resolve the level of service issues in the GDA. This will be subject to assessment by the EPA as part of the abstraction licensing process and will be subject to project level assessment.

The methodology Irish Water used for developing our supply demand balance is set out within the NWRP Framework Plan www.water.ie/NWRP. Within the Framework document, for this iteration of the NWRP, we have set a 1 in 50 Level of Service standard for all of our supplies. This equates to a 2% probability of failure or the reliability we require from our supply sources. In practical terms a large abstraction from a small supply source would have a lower level of service than a small abstraction from a large supply source. In most European Countries, and UK utilities, the Level of Service ranges from 1 in 100 year to 1 in 500 year for large urban supplies. Therefore Irish Waters initial target to improve the resilience of all of our supplies is by no means inflated.

There are only two safety factors included in our supply demand balance, an outage allowance applied to the Deployable output of our supplies (Water Available for Use) and a Headroom factor applied to demand to account for uncertainty in forecasts.

For the Greater Dublin Area (GDA), the outage allowance amounts to 5% of the Deployable output and a headroom of 8% applies to the demand side calculations.

KA associates peak water use as a safety buffer. It is not. Peaking is a normal occurrence in all water supplies, in the same way as it is in energy supply. Peaks happen on a daily basis, with more water used in the morning and evening than at night. In some supplies with manufacturing, there can be a seasonal profile. In high tourist areas there can be peaks for an entire summer. Demand in most water supplies peaks during drought periods.

As the water is essential for public health, we must ensure continuity of supply and must therefore design our supplies to withstand peak periods, such as those that occur between night and day, we utilise network storage of treated water.

For example, an energy transmission company would observe a peak in demand for electricity between 5pm and 7pm. They would report that peak as a value above the average demand. They would not break down how much energy was lost to through the transmission network and then recalculate the peak based on an estimate of what may be being consumed.

It is exactly the same for water supply. For example, In the GDA we can observe that on an average day 570 MI/d was recorded flowing through our meters, while on a peak day that volume can increase to 630 MI/d. As leakage is reduced over time, peaking can become more pronounced.

10.6 Data Challenges

10.6.1 Summary of Data Challenges Feedback

Kennedy Analysis (KA) commented that the projections in earlier reports turned out to be incorrect and noted that this is also true of the projections currently being consulted the draft RWRP-EM. KA referenced that in 2019 Irish Water changed the way that it reported the various elements of water demand where water losses that were previously reported as part of network leakage were re-categorised as domestic demand/non-domestic demand. KA commented this resulted in an artificial inflation of domestic demand and non-domestic demand for 2019 compared to previous years and resulted in network leakage reported as being reduced in 2019 compared to 2018. KA noted they gave repeated requests for Irish Water to publish the 2019 data.

An Fóram Uisce (AFU) noted that in order to make more transparent and informed decisions, current data limitations, in particular data gaps around catchments and water bodies, with the consideration of the broader environmental capacity (catchment-based assessments), rather than just the infrastructure capacity. AFU noted a similar map to the Figure 3.7 (on p.72 of the draft RWRP-EM) combining the supply sources with the water bodies that are used and their quantitative and qualitative capacity, along with their Water Framework Directive status. This they remarked would allow Irish Water to examine where exactly the water available for use (WAFU) constraints are and which users they supply, citing Fig.3.10 in p.78 of the draft RWRP-EM.

AFU recommended the cumulative impacts of abstractions should be assessed in an integrated catchment management approach for greater resilience and environmental protection. Furthermore, AFU noted that this would better

estimate the hydrological balances in Water Resource Zones (WRZs) and would allow the perspective of the water quantity management to change from Water Quantity that Irish Water can provide to Water Quantity that each water body can provide.

AFU highlighted that the consideration of hydrologic and operation parameters should be based on accurate models that capture the main characteristics of the operation of catchment – technical systems. The existence or development of such tools is necessary to make decisions of large scale and importance such as water transfers. AFU noted that Decision Support Systems (DSS) are used internationally over decades to provide the necessary information, which will then be further evaluated by the stakeholders, before proceeding with the planning – a process that unavoidably does not exist in the draft plans AFU noted that Irish Water recognise the weakness in hydrogeological data in the Regional Plan and they recommended that Irish Water specify schedule actions in the draft plan to incorporate hydrological data and water balance estimates for the relevant catchments throughout the Eastern and Midlands region. Specifically, accurate, monthly hydrological estimations and infrastructure capacity planning are required to ensure continued supply during critical periods.

AFU recommended that the final Plan and proposed water transfers should allow for flexibility in the Preferred Approaches once the data on cumulative water balances have been assessed. They added that there should be scope and flexibility to amend the proposed projects as more data becomes available.

AFU recommended that Irish Water include scheduled actions to address current data gaps to accurately assess hydrological balances and supply-demand estimates, with a clear outline of tangible goals and timelines. They added that details should be included of the relevant external cooperation requirements, such as formal collaboration between Irish Water and the Environmental Protection Agency, the Geological Survey of Ireland, and ongoing projects such as the Ground Water 3D project.

AFU added that consideration of the broader environmental and infrastructure capacity through catchment-based assessments is key to lead to the necessary methodological updates regarding supply and demand estimates. An Forum Uisce expressed their concern about the lack of data and analysis provided in the plan, particularly with regards to hydrological models-estimates for the supply and demand, and planned measures for the upstream regions to cover the transferred water volume.

Clare County Council's Planning Department, Economic Development Directorate noted that in the event of refinements to the Core Strategy during the plan preparation process, the draft RWRP–NW would be using population baseline data which could vary from that used for the draft RWRP–EM which

would create an inconsistency between the two regional plans as they both relate to County Clare.

A stakeholder commented the NWRP Framework Plan previously adopted, included a baseline figure for domestic water consumption based on an average consumption for water supplies nationally, giving each an equally weighting. The Stakeholder asserted that this was based on an incorrect methodology whereby the baseline consumption figures for Dublin and the Eastern Midlands were based, not on actual consumption figures in this area but on an average figure arrived at by dividing the consumption averages in for example Bantry or Donegal directly with the average in Dublin. They felt this inflates the actual consumption in the GDA per connection.

The Stakeholder asserted that if the baseline is inflated this will in turn affect appropriate future consumption and demand and future comparisons against the baseline may incorrectly indicate that progress is being made in reducing water leaks. Furthermore, they noted that the Irish Government may reintroduce water charges based on baseline consumption figures for Dublin, that are inflated over the actual consumption and, as there is limited metering involved, this would result in an over estimation for Dublin.

Roscommon County Council (RCC) noted that Hydrological yields from water sources need to be determined more accurately. RCC noted that although considerable progress has been made in reducing Unaccounted-For Water (UFW), in the methodology used in determining UFW they highlighted there is a gross underestimation of unmetered or illegal connections that are not accounted for.

Clare County Council's Physical Development Directorate (CCC-PDD) commented that Section 6 of the draft RWRP-EM and the technical appendices provide no detail as to how options are scored under WRZ or Study Area approaches. They added that the scoring tables presented are incomparable with tick marks used for WRZ approach, a colour gradient employed for the Study Areas and a third different presentation for the discarded options. They argued that Irish Water should provide backup costing, delivery duration and other assessment data, or that they should standardise a simplified approach to data presentation, to make the basis for these decisions transparent. They remarked that the scale of difference between the options considered was unclear and questioned whether the decisions in each category were considered.

CCC-PDD noted that a regionalised approach appears to be the predominant methodology for Limerick and that the approach for County Clare has been considered on an isolated basis which has focused on the revitalisation of existing assets. Clare County Council requested that further regionalisation is considered for County Clare along with transparency for figures to support the

decision-making process and the rationale behind the elimination of options. CCC-PDD noted that Ennis, Shannon and Sixmilebridge are not shown in their correct locations on Figure 5.3 in the dRWRP-EM. CCC-PDD stated that they were unable to fully assess the deficits as Irish Water had not presented adequate data within the report to be able to do so.

The Commission for the Regulation of Utilities (CRU) noted that there is limited information provided on the option costs and recommended it would be beneficial for stakeholders and the public to understand the costs for the six options assessed, which should include the New Shannon Source and the five alternatives which were considered in terms of costs and benefits. The CRU also recommended it would be useful for stakeholders and the public if the additional numerical data could be provided that underpin tables 7.7, 7.9 and 7.13 in the draft RWRP-EM.

The CRU noted the approach taken by Irish Water in assessing the trade-offs between options across study areas was to assign a qualitative ranking rather than a quantitative score as set out in table 7.7. The CRU commented that the difficulty with this approach is that it compromises the readers ability to verify that the trade-offs between options are reasonable and consistent with one another across study areas.

Future Proof Clare suggested that Irish Water publish annual usage statistics that would assist people in planning, prioritising, and conserving water. They further noted that it would need to be broken down regionally, but also on a sector and activity basis.

Meath County Council acknowledged the complexity of calculating demand area and the lack of available Irish data is noted, further noting the difficulty this presents for Irish Water to calculate future demand. MCC noted that the Plan acknowledges that Irish Water need a detailed knowledge of the factors that influence water use. They also welcomed and supported the pilot studies proposed in the NWRP across supplies over the coming years.

10.6.2 Response to Data Challenges Feedback

This is Irelands first NWRP, which includes over 530 fragmented WRZs. Ireland has a very significant challenge in terms of historic underinvestment in water infrastructure to date. Ireland is behind other European Countries and the UK in terms of our information, guidance, and practices in water resource management; however, Irish Water, in the preparation of this first national water resource plan, investigated best practice approaches taken in England, Scotland and Wales, and is taking a significant first step in closing that gap. Irish Water conducted significant stakeholder consultation in the development Framework Plan (which includes the Methodology) and the of the RWRP-EM.

We are satisfied that we have utilised the best possible methodologies, considering the condition and stage of evolution of the public water supply in Ireland, and that we have ensured that the RWRP-EM was as comprehensible as possible and includes the best available data at the time of completing the reports. Irish Water acknowledges that information and data will develop over time and the NWRP facilitates a monitoring and feedback loop in addition to the commitment that the plan will be reviewed at regular intervals.

In relation to the submissions made on details of option costs and their presentation, the objective of the report is to provide the information in a manner that can be accessed and understood by the public. All assessments are carried out at a plan level in a uniform and consistent manner and the purpose of the assessments are to allow a comparison between solutions rather than an absolute evaluation of a proposed solution as further evaluations of solutions will be provided at project level. The assessments at plan level are based on desktop information. Therefore, we have provided a comparison of the scoring information within the Framework Plan and the RWRP EM by providing a colour variation to differentiate the performance and of the solutions against each criteria and cost of each solution relative to each other. This is detailed in each of the Technical appendices to the RWRP EM.

In reference to the submissions outlining the data gaps, a further review of data will be carried out at the project development stage outlined in Section 6.4 and the NWRP has a 5-year review cycle where we will review the option development process considering the available data at that point in time.

The objective of the report is to provide the information in a manner that can be accessed and understood by the public. The assessments at plan level are based on desktop information. All assessments are carried out in a uniform and consistent manner and the purpose of the assessments are to allow a comparison between solutions, rather than an absolute evaluation of a proposed solution, as further evaluations of solutions will be provided at project level. Therefore we have provided a comparison of the scoring information by providing a colour variation to differentiate the performance and of the solutions against each criteria and cost of each solution relative to each other. Additionally, over the course of the development of the NWRP we have held workshops with LAs where we have reviewed the scoring information and we will continue to engage with LAs in the development of further iterations of the NWRP.

A further review of data will be carried out at the project development stage outlined in Section 6.4 and the NWRP has a 5-year review cycle where we will

review the option development process considering the available data at that point in time.

The rejection register, which is an annex to the technical report appendix, provides details of all unconstrained options which were screened out at the coarse screening and fine screening stage.

In relation to the comment made by RCC and AFU in terms of hydrological data, Irish Water will share emerging data in relation to groundwater source protection and set up a steering group, including the EPA Hydrometrics Team and GSI, as part of the development of further studies on existing and potential future groundwater supplies. Irish Water will also incorporate information from the GSI regional assessments, into our options assessments, as it becomes available. Emerging data and information will be incorporated into the NWRP through the feedback and monitoring process set out in section 8.3.8.

In response to the KA statement that we artificially overstated our leakage projections as a result of changing our methodology, this is not correct. The overall Irish Water methodology for how leakage is calculated has not changed since 2018. We are moving from estimating Unaccounted For Water (UFW) to estimating Leakage based on the International Water Association (IWA) Water Balance Approach. This best practice methodology uses data from over 1.1 million meters on the Irish Network to calculate each element of the water balance including leakage and water delivered to customers.

In response to the queries related to how the Plan will be updated to account for new data, Section 8.3.8 of the Framework Plan sets out the process for reviewing and responding to new data as it becomes available. In certain circumstances, monitoring and feedback will identify the need for a variation of the NWRP - Framework Plan or a RWRP. This assessment will be carried out on a case-by-case basis depending on the materiality of the impact of the relevant new data or change in circumstances.

Irish Water has developed a 10-year capacity register based on an amended Supply Demand Balance to provide the LAs with an indication of settlements with potential capacity constraints. This allows Irish Water to both inform the next review of Regional Planning Strategies, the preparation of Local Authority Development Plans and also to respond to growth and development needs.

In terms on data gathering, as set out in Section 9.4 of the RWRP-EM we are committed to;

- Development of a strategy to improve understanding of supply risk including Source Risk Assessment studies, supply assessments, source surveys, source monitoring, and source models to facilitate greater understanding of supplies and roll-out of appropriate studies.
- Integration of Geological Survey of Ireland, Regional Groundwater Availability Assessments into the NWRP desktop studies as the information becomes available (currently under development).

In order to allow for flexibility, the Supply Demand Balance for all WRZs includes an allowance for Headroom. As defined in the RWRP EM, “Headroom is the term given to a buffer in the SDB. It accounts for the uncertainty with data and the assumptions used in the supply and demand estimates and forecasts.” Headroom allows us to move forward with projects despite the uncertainty in data. Further data on yields available from our current and proposed abstractions will be obtained at project development stage as set out in Section 6.4.

In response to the statement that IW is inflating consumption figures by determining them at national level, that is incorrect. As set out in Section 4.2.2.1 of the Framework Plan the baseline domestic demand is determined at WRZ level.

In response to the statement that Clare is being considered separately in two Regional Water Resources Plans (EM and NW), Clare has not been considered on an isolated basis. Study Area options which consider rationalising/merging WRZs in Clare to supplies in Limerick were considered as feasible options, however, these options did not perform better compared to more local options for the area, due to the presence of good sources of supply locally. Clare is not unique in this manner. In Laois local solutions were considered preferable for the majority of WRZs in the county.

As raised by RCC we acknowledge there may be some uncertainty in our estimation of future growth (as noted in Section 4.4 of the Framework Plan). Therefore, we have included a headroom allowance in our estimation of demand. Headroom is the safety margin which is applied to demand forecasts to allow for uncertainties in our calculations on both the demand side and the supply side, such as uncertainties in our understanding of leakage and illegal connections. The allowance is calculated and added to estimated demand to provide a buffer in the supply demand balance and to ensure that the preferred approach is sized appropriately to meet future required needs. As our data improves, Irish Water will review methods to share this data with the public.

In response to the submission from Future Proof Clare on publishing annual usage statistics we are currently building up our understanding of water use across the network. IW’s existing domestic metering network, with coverage of almost 60% of domestic units, has smart functionality, such as automatic drive-by reading, month-end readings, and continuous-flow (leak) alarms. This functionality has been used in our ‘First Fix Free’ programme.

In 2018 Irish Water carried out a pilot study of sub-metering of apartments, where smart meters were used with fixed radio communications. This trial was primarily to confirm that it is feasible to sub-meter apartment buildings and retrieve usage data, however, it also demonstrated how water usage data can

be made available to the occupants of the apartments. This work was funded by the CRU. <https://www.water.ie/about/research-and-innovation/CRU-Report-Pilot-Technology-Trials-of-Water-Metering-Systems-for-Multi-Unit-Development-30th-Sept-2019-Final-Website.pdf>. Irish Water are currently running a 'smart network' trial in the South Dublin Area.

In response to the submission from AFU recommending that Irish Water include scheduled actions to address current data gaps. Commitments to data improvements are set out in Section 9 of the RWRP EM.

10.7 Monitoring and Mitigation

10.7.1 Summary of Monitoring and Mitigation Feedback

The Southern Regional Assembly noted the integration of Green and Blue Infrastructure, and Nature-Based Solutions and Ecosystem Service Approaches as part of the Developing Solutions and Supply Smarter infrastructure measures and methodologies of the NWRP. They added that the integration of these principles and projects will align with the three outcomes of the NWRP to Lose Less, Use Less and Supply Smarter. They added that they strongly advocated Nature Based Sustainable Urban Drainage Systems and an Ecosystem Service approach, requesting further detail upon these approaches.

Meath County Council welcomed the measures set out to address deficiencies in available data collection, including pilot studies. They also welcomed the proposal to review the plan every five years. They added that ongoing updates to local authorities on plan implementation would be helpful.

Limerick Greens asked whether the River Basin Management Plan would sufficiently inform the NWRP in real time. They sought clarification on how effectively the measures advised to farmers by the Local Authority Waters Programme (LAWPRO) and Agricultural Sustainability Support and Advisory Programme (ASSAP) have been implemented at a local level. They also asked how Irish Water would effectively respond to LAWPRO updates if there is little or no uptake on ASSAP advice at a local level.

10.7.2 Response to Monitoring and Mitigation Feedback

In response to the point made by the Southern Regional Assembly on blue and green infrastructure, Irish Water recognises the increasing importance of nature-based solutions and catchment measures in relation to improving water quality and reducing risk across our supplies. Irish Water is an active participant in catchment-based initiatives and where possible will incorporate Nature Based Solutions (NBS) at project level.

A key aspect of the NWRP is the monitoring and feedback process set out in section 8.3.8 of the Framework Plan. This process involves continual review of assumptions and data as new information becomes available, to ensure the NWRP is up to date.

As set out in Section 2.3.9 of the RWRP-EM Irish Water's long-term approach to protecting drinking water sources and therefore our natural resources will be the increasing implementation of catchment management for drinking water source protection in partnership with key stakeholders. This approach is in accordance with Article 7(3) of the Water Framework Directive and has the joint benefit of protecting our water habitats and managing the risk to our drinking water sources.

Implementation of source protection measures will require further collaboration with several stakeholders including, riparian owners, industry groups, the agricultural, forestry and environmental sector and Teagasc. These measures will complement existing ongoing works for example the works carried out by Teagasc under the Agricultural Sustainability and Advisory Programme (ASSAP) which looks to improve water quality through working with farmers. More text on this has been provided in Section 5.4.

In recognition of the importance of multi-stakeholder engagement and collaboration in managing shared natural resources, Irish Water are members of an expert group chaired by the Department of Housing Local Government and Heritage (DHLGH) to make recommendations to the Minister regarding a new approach to drinking water source protection as part of the transposition of the recast Drinking Water Directive. Irish Water is also actively involved in pilot source protection projects in Ireland to trial catchment scale interventions to reduce the risk of pesticides causing exceedances in water supplies. The two key projects are the Source to Tap Project and the Pilot Drinking Water Source Protection Project more information on these projects are provided in Box 2.4 of the RWRP EM.

One of the key objectives of Irish Water's Biodiversity Action Plan is the promotion of nature-based solutions (NBS) for water protection and wastewater treatment, which have significant potential to deliver biodiversity.

Section 2.3.9 sets out examples of NBS implemented by Irish Water including biodiversity enhancement measures which have been in place for several years, in Ballymore Eustace, the site of Ireland's largest water treatment plant occupying 56 hectares, with habitats including wildflower meadows and native woodland.

We explore the sensitivity of our Preferred Approach at Regional Level by testing the effect of a range of future events, such as climate change and new abstraction legislation, on the Supply Demand Balance. This allows us to understand Sensitivity of the Regional Preferred Approach to changes in Need, in turn allowing us to ensure that the Regional Preferred Approach is robust and that our Plan is adaptable. Section 8 of the RWRP-EM outlines how the regional solution is developed.

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/>

10.8 Conclusions on Solutions Methodology Feedback

Having carefully reviewed the submissions received on the theme of Solutions Methodology, Irish Water considered that more clarity on certain points should be provided in the RWRP-EM. This change is explained in section 10.8.1 regarding "Clarifications" below. In addition, some of the points made in the submissions will be taken forward in other ways, as explained in section 10.8.2 regarding "Recommendations" below.

10.8.1 Clarifications on Solutions Methodology Feedback

As set out in the Solutions Methodology Feedback, much of the responses point to the particular section of the RWRP-EM where the information is found. However, the following section of the RWRP-EM has been updated, where relevant, to reflect feedback set out under the theme of Solutions Methodology Feedback:

Section 5 - Additional text has been provided in Section 5.4 of the RWRP-EM to detail Irish Water's approach to source protection measures.

Section 6 - Provision of new section, Section 6.4 of the RWRP-EM, which outlines the project development process. This Section explains the assessments undertaken at plan level and confirms and details further the level of site-specific assessment that will be required prior to the development of any solution. In particular, it notes that many existing abstractions, in addition to new, will have to undergo a consenting process that will require detailed environmental assessments and be subject to public consultation.

Appendix 4 Study Area 4 Technical Report - The interim solution for the Portloman WTP has been updated to include the proposal to divert areas of Moate, Moyvore and Ballinacarrigy from the Portloman supply to the Athlone supply.

Appendix 4 Study Area 4 Technical Report - The interim solution for the Portloman WTP has been updated to include the proposal to divert areas of Moate, Moyvore and Ballinacarrigy from the Portloman supply to the Athlone supply.

Appendix 5 Study Area 5 Technical Report - Text has been updated to clarify that;

- the Preferred Approach for Mount Talbot Water Resource Zone is to Increase Ground Water abstraction at Mount Talbot Spring to supply deficit and upgrade of WTP for quality and capacity purposes.
- the Preferred Approach for Lisbrock and Killeglan is New GW at Lisbrock and upgrade of WTP for quality and capacity purposes and new GW at Killeglan and upgrade of WTP for quality and capacity purposes.

Appendix 8 Study Area 8 Technical Report – As outlined in Section 4.12 of this report the Preferred Approach for Killaloe has been updated to reflect feedback from the consultation.

10.8.2 Recommendations on Solutions Methodology Feedback

As noted in Section 8 Environment at project level options will be developed to ensure all potential opportunities that can be afforded by the solution are realised and this could include an augmentation of the option in line with our Biodiversity Action Plan or our Energy Efficiency Plan.

11. Regional Plan Consultation Process

In this chapter, we summarise the key references in submissions to issues under the broad theme of “Consultation Process.” We deal with the theme in this chapter, by setting out first a summary of the relevant mentions in the submissions, followed by our response. There were 31 submissions in relation to the Regional Plan Consultation Process

11.1 Regional Plan Consultation Process

11.1.1 Summary of Regional Plan Consultation Process

Many submissions welcomed the draft RWRP-EM and the opportunity to comment on and invited further engagement from Irish Water.

A member of the public expressed hope that this consultation would lead to more sustainable use of water in Ireland.

Ibec welcomed the opportunity to comment on the draft RWRP-EM. They noted that their views represent a wide variety of businesses across the country and stated that they see the need for continued improvement in the availability of resilient, sustainable, and affordable supplies of potable mains water as a key determinant of Ireland’s future economic prosperity. Ibec stated that Irish Water’s goal should be to have a resilient, integrated national network and noted that it would require time and sustained investment in both physical and human capital to achieve.

The Commission for Regulation of Utilities (CRU) noted that according to Section 32 of the Water Services Act 2013 No.2, they have a function protecting the interests of the people and businesses served by Irish Water. In this context the CRU has reviewed and responded to Irish Water’s statutory consultation on its draft RWRP-EM. The CRU responded to the original NWRP consultation and therefore, has limited its response to the draft RWRP-EM. The CRU reiterated their aim is to ensure that Irish Water appropriately plans and prioritises its delivery of investments and services so that it can meet water demands in a safe, secure, and sustainable manner.

The CRU noted their aim is to ensure that Irish Water delivers efficient and effective investment to maintain and improve services across the country. The CRU commented that their submission to this consultation on the RWRP-EM is intended to highlight several areas where the CRU is of the view that further clarity on some of the assumptions and rationale, supported by some additional underlying data would improve both stakeholders’ and the public understanding of Irish Water’s proposed approach. The CRU encouraged Irish Water to be

open and transparent when performing their functions under Section 39(2)(i) of the Water Service (No.2) Act (2013). The CRU is of the view that further clarity on some of the underlying assumptions which drive the proposals contained within the draft RWRP-EM will support the overarching requirement for openness and transparency. CRU requested that where Irish Water has made assumptions, used studies, or referenced previous work, in relation to the RWRP-EM that where possible this information should be published in full within, or be made available alongside, the RWRP-EM.

Regarding the Ennis Water Supply, Councillor Johnny Flynn requested the acceptance of his submission to the draft RWRP-EM public consultation in connection with his previous related submissions to the NWRP public consultation. Councillor Flynn noted that the NWRP when adopted, will outline Water infrastructure investment up to 2044.

Councillor Flynn also wished to acknowledge the positive engagement he experienced with Irish Water staff over several information webinars and face to face meetings in the past and more recently regarding the draft RWRP-EM. Regarding Proposed Water Abstraction from Lough Derg, Councillor Flynn requested the acceptance of his submission to the draft RWRP-EM public consultation in connection with his previous related submissions to the NWRP public consultation.

Dublin Chamber welcomed the opportunity to make a submission to Irish Water on the draft RWRP-EM. They voiced their ambition for the future of Dublin, and the EM Region, and support sustainable and well-planned growth. They noted that this must be underpinned by improved management of the region's water resources, through well advised care of existing supplies, and progressive investment in new supply infrastructure. The Chamber took their submission as an opportunity to reaffirm the need to expedite progress on the EM Water Supply Project, which they stated is a major infrastructure project that is needed to address Dublin's water needs.

Dublin Chamber reported that they have for many years outlined the need for renewed investment in Dublin's water supply and highlighted the detrimental impact of historic underinvestment.

In their submission, Future Proof Clare commented that there was some uncertainty surrounding the public consultation end date and noted that Irish Water could have made a clearer statement on their website regarding the 10-day extension to the draft RWRP-EM consultation period.

Future Proof Clare raised concerns over commencing and advertising public consultations during the Christmas period and noted it as an unacceptable method used by Government, Semi-State bodies and other companies. They

highlighted how this approach reduces the likelihood of information getting to the public.

A member of the public advised Irish Water to improve their public engagement and to inform stakeholders of this proposed plan fully and truthfully. The respondent further stated that if they had not been looking for this consultation specifically, they would not have heard about it.

The Department of Agriculture, Food, and the Marine (DAFM) in their submission, stated that it is imperative engagement is sought with the fishing industry and other relevant stakeholders at an early stage to discuss any proposed changes that may affect them and to afford these stakeholder groups the opportunity to give their input to the Plan. DAFM also expressed that Fishers' interests and livelihoods must be fully recognised, supported, and considered in the Plan.

Inland Waterways Association of Ireland (IWAI) noted the omission of Waterways Ireland as a stakeholder in box 2.5 of the draft RWRP-EM where actions pertaining to the 2018 drought event are discussed. IWAI advised that Waterways Ireland should be included on this list in future as they are the navigation authority for inland waterways in Ireland and included as part of further stakeholder discussions with Irish Water.

Clare County Council Physical Development Directorate advised that the draft RWRP-EM should be revised to provide adequate data allowing stakeholders a transparent view on the data used to inform Irish Water's decision making. They further suggested that the reports be re-issued for consultation. They also requested in their submission that Irish Water should prioritise engagement with Clare's directly elected public representatives at each stage of development and delivery to ensure that Irish Water is appropriately accountable to the people it serves.

Kildare Chamber commented that greater communication is needed between all of the key stakeholders when decisions are being made regarding water supply. They also suggested the creation of a Regional Stakeholder Forum, between Irish Water and all of the key interested stakeholders within the wider Kildare and Greater Dublin region. Kildare Chamber proposed that this forum could take place quarterly, where participants would be alerted to future disruptions to supply.

Kildare Chamber acknowledged how water disruption can have negative impacts and highlighted their ambition to work cooperatively to help businesses plan and grow sustainably into the future. Kildare Chamber highlighted that enhanced communication between Irish Water and key stakeholders is imperative for a cohesive and mobilised approach to the development of Kildare County. They noted that important policy initiatives such as the Kildare County

Development Plan will shape the future of Kildare into the medium and long term.

The Southern Regional Assembly (SRA) requested clarity to ensure their previous recommendations to the NWRP are addressed. The SRA acknowledged the engagement with stakeholders, and positive collaboration with Irish Water on a number of initiatives. SRA noted they look forward to continued consultation during Phase 2 of the NWRP.

The SRA welcomed the commitment in the draft RWRP-EM to align and deliver on the objectives of each Regional Spatial and Economic Strategy (RSES) and coordinate with Local Authorities to invest in water infrastructure to service the Core Strategies of City and County Developments. The SRA encouraged continued collaboration with the implementation of projects that integrate Green Blue Water Initiative and Nature Based Solutions (NBS) at national, regional, and local levels.

The SRA strongly encouraged the continued partnership approach with Local Authorities to ensure that optimal infrastructure to guarantee a quality supply to service Core Strategies is achieved through the final agreed approach. SRA trusted that their recommendations will be taken on board to help strengthen the final unified NWRP from the Region's perspective. The SRA welcome the opportunity to engage with Irish Water on these recommendations and are available for future consultation and clarities as required.

An Forum Uisce (AFU) recommended that Irish Water include a section in the Regional Plan to provide actions for transparent, ongoing collaboration between Irish Water and the Environmental Protection Agency (EPA) and Geological Survey Ireland (GSI) to determine the data requirements for accurate estimates of the water availability and balance for every catchment, which has a drinking water source. They commented that cooperation with EPA and GSI, as well as the multi-annual government funded GW3D project, must also be set as priorities for robust assessments for water availability from the aquifers, essential to support the additional groundwater abstractions proposed in the Plan. They noted that this cooperation is essential in the context of sustainable Integrated Catchment Management. They also highlighted their awareness that the actual abstraction limits and conditions, which Irish Water will operate under, has yet to be determined in the current abstraction licensing process. AFU recommended that Irish Water provide further detail on its role on regulatory control of growth, development, and expansion of activities, to ensure transparency and accountability for water sustainability in the planning process. They noted the need for solid planning and financial management as already raised in AFU's Significant Water Management Issues recommendations for Irish Water, where focus should be given to measures which increase capacity, investments, and flexibility of altering the planning process based on reasonable interaction with relevant bodies, if necessary.

AFU recommended that Irish Water include details in the final RWRP-EM plan of the required engagement and collaboration with the National Federation of Group Water Schemes and individual group water schemes where water transfers propose to use or impact existing group water schemes infrastructure, acknowledging that these are privately owned community assets. They further recommended that Irish Water, the GSI, and the EPA work together in a transparent and ongoing manner to ensure that Irish Water plans and develops their proposed plans, particularly the Regional Preferred Option, using accurate hydrological assessments of the catchments to ensure resilient water services and environmental protection across the study area. AFU recommended that Irish Water should add actions to the Regional Plan highlighting how they will increase transparency in their data, monitoring and knowledge-based tools. They also advised making open-source information available for water supply services allowing the public and stakeholders to make informed contributions to public consultation processes.

Councillors from Clare County Council sought further clarification on the provision of WW treatment in the untreated areas across the county and are seeking further clarification on wastewater and about the planned abstraction from the River Basin in Parteen. They suggested having another workshop with Irish Water as soon as possible.

Meath County Council noted that the Water Services Section of the Council engages with Irish Water on an ongoing basis. They commented that maintaining a productive working relationship between Irish Water and all stakeholders is central to the successful implementation of the Regional Water Resource Plans. MCC noted that Irish Water have engaged with Local Authorities across the country to ensure that the investment is made appropriately in accordance with the relevant County Development Plan and that the inclusion of Ballivor in Study Area 3 is welcomed.

The EPA advised that it is essential for Regional Assemblies to keep regional land use planning and water-services planning aligned throughout the Plan's lifespan.

The Office of the Planning Regulator commended the acknowledgement of continued collaboration between regional assemblies and local governments throughout the development of statutory development plans. They noted that they look forward to continued consultation for the remaining RWRP.

The Irish Business and Employers Confederation (Ibec) stated that substantial planning and investment is vital to ensure the post-Covid economic recovery of the region and its urban centres. They added that achieving a greater mix in land uses within urban areas would lead to sustainable rejuvenation. Ibec argued that a better and more appropriate balance is required between

residential, retail, and other commercial or business activity, which they stated would rely upon a collaborative approach between local business, local authorities, Government, and key infrastructure providers, such as Irish Water, in order to be successful.

Roscommon County Council agreed that the project consultation roadmap was clearly defined. They further noted that the timeframe may be ambitious due to the inputs expected from all affected stakeholders.

Elected Representatives of Clare County Council referred to a term used for consultations on large infrastructure projects, known as 'Non-sultation' which they understood to mean that the decision has already been made and that stakeholders are being told what will happen and not asked. They expressed the view that Irish Water have started with a solution for the Eastern and Midlands (EM) region and have worked backwards from there.

Kennedy Analysis (KA) described the prescribed consultation questions as limited and noted that if the remit were wider, they would have raised further points. KA questioned the transparency of the consultation process for draft RWRP-EM noting that concerns raised in previous submissions have not been addressed sufficiently.

KA noted that supporting reports and cost analysis have not been published for public scrutiny and highlighted this as a serious concern. KA highlighted that at the time of the 2015 Programme for National Recovery, Irish Water published various reports that fed into its projections in relation to non-domestic demand, customer side leakage, groundwater, desalination, per capita consumption etc. KA noted that this time it has published no reports for any of these elements except for non-domestic demand. KA stated that it is against the principles of transparency and does not allow for proper independent scrutiny.

KA noted errors within Irish Water's analysis through the publication of those underlying reports in 2015/2016. KA noted they would not have been able to identify these errors in the previous projections if it had not been the case that the previous two industrial demand reports were published in full. KA commented that this demonstrates the benefit of public scrutiny in projects of this scale and that all underlying reports should be published in full to allow for proper public scrutiny.

AFU recommended that Irish Water improve their transparency measures regarding data available to, or used by, Irish Water in the assessment of their proposed plans for the Eastern and Midlands Region and to include them in the final Plan. They noted that currently, there is no detail provided by Irish Water on the actual water balances and their allocation (spatially) within the Greater Dublin Area (regarding their needs and deficits, and that there is no information on a design study for the works proposed. AFU commented that the Regional

Plan should indicate how much water can be saved from each option, for each month and supply source, in order to evaluate the options in a transparent and fair manner. They suggested a catchment-based approach that considers integrated planning with a focus on sustainability, and combinative solutions. AFU recommended that stakeholders and the general public have access to more data on water availability in order to make more informed decisions about water use.

AFU recommended that a table should be added to the Plan to include the definitions of key terminologies used throughout the plan to avoid misinterpretations. AFU were concerned over the use of unclear terminologies in the draft RWRP-EM which could result in misleading interpretations. They advised that clarity in terminology would ensure more accurate tracking of the performance of water services, and their improvement. AFU noted that using actual Multi Criteria Assessment with performance criteria, would allow Irish Water to start to quantify the performance of the systems, with more transparent, objective comparisons and decision-making process.

Limerick Greens stated that the definition of an Eastern Midlands Region in the draft RWRP-EM Plan is misleading. They commented that the RWRP-EM plan is designed to facilitate the building of the proposed interconnector between the River Shannon and Dublin by suggesting these are in the same region and questioned whether the consultation was genuine. Limerick Greens stated that Irish Water's definition of the EM region is in breach of the principles of good faith and good administration and other principles of administrative law noting that it incorrectly frames the problem and the proposed solution. They noted that Irish Water does not have a statutory or legal basis to define regions differently to the existing definitions of regions. Limerick Greens recommended another consultation with these amended definitions and descriptions. Limerick Greens requested that Irish Water annuls the current consultation and correctly identifies Limerick, Clare, and the Shannon Estuary as being in the Southern region and Mid-West region. They further recommended describing the proposal as being to transport water across the breadth of the country and crossing three regions as opposed to being within the same region.

Ardcrouney Group Water Scheme stated that they are a privately owned entity, governed democratically by their members, by whom all major decisions must be passed. They added that they expect a full assessment to be completed to ensure the proposed pipeline or ancillary works have minimal impact on their source and infrastructure. They added that the use of their infrastructure by Irish Water would require consent from their members, decided at a special general meeting. They added that, without this consent, Irish Water would be unable to access this infrastructure

11.1.2 Responses to Regional Plan Consultation process

The statutory obligations to undertake public consultation on the National Water Resource Plan (NWRP) arose in the context of the broader requirement to conduct Strategic Environmental Assessment (SEA) and Appropriate Assessment (AA) of the plan under the following environmental legislation:- The EU Strategic Environmental Assessment Directive (2001/42/EC) as implemented in Ireland by the European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (SI 435/2004) and as amended by the European Communities (Environmental Assessment of Certain Plans and Programmes) (Amendment) Regulations 2011 (SI 200/2011) (together with SEA Regulations); and communities (birds and Natural Habitats) Regulations 2011 (as amended) (SI 477/2011) (the Habitats Regulations).

Specifically, Article 13 of the SEA Regulations requires competent authorities to publish public notice of a draft plan or programme and provide no less than four weeks for the public to provide written submissions or observations on the draft plan or programme. Article 15 of the SEA Regulations requires the competent authority to "take account of" any submissions or observations made to the competent authority in the response to submissions received under Article 13.

Similarly, Regulation 42(13) of the Habitats Regulations (as amended) now requires public authorities to provide at least 30 days for the public to make written submissions or observations in relation to the proposed plan. Regulation 42(12) then requires the public authority to "take into account" any written submissions or observations made to the public authority.

The NWRP will be formally updated every five years at which point there will be further opportunities for public participation through public consultation. Baseline forecasts and data feeding into the NWRP will be reviewed annually. The Monitoring and Mitigation Plan for the RWRP-EM is based on Chapter 4 of the Strategic Environmental Assessment (SEA) Statement prepared in relation to the NWRP Framework Plan.

Irish Water is committed to reviewing the RWRP-EM 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 response to the submission from KA on previous reports, Irish Water notes that this consultation is on the draft RWRP EM. The public consultation is not on a specific project, nor does it include a critique of projections carried out as part of other consultations.

In relation to the submissions made on details of option and their presentation, the objective of the report is to provide the information in a manner that can be

accessed and understood by the public. All assessments are carried out a plan level in a uniform and consistent manner and the purpose of the assessments are to allow a comparison between solutions rather than an absolute evaluation. Further evaluations of solutions will be provided at project level. The assessments at plan level are based on desktop information. Therefore we have provided a comparison of the scoring information by providing a colour variation to differentiate the performance and of the solutions against each criteria and cost of each solution relative to each other.

All submissions to date, in relation to the NWRP Framework Plan and the RWRP-EM, have been analysed and assessed. The outcome of this assessment process is feeding into the development of the NWRP (which will comprise the Framework Plan and the four RWRPs, once finalised). A detailed Consultation Report, which ran to 476 pages (214 pages plus Appendices) was published along with the updated plan, SEA Statement and AA Determination following on from the public consultation on the Framework Plan.

When finalised, the RWRP-EM will form part of the overall National Water Resources Plan (NWRP). The NWRP will identify possible solutions, all of which will be subject to IW's capital investment process, along with the appropriate regulatory and statutory consents. In addition, the NWRP is a 25-year plan, and it will take time and money to roll out the solutions identified within it. Further, the NWRP will be updated to respond to any changes in the external environment and applicable policy framework, through the monitoring and feedback process outline in Section 8.3.8 of the Framework Plan.

Irish Water carried out a thorough and comprehensive consultation process and responded substantively to submissions. The NWRP is not a vehicle for any individual project. It is a plan for every public water supply in Ireland. The draft RWRP-EM was published for public consultation on 14 December 2021 and, as a result of it launching before the Christmas period, it was originally lengthened to account for this. In addition to this, the consultation closing date was extended twice at the request of stakeholders, with consultation closing on 08 April 2022, resulting in an overall consultation period of approximately 16 weeks.

An extensive media campaign was launched at the commencement of the public consultation, including on national and regional media. Briefings were offered to journalists who were interested in learning more about the RWRP-EM and Irish Water spokespersons were made available for media interviews and press briefings throughout the consultation. Coverage featured across national and regional media channels throughout the consultation period, particularly around the time of the launch of consultation. An extensive, promoted social media campaign also ran in tandem with the media campaign. A freephone

1800 was provided and staffed by the NWRP team during office hours throughout the consultation period.

In advance of public webinars Irish Water launched another public information campaign. Regional adverts were published advertising the online public webinars as well as on the Irish Water website and an email update was issued to all stakeholders on the NWRP mailing list. A total of eight public webinars were held over the month of February 2022.

A suite of engaging animations was developed for use on social media to explain many water resource planning topics including population growth, climate change and supply demand balance.

Irish Water facilitated 36 briefing requests from environmental authorities, Local Authorities and interested stakeholders. Eight public webinars were held over the month of February 2022 and 198 interested members of the public registered their attendance. A presentation on the draft RWRP-EM was given, followed by a Q&A (question & answer) session with the NWRP team. Written responses were issued to any queries not answered at the webinar and published on the Irish Water website.

Irish Water is engaging with representative groups of the fishing industry, including Inland Fisheries Ireland (IFI) as part of the NWRP. Irish Water has met with regional representatives of the IFI throughout each stage of the development of the RWRPs. All feedback received from the IFI, as well as other representatives of Fishing groups, both recreational and commercial, is being considered at every stage of the Plan. Where we have received submissions from such groups, we have included and provided responses to the submissions, within our Consultation Reports.

Irish Water held several online webinar briefings and one in person briefing for elected representatives of Clare County Council during the consultation period, to go through the RWRP-EM in detail. Later this year, Irish Water will hold an in person briefing for elected representatives of Clare County Council, as part of its planned non-statutory consultation on the Water Supply Project, East and Midlands Region. At this time, IW does not have a remit, nor funding, to provide new infrastructure in areas that currently do not have public infrastructure, such as the untreated agglomerations mentioned in County Clare.

In addition to this, all questions raised at the public webinars were noted and responded to and were published on our website, in order to allow for real-time responses to help people with their submissions. These can be found here: www.water.ie/docs/rwrp-easternmidlands/QA_Public-Webinars_v28.pdf

Irish Water continues to engage with all stakeholder representatives through its National Stakeholder Forum and other ongoing daily activities, including the

delivery of water and wastewater services, new projects, as well engagement through conferences, professional bodies, and sponsorships. Planned water outages are promoted through press releases that are sent to the local media in the area in question, as well as circulated to elected representatives, Chambers of Commerce and/or other business representative bodies in the local area. All water outages are listed in the Supply and Service Updates section of water.ie and updates are issued on Irish Water's twitter account @IWCare. While communications cannot issue to these groups before an unplanned water outage, all updates on unplanned outages, including the estimated time it will take for normal supply to resume, are posted to the Supply and Service Updates section of water.ie.

Irish Water recognises the ongoing work between the Regional Assemblies and the local authorities over the course of the development of the Local Authority Development Plans. As these plans are finalised, Irish Water will incorporate the increasingly refined growth rates into our demand forecasts. The information including Metropolitan Area Strategic Plan, Strategic Development Zone and core strategies will also be used to stress test models of our networks.

Irish Water recognises that the tangible outcomes and benefits to the supply-demand balance (SDB) of some of the solutions, particularly under the "Use Less" (or water conservation) pillar, are not quantifiable at present. However, IW recognises the strategic importance of this pillar and is proactively investing in measures, including water conservation campaigns, Green Schools initiatives to promote grassroots understanding of water conservation, development of a Water Conservation App and a successful Water Stewardship Programme with non-domestic users. These initiatives verify IW's commitment to conservation. Over the coming years our ability to quantify the impact of these initiatives in terms of reduction in water use will improve as our data and intelligence systems become more refined.

When prioritising growth projects through Irish Water's Capital Investment Plans, we will ensure that these decisions are based on dialogue with the RSES and local authority housing and planning functions.

Irish Water undertook public consultation on Phase 2 of the draft RWRP-EM in accordance with the consultation requirements of the SEA and Habitats Regulations. Irish Water's consultation and engagement processes are in line with the public participation requirements of the Aarhus Convention, along with the requirements for public consultation for the purposes of the SEA Directive and Habitats Directive. Our public participation process includes different phases with reasonable timeframes in excess of the statutory minimums under the SEA and Habitats Regulations, allowing the public to be informed, and for the public to participate effectively during the decision-making process.

Irish Water commits to continuing to provide communications and public consultation that are accessible, meaningful, transparent, proportionate, and accountable for all stakeholders including those without a technical background. These principles have underpinned the approach Irish Water has taken to the

communications and public consultation for the NWRP to date relative to Phase 1 NWRP Framework Plan and Phase 2 NWRP, the four Regional Water Resource Plans.

Non-technical summaries for the draft RWRP-EM, infographics, and animations to explain technical aspects were all developed to assist in articulating the RWRP-EM to the widest possible audience and a case study was also provided. A glossary of acronyms and terms was also provided. Where required, Irish Water facilitated additional requests for information from groups or individuals with a specific issue in a particular area or aspect of the draft RWRP-EM plan.

To assist stakeholders in making a submission as part of this public consultation, IW included consultation questions, however IW also noted that feedback on all aspects of the draft RWRP-EM would be considered.

11.2 Conclusions on Consultation Process Feedback

11.2.1 Clarifications on Consultation Process Feedback

The following section of the RWRP-EM has been updated to reflect feedback under the theme of Plan Implementation:

Section 6 - Provision of a new section, Section 6.4 Project Level Summary, which outlines the project development process. This Section will detail the level of site specific assessment yield assessments that will be required prior to the development on any solution. It also notes that environmental assessments, including an Appropriate Assessment (AA) screening, Environmental Impact Assessment (EIA) screening and WFD assessments will be carried out at project level.

11.2.2 Recommendations on Consultation Process Feedback

Irish Water will consult with the NFGWS, on any preferred approach where we are proposing to obtain supply from a Group Water Scheme, through the consultation process for the 3 other regional plans.

Irish Water will identify Group Water Schemes looking to be taken in charge as part of the consultation process on the RWRPs and this will be considered in the development of the Preferred Approach and in future iterations of the NWRP.

12. Plan Implementation

In this chapter, we summarise the key references in submissions to issues under the broad theme of “Plan Implementation.” Within the overall Plan Implementation theme, we identified four sub themes, which we set out in Figure 12.1. We deal with each of these sub-themes in this chapter, setting out first a summary of the relevant mentions in the submissions, followed by our response. The sub-themes are not dealt with in any particular order.

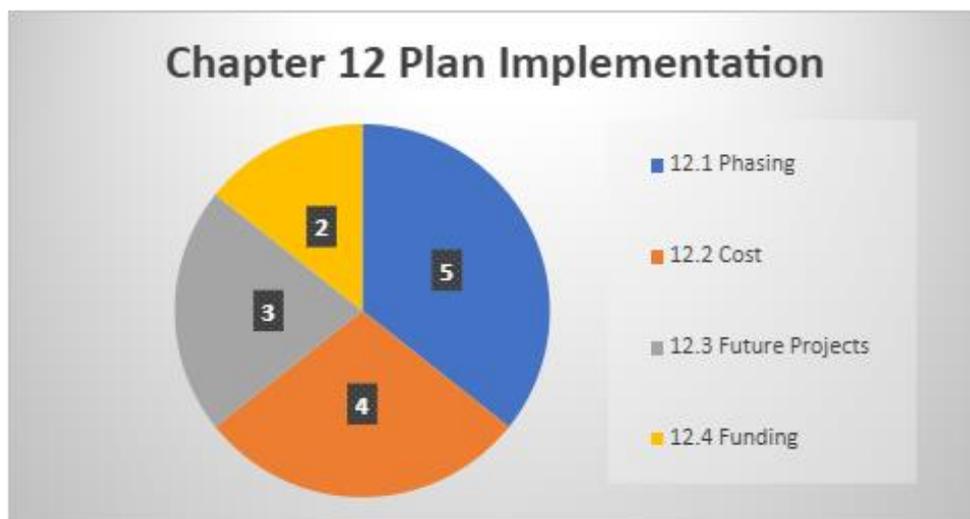


Figure 12.1 Plan Implementation

12.1 Phasing

12.1.1 Summary of Phasing Feedback

Clare County Council’s Physical Development Directorate (CCC PDD) referred to page 75 of the Study Area 8 (SA8) technical report, on which Irish Water notes that delivering on all the options noted in the resource plan will take five to ten investment cycles. They noted that this is a twenty-five-to-fifty-year investment horizon for a report which they stated sets out considerable supply deficiencies in schemes throughout the SA8 within that timescale. They added that the report appears to suggest that there are significant deficiencies across the SA8 which may not be met or will only partially be met by Irish Water during the period considered in the strategy up to 2044. CCC PDD queried what the intended phasing of these future works would be in order that the unknown aspects such as feasibility of additional ground water source abstraction are clarified before upgrade capacity decisions are made for large regional plants, such as in Limerick City and Environs 1900SC001.

Dublin Chamber noted that Irish Water’s original proposed timeline for water available from the new source at the Shannon was from 2022 onwards which

has now been pushed to 2026-27 at the earliest. They added that the Dublin Region Water Supply Area and the Benefitting Corridor will reach its maximum deployable supply of 623 Ml/d by 2026. They highlighted that this maximum deployable supply assumes that all infrastructure is fully operational and working to maximum capacity, a highly unlikely scenario for any water supply area, in Ireland or internationally. They argued that a new water source is needed urgently to avoid serious challenges arising soon and avoid threats to Dublin's international competitiveness. Dublin Chamber further stated that the need for the project is evident, and its delivery is urgent. They added that commitment is required by Government as well as Irish Water to ensure delivery in the face of the political and planning uncertainties that may arise in the coming years. Dublin Chamber urged prioritisation of the Eastern and Midlands Water Supply Project and called for joint action to accelerate delivery.

Tipperary County Council (TCC) recognised that the scale of investment required across the entire county will mean that it will take several investment cycles before Irish Water can address all issues with the existing water supplies and that small, localised options may be required on an interim basis to secure need in existing supplies until the preferred option can be delivered. TCC noted that Irish Water identified current and future water quantity issues in the Newport-Ballina, Lorrha, Terryglass, Upperchurch and Borrisokane Water Supplies in its Supply Demand Balance (SDB) calculations. TCC raised concerns over insufficient capacity in any drinking water supply and support the interim and preferred options in the draft RWRP-EM and requested that Irish Water provides early capital investment in these areas.

Councillor Johnny Flynn supported and urged early implementation of the proposed Ennis Water Resource Zone option - SA8-172, reiterating the critical supply issues in the region and the 10% plus deficit of raw water for abstraction experienced during the 2018 summer drought.

Offaly County Council (OCC) agreed with how the Preferred Approach is identified at WRZ and Study Area Level. Offaly County Council noted that there are water deficiencies for County Offaly, and although the WRZ preferred approach addresses these concerns, they noted that a specific timeframe is not given. OCC stated that they will work with Irish Water to continue to monitor the performance of the network to ensure that the most urgent works are prioritised as required.

The EPA added that the supplies currently on their Remedial Action List (RAL) should continue to be addressed on a priority basis within each WRZ as appropriate.

12.1.2 Response to Phasing Feedback

The scale of investment required to transform our water supplies is undoubtedly considerable. However, the outcome in terms of increased ability to protect the environment, provide a good Level of Service for all customers, support growth and economic development, and adapt to climate change impacts will be substantial. The development of the NWRP will enable us to understand the scale of strategic investment required across our supplies, and to propose the right solutions and the appropriate level of investment needed within the context of the National Planning Framework. It also enables us to identify data gaps and commit to pilot projects and schemes to improve our information. This will not only help Irish Water but also the EPA, AFU, the Government, and other bodies in terms of coordinated thinking.

The Preferred Approaches identified through this process will be prioritised on a national basis and progressed through Irish Water's Capital Investment Plans. The phasing and timeframes for delivery of individual projects will be determined through the capital investment process.

When prioritising growth projects through Irish Water's Capital Investment Plans, we will ensure that these decisions are based on dialogue with the Regional Assemblies and the Local Authority housing and planning functions.

Critical projects and programmes to address potential public health issues and supply deficit issues are on-going and not impacted or delayed by the delivery of the NWRP. Section 7.6 of the RWRP outlines the process for developing interim options to address critical water quality and quantity issues while we deliver our Preferred Approaches through the coming investment plans. Using this process in the interim, short term capital maintenance solutions have been identified for all WTPs and these solutions are referred to in Section 6 of the Study Area Technical Reports.

As outlined in Section 6.1.2 of the RWRP-EM, all options outlined in the RWRP-EM are developed at a plan level.

Site specific hydrological and hydrogeological assessments of yield will be required to confirm the volumes of water we can abstract for water supply from proposed aquifers, lakes, and river sources. Additional text will be provided in a new Section 6.4 of the RWRP-EM which will outline this project development process.

It will be a significant challenge to progress the NSS, given its scale and complexity through the necessary consent, procurement, and construction phases to make it fully operational before the end of the decade. The RWRP-EM identifies current and proposed measures to enhance supplies in the Eastern and Midlands Region and potential interim solutions that might be

capable of being delivered before the Preferred Approach alongside ongoing leakage reduction, capital maintenance and water conservation programmes. These interim measures will help keep water services in the region functioning in the medium to short term but a large supply to address the deficit and long term resilience is needed to meet the long-term water supply requirements to 2050 and beyond in a sustainable manner.

12.2 Cost

12.2.1 Summary of Cost Feedback

Clare County Council's Physical Development Directorate had a number of questions relating to cost. They asked what the total anticipated costs would be of the preferred option projects for each study area, as well as water conservation measures, and any interim solutions proposed. They then queried how these costs would compare to Irish Water's historical capital spend for capital cycles to date in its lifespan.

Clare County Council's Physical Development Directorate noted that the project to bring water from the Parteen Basin to Dublin is reported to cost approximately 1.3 billion euro, before enquiring as to how the progression of this project would impact the funding availability and timelines for delivery of all other projects noted in the consultation documents. They sought further clarification around how delivery would be prioritised.

They further requested that Irish Water provides the outline costings to demonstrate that the project is realistic and can be delivered within 25-50 years, including interim and final options, given current levels of capital investment. They also noted that the use of renewable energy sources is discussed within the Draft RWRP-EM and requested that this issue be included alongside cost implications.

Kennedy Analysis (KA) argued that, under the interests of transparency and scrutiny, the cost assumptions of the three final "combinations" considered for the GDA should be published in full. They claimed that Irish Water states that the Shannon pipeline would be the least expensive of the three solutions that it considered for the GDA in the draft RWRP-EM however, it did not publish the basis for this. KA noted that Irish Water has not stated how much the Shannon pipeline is currently anticipated to cost and claimed that this is entirely inappropriate and must be addressed.

KA claimed that the projected costs of the Shannon pipeline project since it first began in 2011 were reported to cost €720 million, but by 2018 IW said it would cost €1.3 billion. They noted this as important to understanding the scale and the basis of the latest cost assumptions.

KA argued that, at the time of the 2016 FOAR, Irish Water used OPEX cost data for desalination that was out-of-date and likely to be over-inflated and that Irish Water acknowledged at the time that the OPEX cost figures it was using were out-of-date and likely to be overstated.

12.2.2 Response to Cost Feedback

A key aspect of the NWRP is understanding the current and future need across all our supplies. The NWRP Framework Plan sets out a methodology used to determine need across our supplies. This methodology was developed through consultation with stakeholders and further to consideration of government policy and legislation on domestic and economic growth, climate change, water quality and the environment. Further to the application of this methodology, the NWRP has identified significant need across all our supplies. This need is associated with the lack of historical investment in water supply.

The Preferred Approaches identified through this process will be prioritised on a national basis and progressed through Irish Water's Capital Investment Plans. The phasing and timeframes for delivery of individual projects will be determined through the capital investment process.

In response to the submission from KA on previous reports, Irish Water notes that this consultation is on the draft RWRP EM. The public consultation is not on a specific project, nor does it include a critique of projections carried out as part of other consultations.

At plan level, an outline design and estimated cost is developed for each feasible option, which captures the scale of the project and allows for a comparison of costs between other feasible options. At this stage, designs, costings, and environmental assessments are desk-based and considered at plan level. As preferred approaches progress to project level, we conduct more detailed costings and cost benefit analysis. These are to meet the requirements of the Department of Public Expenditure and Reform and our regulator, the CRU. Regional options include for the costs involved in connecting to all of the fragmented water resource zones. Therefore, when comparing a local option to a regional option, the total costs are comparable.

Costs are not the only factor considered when determining the Preferred Approach. As set out in section 7.2, all feasible options are assessed against a number of categories including: Least Cost, Best Appropriate Assessment (AA), Best Environmental, Most Resilient, Lowest Carbon and Quickest Delivery.

At project level the Preferred Approaches will be developed to ensure that all potential opportunities that can be afforded by the solutions identified are realised. This might include an augmentation of the Preferred Approach in line with our Biodiversity Action Plan, or Energy Efficiency Plan. An example would be at our newly developed Thurles Water Treatment Plant (WTP), where 230 solar panels were included in the design. We have provided a new section, Section 6.4, in the RWRP-EM, which outlines the project development stage.

It is important to note that this consultation is for the draft RWRP-EM. It covers all 134 Water Resource Zones in the Eastern Midlands region, and it is not a consultation on the Water Supply Project-Eastern Midlands (WSP-EM) project.

12.3 Future Projects

12.3.1 Summary of Future Projects Feedback

Clare County Council's Physical Development Directorate commented that the Irish Water takeover of Group Water Schemes (GWS) should form part of the Plan, given that the Plan is to be implemented over several investment cycles.

The Environmental Protection Agency acknowledged possible opportunities for further commitments to deliver future projects, including developing a raw water sampling strategy and a live water quality mechanism.

12.3.2 Response to Future Projects Feedback

The National Federation of Group Water Schemes (NFGWS) are a stakeholder in the NWRP and we have consulted with them in the development of the NWRP. As part of the consultation on the RWRP-EM, the NFGWS noted that Group Water Schemes (GWS) are community-owned, democratically controlled, private water supplies.

Each individual GWS is owned and controlled by its members (the community it serves) and in most situations, the GWSs are extremely proud of the service provided (which in many situations goes beyond the provision of drinking water services), as well as the achievements of their scheme to date.

Therefore, it is not considered appropriate for Irish Water to propose taking over GWSs as part of the Plan, and it is not assumed that an individual GWS is required to be taken in charge by Irish Water.

Irish Water has an "opt in" process for taking in charge GWSs and will identify GWSs looking to be taken in charge as part of the RWRPs. This will be

considered in the development of the Preferred Approach and in future iterations of the NWRP.

Irish Water currently provides supply and obtains supplies to a number of GWSs. As part of the option development process for the NWRP, obtaining supply from adjacent GWSs was considered where appropriate, however such solutions were not identified as part of any preferred approach under the RWRP-EM. Irish Water will consult with the NFGWS, on any preferred approach where we are proposing to obtain supply from a GWS, through the consultation process for the three other regional plans.

At present, compliance data for each water supply is available on our website. While it will take several years to put in place, Irish Water will consider mechanisms for providing live water quality data.

12.4 Funding

12.4.1 Summary of Funding Feedback

Kildare Chamber noted that Kildare is a large and fast-growing county, with a number of multinational firms. They added that Kildare attracts large amounts of foreign direct investment, thanks to its bright, well-educated workforce. Kildare Chamber stated that, for Kildare to continue to thrive, it is important that all resources and stakeholders work together. They then argued the need for Kildare's housing system, infrastructure, and service sector to perform in unison. Considering this, Kildare Chambers called for Irish Water and the Government to ensure all interim measures, which are currently subject to budgetary availability, are futureproofed for funding in future budgets.

The Southern Regional Assembly (SRA) stated the importance of working in partnership with Local Authorities to confirm the evidence base for the need for water services investment, adding that this constitutes critical infrastructure servicing the National Planning Framework (NPF), Regional Spatial and Economic Strategies (RSES), Metropolitan Area Strategic Plans (MASPs) and City and County Development Plans. The SRA argued that this partnership approach must inform Government Departments and the Department of Public Expenditure and Reform for the NDP Review and the Project Ireland 2040 Delivery Board, on the justification and business case to fund regional-scale water infrastructure investment to the levels required.

The SRA strongly encouraged Irish Water to make the business case to Central Government on what they described as the critical need to invest in water infrastructure and deliver the recommendations under the NWRP and final

approach through capital investment. They added that delivery of infrastructure to provide a safe, secure, reliable, and sustainable water supply in the Southern Region is critical for RSES implementation, particularly to service Study Areas 6, 7 and 8 in the Southern Region in the draft RWRP-EM.

12.4.2 Response to Funding Feedback

The scale of investment required to transform our water supplies is undoubtedly considerable. However, the outcome in terms of ability to protect the environment, provide a good Level of Service for all customers, support growth and economic development, and adapt to climate change impacts will be substantial. The development of the NWRP will enable us to understand the scale of strategic investment required across our supplies, and to propose the right solutions and the appropriate level of investment needed within the context of the National Planning Framework.

The Preferred Approaches identified through this process will be prioritised on a national basis and progressed through Irish Water's Capital Investment Plans. The phasing and timeframes for delivery of individual projects will be determined through the capital investment process.

Irish Water is funded through central government and submits business plans to the CRU for both operating and capital costs for our revenue controls periods, which typically cover 5-year periods. The outputs the NWRP will be used in future submissions for funding. It is envisaged that it will take several funding cycles to deliver all works required, so the proposed works will need to be prioritised over future funding cycles.

We recognise the ongoing work between the Regional Assemblies and the local authorities over the course of the development of the Local Authority Development Plans. As these plans are finalised, Irish Water will incorporate the increasingly refined growth rates into our demand forecasts.

When prioritising growth projects through Irish Water's Capital Investment Plans, we will ensure that these decisions are based on dialogue with the RSES and local authority housing and planning functions. Critical projects and programmes to address potential public health issues and supply deficit issues are ongoing and not impacted or delayed by the delivery of the NWRP. Section 7.6 of the RWRP-EM outlines the process for developing interim options to address critical water quality and quantity issues while we deliver our Preferred Approaches through the coming investment plans. Using this process interim, short term capital maintenance solutions have been identified for all short term capital maintenance solutions have been identified for all Water Treatment

Plants (WTPs) and these solutions are referred to in Section 6 of the Study Area Technical Reports.

12.5 Conclusions on Plan Implementation Feedback

Having carefully reviewed the submissions received on the theme of Plan Implementation, Irish Water considered that more clarity on the project development process should be provided in the RWRP EM. This change is explained in section 12.5.1 “Clarifications” below. In addition, some of the points made in the submissions will be taken forward in other ways, as explained in section 12.5.2 “Recommendations” below.

12.5.1 Clarifications on Plan Implementation Feedback

The following section of the RWRP-EM has been updated to reflect feedback under the theme of Plan Implementation:

Section 6 - Provision of a new section, ‘Section 6.4 Project Level Summary,’ which outlines the project development process, will be added. This section will detail the level of site specific yield assessments that will be required prior to the development of any solution. It also notes that, where required, environmental assessments, including an Appropriate Assessment (AA) screening, Environmental Impact Assessment (EIA) screening and WFD assessments will be carried out at project level.

12.5.2 Recommendations on Plan Implementation Feedback

Irish Water will develop a representative raw water sampling strategy.

Irish Water will continue to consult with the Regional Assemblies and local authority housing and planning functions on the development of Capital Investment Plans.

Irish Water will identify Group Water Schemes looking to be taken in charge as part of the consultation process on the RWRPs and this will be considered in the development of the Preferred Approach and in future iterations of the NWRP.

13. Option Types

In this chapter, we summarise the key references in submissions to issues under the broad theme of “Option Types.” Within the overall Option Types theme, we identified ten sub-themes, which we set out in Figure 13.1. We deal with each of these sub-themes in this chapter, setting out first a summary of the relevant mentions in the submissions, followed by our response. The sub-themes are not dealt with in any particular order.

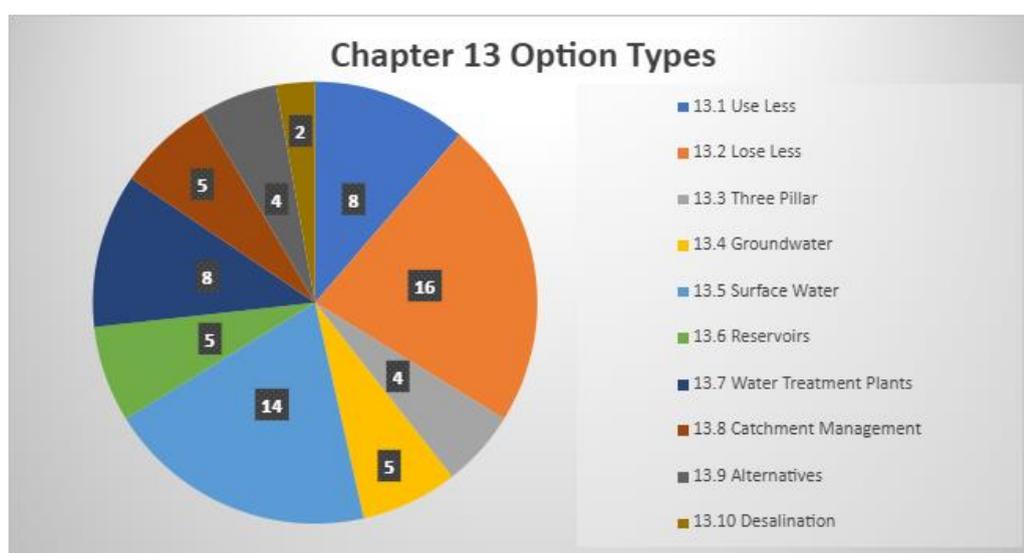


Figure 13.1 Option Types

13.1 Use Less

13.1.1 Summary of Use Less Feedback

One respondent commented on water harvesting in the home and questioned why it has not been made a planning condition for new homes. They highlighted that construction companies can build and retrofit such systems and suggested using ground water to a greater extent.

A stakeholder queried whether new buildings would be required to recycle water. They also questioned if retrofitting existing residential and commercial building stock had been considered in the RWRP-EM plan.

Another stakeholder recommended persuading local councils and developers to use greywater in future house construction to conserve treated water for kitchen usage and other home needs.

Future Proof Clare suggested that Irish Water request rainwater harvesting be utilised in new private housing and apartment schemes, hotels, public and commercial buildings. They noted that it could lead to a minimum of 35% reduction in the average household's fresh, potable water usage according to the Renewable Energy Hub in the UK. In addition, they noted that the request should be placed before allowing new planning permissions for industry, technology, and agriculture. Future Proof Clare stated that this will reduce the unnecessary waste and contamination of any future demand on fresh drinking water.

Future Proof Clare compared rainfall between the west and east of the country and noted that most of the rainfall occurs in the west, which could be harvested to supply the densely populated Greater Dublin Area. They noted that currently, this valuable resource is lost, but rainwater harvesting could reduce the unnecessary waste of drinking water.

Future Proof Clare noted as per the latest publication of the Intergovernmental Panel Climate Change 6th Assessment Report, Climate Change 2022, Ireland's current use of all natural resources needs to reduce. They highlighted that Irish Water has a big role to play in promoting the reduction in over abstraction of the aquifers and the restoration of Irish waterways and bodies. They recommended that Irish Water considers water conservation and the involvement of rain, storm, and wastewater in a sustainable water management plan for the Greater Dublin Area (GDA) and nationwide.

Future Proof Clare suggested that in water stressed areas, Irish Water should reject new planning applications for industries with a high, fresh, potable water demand, unless extra conditions are met that will reduce their use of that water considerably. If this is not feasible, they believe that such industries should be relocated to other areas in the country with less water stress levels but recommended that conditions to continue to reduce the use of fresh, potable water must still be applicable, so that the area will not become water stressed in the foreseeable future.

An Forum Uisce (AFU) suggested that Irish Water should encourage and support water-saving technologies when assessing new connection enquiries for both non-domestic and domestic users. They noted that Irish Water should identify policy gaps in relation to water conservation measures with the Department of Housing Local Government and Housing especially in areas with critical supply issues.

Limerick Greens questioned whether the National Development Plan, National Planning Framework and Project Ireland 2040 incorporated rainwater harvesting and greywater harvesting into their new build projects to minimise stress on natural aquatic systems. They also proposed the introduction of a home retrofitting grant for established housing estates, agricultural and business

premises, noting that it could lighten the burden of abstracting water from a natural resource. In addition, they suggested that an educational and advertisement campaign could be considered by the NPF to inform people on how to manage their water properly.

The Department of Housing, Local Government and Heritage National Parks and Wildlife Service (DHLGH-NPWS) noted that recycling treated wastewater or grey water provides a critical supplementary water source for non-potable activities, therefore alleviating stress on primary water sources. They added that in periods of drought, when potable water is in short supply, grey water can be a potential alternative water source for activities such as agricultural and landscape irrigation, industrial process, and toilet flushing.

A stakeholder commented that it is important to both reduce water usage and address water leakage problems.

An Fóram Uisce (AFU) raised concerns about the lack of inclusion of the Use Less Pillar in the draft Plan. They recommended more emphasis on demand management via water conservation solutions in the draft Plan. They also referenced the Domestic Water Conservation report by Cotterill and Melville-Shreeve. AFU then made a series of key recommendations around the Use Less Pillar, including:

- enhancing water education to support a bottom-up understanding of water treatment and supply
- an awareness campaign to highlight water scarcity in Ireland, and potential future threats to the water supply as a proactive measure for demand management, rather than future crisis management
- establishing Irish Water community engagement liaison officers, increasing communication between Irish Water and the public, to support water conservation
- a pilot project run by Irish Water for the use of smart meters, to determine their effectiveness as a domestic water conservation tool

AFU argued that water stewardship measures, standards and indicators should not only reflect water usage and cost efficiency, but also the environmental sustainability.

AFU reported that they commissioned research in 2021 which introduced issues around water scarcity in Ireland, and the common misconceptions about water availability. As part of this research, they proposed 10 policy recommendations, some of which they stated are relevant to Irish Water and the Use Less Pillar. AFU recommended that they be incorporated into the Regional Plan, including:

- establishing a National Water Conservation Team (with Irish Water taking a leading role in the team) to share best practice and knowledge

- identifying funding retrofittable water-saving kits, which they argued should be free of charge to domestic households, especially for the Eastern and Midlands region and in areas with greatest supply-demand balance deficits

AFU recommended that Irish Water place a stronger emphasis on water conservation in the RWRP-EM given the deficits in the supply demand balance (SDB), the future challenges of climate change, population growth, exploitation of nearest resources, inadequate infrastructure and the current levels of energy used by Irish Water .

AFU noted that despite ‘Use Less’ being one of the three pillars proposed in the NRWP, there is little focus on water conservation measures within the draft RWRP-EM, with limited options considered for sourcing additional water through demand management and exploiting of renewable resources or options for optimum allocation. AFU recommended that efforts to improve water conservation should occur simultaneously to the proposed increases in water supply to address the supply demand deficits of the region. They noted that the actions of the Box 5.1 page.133 in the draft RWRP-EM are a starting point that could be applied to all areas, even as interim measures, that can serve multiple purposes and more than just leakage reduction.

AFU highlighted previously commissioned research on the Eastern and Midlands Water Supply Project (WSP) and the general approach regarding water transfers to support AFU’s submission to the Commission of the Regulation of Utilities (CRU). AFU noted that the scope of this research is applicable to the Preferred Option of the draft RWRP-EM, which includes the New Shannon Source (NSS). AFU mentioned that one of the key findings of this research was that there is a lack of a demand management strategy within Irish Water:

“Water demand is not an external parameter, such as rainfall, but instead a component of the system that a water utility can, and should, manage; to that end, it is necessary to adopt a holistic view of all the drivers, as well as levers, that can influence water demand in the future. While Irish Water indicates that it intends to implement a demand management strategy, the impact of such strategy is not evidenced in the proposed demand projections” (Maublanc, 2019).

AFU subsequently made a submission to the CRU and raised concerns regarding the focus on the supply from the River Shannon as the main response to addressing the water demand in the GDA, where they noted that insufficient emphasis would be placed on demand reduction, leakage management and conservation measures. AFU recommended that demand management via water conservation solutions should be considered from the early planning stages and cited an example in Table 7.20 page.237 of the RWRP-EM that

should occur simultaneously to leakage reduction efforts and additional water supplies as proposed in the draft Plan.

AFU welcomed future engagement and collaboration with Irish Water in relation to water conservation initiatives. They noted that water conservation is a central pillar of the AFU's Strategic Plan, where one of the Strategic Goals is to advocate for the need for and benefits of meaningful public engagement and education on water resource management. AFU is happy to support Irish Water in future initiatives and communications around water conservation.

The Environmental Protection Agency (EPA) acknowledged the efforts at promoting water conservation at all levels of the services provided by Irish Water and 'water-stewardship' activities to support businesses become more efficient in their water usage and needs.

13.1.2 Response to Use Less Feedback

Irish Water agrees that water conservation and demand management is extremely important. "Use Less" is one of the three "pillars" that Irish Water has used to develop options to address identified need. Under the 'Use Less' pillar, conservation activities are underway at present, and Irish Water is committed to helping our customers become more efficient in their water use. Presently Irish Water is actively promoting water conservation in schools, business and communities through activities including:

- National and Local Media Campaigns;
- Targeted Sectoral campaigns;
- Green Schools;
- Water Stewardship Scheme;
- First Fix Free Scheme; and
- Irish Water's new Conservation Calculator,

The new Conservation Calculator will assist households to assess their water usage habits and find out how much water they are saving on a daily basis. It also offers useful and practical tips on how to reduce water usage and track their progress. The free tool was developed in response to research, which showed that consumers want additional tools to assist them in conserving water. It is available at www.water.ie/calculator

IW's existing domestic metering network, with coverage of almost 60% of domestic units, has smart functionality, such as automatic drive-by reading, month-end readings, and continuous-flow (leak) alarms. This functionality has been used in our 'First Fix Free' programme.

In 2018 Irish Water carried out a pilot study of sub-metering of apartments, where smart meters were used with fixed radio communications. This trial was primarily to confirm that it is feasible to sub-meter apartment buildings and retrieve usage data, however, it also demonstrated how water usage data can be made available to the occupants of the apartments. This work was funded by the CRU. <https://www.water.ie/about/research-and-innovation/CRU-Report-Pilot-Technology-Trials-of-Water-Metering-Systems-for-Multi-Unit-Development-30th-Sept-2019-Final-Website.pdf>. Irish Water are currently running a 'smart network' trial in the South Dublin Area.

Irish Water also works with stakeholders to support policy change, such as developing water efficiency standards in Building Regulations and social housing.

The RWRP-EM has been updated to provide reference to the fact that reducing demand will result in a reduction of our carbon output and the research carried out by AFU on a Framework for Improving Domestic Water in Conservation in Ireland.

Recent government policy has also allowed for the introduction of the Household Water Conservation Charge or Excess Use Charges to highlight high usage to our customers. This may also encourage further uptake of our First Fix Free Scheme, where customer side leakage is the main cause of excessive use. More detail of our current activities can be found in section Chapter 4 of the NWRP Framework Plan and on our website: <https://www.water.ie/conservation/>.

Irish Water is active in seeking to incentivise customer-side greywater usage initiatives. However Non-potable water supplies, such as greywater, must be kept separate to treated drinking water in distribution networks and domestic-plumbing systems. Therefore, greywater cannot be introduced to the public water supply, to prevent contamination and a parallel network of pipeline would be required to deliver a non-potable water supply.

Therefore, greywater and rainwater harvesting are private side measures, that can potentially result in a reduction in demand (greywater) or a reduction in some peaking in dry conditions. However, the storage volume required particularly to address peaking in drought conditions for greywater and rainwater solutions, can be substantial.

Due to the seasonality of rainfall in Ireland, a significant amount of storage would be required to ensure that rainwater harvesting is a viable option to address demand, particularly during dry periods. The space for the storage required to maintain supplies during dry weather would not be available at a typical domestic property.

Irish Water is supportive of initiatives to improve the use of greywater and rainwater harvesting. Irish Water will progress pilot projects to assess the potential outcomes and benefits of rainwater harvesting over the coming years.

We will progress studies through our Innovation team to review the potential outcomes and benefits for conservation measures such as rainwater harvesting and grey water reuse. Consideration must also be given to the operational and maintenance costs of such measures.

We will continue to progress water conservation measures and will engage with other stakeholders in driving the need for policy to support water conservation measures.

13.2 Lose Less

13.2.1 Summary of Lose Less feedback

An individual noted that the key issue was not water shortage but water treatment scarcity. They suggested a more accelerated replacement plan for leakage in Dublin to replace the 100-year-old pipes instead of 172km of piping across around 500 farms. They further noted how modern technology now allows for lining to be inserted in pipes eliminating the need to dig up roads for pipelines.

Councillor Eddie Fitzpatrick noted that lower pressure reduces water loss but also reduces supply to the user and questioned whether Irish Water had lowered pressure below normal working conditions to reduce water loss.

The Clare County Council Killaloe Municipal District commented on the proposed Leakage targets stating that they were unrealistic and unlikely to be achieved, and that to reduce the leakage from its current level to 22% with the amount of proposed investment (150 million euros p/a) will not be achieved.

Elected Representatives from Clare County Council commented on the aim to reduce leakage to 21% by 2033. They argued that Irish Water should fix the existing network and then enhance the supply of water. They asked what the percentage leakage rate considered best practice is and if Irish Water is aiming for 21%, or 1/5 of all treated water, leaking from their networks. They noted that it does not seem like an ambitious plan going forward.

Future Proof Clare noted the importance of reducing the national leakage rate which currently stands at 38% as of 2021. They noted that lower leakage rates have been achieved in other European countries and cities, such as Paris with a leakage rate of 7%. They suggested that a similar leakage rate target must be achievable for Irish Water in the dense urban centres, like the GDA, Cork, Limerick, Galway, and Sligo and were surprised that this ambition was not stated in the Sustainable Economic Level Leakage (SELL) Report (2021) in Appendix H.

Future Proof Clare noted that, according to the Sustainable Economic Leakage Level (SELL), Irish Water is allowing a minimum leakage level of 20.7 % for the GDA water supply which they outlined is significantly higher than the 7% that the cities of Paris and Frankfurt are achieving.

Kennedy Analysis (KA) outlined that leakage in Ireland is among the highest in the world, with only 50-55% of treated water reaching the taps via the supply system. KA raised concerns over Irish Water's messaging in relation to its leakage reduction plans and Dublin's water demand. They commented that the public are unhappy with proposed plans to pump treated water into a supply system that has high leakage issues.

KA noted that background leakage is a problem with mixed pipe systems like those in Dublin. They recommended addressing the problem through mains replacement rather than find-and-fix which they noted only addresses large leaks. KA also noted that Irish Water would have to invest a lot to repair the pipes through the find-and-fix method due to the natural rate of rise of leakage being high.

KA argued that Irish Water's plan to reduce leakage across the region to 21% is misleading, stating that the supply-demand balances for many WRZs do not reflect a 21% leakage reduction across the region and that they do so only for a very small minority of WRZs. For the vast majority of WRZs the SDBs assume that leakage will remain at, or almost at, its current level which is above 21%.

KA commented that if 21% leakage reduction were built into the regional SDBs themselves before the options selection process, then the projected deficits for those regions should be slashed and local options in most (if not all) cases would more than suffice to meet the deficits.

KA cited the SDB for Study Area 3 as an example where a deficit of 26Mld was identified; cutting leakage to 21% would save over 13Mld and so would cutting the deficit to 13Mld (which they argued local options could have met), however the SDB assumed that leakage would be cut by 0.4Mld, which KA argued barely reduces the deficit and the conclusion in the RWRP-EM was that the region should be supplied via the Shannon pipeline. KA highlighted this as relevant in their view since the Shannon pipeline project is now being driven to a very significant degree by these regional supplies, as they argued it cannot be justified based on the GDA alone.

KA questioned the transparency of the draft RWRP-EM report and argued that it requires an in-depth read to understand the 21% leakage figure. KA argued that Irish Water does not reflect a 21% leakage reduction into its regional projections. They noted that if Irish Water's public statements on 21% leakage were reflected in the SDBs for these regions then each of their 2044 deficits

would be significantly reduced, and in many cases local supply options would have sufficed to meet those deficits without any need to call on the Shannon supply.

KA highlighted that in the draft RWRP-EM the aim is to reduce leakage to 21% in the larger Greater Dublin Area WRZs and to reduce it to Sustainable Economic Level of Leakage (SELL) in all the other GDA WRZs. KA noted that if this did happen then leakage and the projected 2044 regional deficit would be reduced by 57Mld – however KA noted that the SDB calculations do not assume a reduction in leakage of 57Mld, instead they assume a reduction of 3Mld. KA noted this as they said it is without justification and acknowledgement and is at odds with Irish Water’s 21% leakage reduction.

KA cited Study Areas 3, 4, 5,6 and 8 as examples where 21% leakage reduction is not accurately reflected.

KA concluded that these regions are not all connected, so it would be wrong to suggest that one could simply deduct 57Mld from 84Mld and reflecting a 21% leakage level each of the regional SDBs themselves would have had a very profound impact on the conclusions of this draft RWRP-EM.

KA further claimed that Irish Water’s leakage targets are not in line with international best practice. They stated that leakage targets in Irish Water’s SDBs do not reflect the leakage commitments outlined in the most recent Revenue Control 3 process. KA highlighted that the CRU confirmed that the 176Mld leakage reduction target for the 5-year period from 2020 to 2024 in August 2020 amounted to 25% (176Mld as a percentage of 712Mld is 25%) and that it was in line with the targets set by the UK water regulator for under-performing UK water suppliers. KA argued that Irish Water does not reflect this, in their calculations. KA argued that Irish Water’s figures assume that, by 2024, leakage will have been reduced to 698Mld, which equates to a leakage reduction of just 14Mld from a 2019 baseline level of 712Mld, which amounts to a 5 year leakage reduction target of just 2%.

KA noted that Irish Water’s long term leakage target is SELL and criticised it as too unambitious and not in line with international best practice. They highlighted the Water Service Regulation Authority’s latest Water Resources Planning Guidelines, which stated that SELL is no longer acceptable for use in water resource management plans because SELL, as an approach, allows for leakage to increase when new resources are built, because the value of reducing leakage decreases as more water is available.

KA added that Irish Water’s plan to stick to find-and-fix will not achieve a step-change in Ireland’s leakage KA stated that leakage constitutes the biggest single element of demand for Ireland’s water pipes. They noted that find-and-fix

as a primary leakage reduction method is not capable of achieving significant leakage reductions and is instead only offsetting the natural rate of rise. They noted that Irish Water's statement outlining its total gross leakage savings for the 2014-2019 period of 233.2 Mld on the public side of the network is misleading. KA argued that by using the language "gross leakage savings" Irish Water is referencing the water that it saved by offsetting what is known as the natural rate of rise of leakage which KA noted as very different to cutting leakage by a significant volume.

KA highlighted that in the UK during the '90s/'00s, a major mains replacement programmes were undertaken shortly after the privatisation of the UK water supplies and leakage was reduced by 37% in just 6 years (between 1995 and 2001). They outlined that this was a net reduction – not a reduction including the offset of the "natural rate of rise." KA further highlighted that after those mains replacement programmes ended, the UK reverted to a primarily find-and-fix approach whereby mains replacement rates reduced significantly to around 0.6% per year. Since then, leakage levels in the UK have plateaued with nothing like the reductions that were achieved in the '90s/'00s. KA noted this has sparked growing criticism from OFWAT and a growing body of industrial/academic opinion who support mains replacement as a primary leakage reduction tool. KA quoted statements from the Rural Planning Service and Price Waterhouse Cooper, who expressed their support for the mains replacement solution to leakage reduction. KA argued that Irish Water's plan is to use find-and-fix as its principal leakage-reduction method, which they noted is not acceptable for Ireland, where pipes have been neglected for decades and a step-change in leakage is needed.

KA argued that a major mains replacement programme is the only way to sustainably fix Ireland's water demand, and they further argued it was not considered as a potential solution within the draft RWRP-EM. KA referred to the previous consultation on the Framework Plan where Irish Water, outlined that a major water mains replacement programme is not included in the unconstrained options list, as it is already included as a core element of the National Leakage Reduction Programme.

KA argued that this is unacceptable, arguing that the mains replacement programme within the National Leakage Reduction Programme replaces the mains at a rate of 0.3% per year. KA noted that Irish Water has confirmed that there are no plans to increase this rate and it therefore equates to a total replacement rate of just once every 333 years, which KA argued is well below international best practice, and below the levels in the UK and Europe, where they argued that pipes are in better condition than those in Ireland. KA further added that this rate is not high enough to offset the natural rate of deterioration

of the pipes. They also noted that Irish Water recently cut its proposed spend on mains replacement to just €34million per year.

KA stated that many of the pipes are unfit for purpose and significant pipe failures are becoming frequent.

KA referenced Irish Water's response to their last submission for the NWRP framework plan, where they stated that Irish Water responded by saying that mains replacement alone cannot address the issues, and that pressure management and active leakage control (ALC) (also known as find-and-fix) are key elements of leakage reduction. This was strongly disputed by KA, who highlighted that mains replacement would never be undertaken as a standalone solution but would always be combined with pressure management and ALC. KA noted that it is internationally recognised that ALC is generally only capable of offsetting the natural rate of rise of leakage and affecting small reductions beyond this, which they said that Irish Water's record supports.

KA argued that a major mains replacement programme combined with pressure management is the most obvious solution to address the water supply problems in the Eastern and Midlands region, including reliability of the supply and water quality, and the projected deficit. They added that they were unable to understand why Irish Water has not considered major mains replacement as an option.

Clare County Council's Physical Development Directorate (CCC-PDD) recognised that leakage reduction is an important part of future demand and supply consideration and that achieving the SELL target of 21% of overall demand will require a considerable increase in the current level of funding provided by Irish Water. They noted that the level of economic and social disruption that this work will cause over such a short timespan must be considered against the benefits accruing. They also stated that a more onerous target leakage level would mean a higher marginal cost to reach that target level. CCC-PDD queried whether the disruption of intensive pipework replacement and leakage reduction measures required to achieve 21% leakage has been communicated in a clear and transparent manner to Public Representatives and Council management in Clare.

Meath County Council (MCC) acknowledged the opportunity to increase capacity through leakage reduction and expressed their support for the ongoing investment in water conservation measures. They noted that the leakage reduction targets are ambitious, and that contingency planning is required in priority areas designated to accommodate future development. They also noted that figures presented in the draft RWRP-EM regarding apparent losses are much lower than MCC's estimates, which they underlined could have an effect of inflating the leakage figure.

CCC-PDD noted that the 2022 Irish Water target for leakage reduction countywide is 1,000m³/day and that Irish Water rehabilitated 0.3% of the Ennis water supply network in 2021. CCC-PDD noted that there are 218km of Asbestos Cement pipework currently in County Clare and are prone to joint failure and longitudinal cracking. CCC-PDD noted that the network in the County includes 97km of cast iron pipework, with half of this main type in the ground for more than fifty years. They further noted that in 2021 Irish Water replaced 7km of watermain in County Clare, 1.5km of which was in Study Area 8. CCC-PDD argued however that the strategy and investment to date does not indicate that achieving this leakage target will be sufficiently supported by Irish Water.

Ibec underlined the importance of accelerating the programme of network maintenance to bring the leakage rate in line with EU norms.

The Southern Regional Assembly stated that network improvements and proactive leakage reduction alone will not resolve the issues with supplies over the medium-to-long term.

AFU recommended that Irish Water adds urgency to their National Leakage Reduction Programme, particularly in areas with greatest supply demand deficits. AFU noted that in the WRZ scale, efficient water use is connected to the minimisation of losses which in the draft plan is perceived as fixing leaks. AFU also advised putting emphasis on mapping and controlling the networks' general performance to ensure efficient water usage and minimise loss. They highlighted that there are a range of possible losses in addition to distribution network leakage. They also suggested increasing the monitoring of these loss components and to raise awareness of the ones that are not subject to AFU's responsibility.

Furthermore, AFU suggested analysing the effect of leakage reduction on water bodies to increase targeted fixes, which will not only reduce current losses but also align with and support the River Basin Management Plan's objectives. They added that Irish Water should increase the number of district meters across the Eastern and Midlands region as a leakage management tool, beginning in areas with greatest supply-demand deficits.

AFU further recommended that Irish Water increase the distribution of district meters throughout the Easter and Midlands region to increase the efficiency of leak detection and management.

Clare County Council's Strategic Economic Initiatives Unit (CCC SEUI) recommended that Irish Water fix the existing water supply network and then enhance the supply of water. They also queried what percentage leakage rate is considered best practice, stating that aiming for 21% was not ambitious enough.

Tipperary County Council (TCC) noted Irish Water's leakage reduction targets and sought clarification on how they were calculated. They also requested further information on leakage reduction targets for all Tipperary WRZs within the draft RWRP-EM. TCC highlighted the range of Irish Water leakage reduction programmes that are active in County Tipperary, but commented that major and accelerated expansion, plus increased funding for these programmes, would be required at a local level to achieve these Irish Water targets by 2034.

TCC supported these objectives and are willing to work in partnership with Irish Water targets to deliver its Leakage Reduction Programme in County Tipperary.

Offaly County Council noted that they are continually progressing leakage reduction activities, mains rehabilitation activities and lead replacement activities with Irish Water. They stated this is a priority for the Council due to the cost of leakage rates, water quality issues and ongoing disruption to customer's supplies.

Tipperary County Council noted the commitments by Irish Water to recalculate the SELL within the timeframe of the NWRP, to commit to a further review of water resource zone-specific appropriate levels of leakage, and to review the programme and funding for network renewal and high burst frequency mains.

Limerick Greens suggested investing the Shannon Pipeline project funds into fixing the leakage issues. They noted that mains leakage in 2020 was 212MI/d, and the volume of water to be abstracted from the Shannon is 330 MI/d. In addition, they also questioned whether household in-house leakage had been measured in the GDA. They also questioned what percentage of the 212MI/d GDA leakage can be regulated in a household or business premises locally.

The Commission of Regulation Utilities (CRU) noted that the framework and regional leakage profiles are hard to combine with the approved leakage spending allowances for leakage expenditure within the CRU approved Revenue Control 3.

13.2.2 Response to Lose Less Feedback

Some of the submissions questioned whether leakage reduction measures or mains replacement would alleviate the issues in the region. The issues with the public water supply relate to a number of factors including compliance, water quality risk, environment, level of service, sustainability of water sources, ageing existing infrastructure, residuals, drought, resilience, climate change, population growth and economic development, interconnectivity of supplies as well as issues such as network performance and leakage. Typically, problems

with the public water supply cannot be related to a single issue or cause and cannot be solved with a single solution such as leakage reduction alone.

For instance, leakage reduction and water conservation measures will not resolve the issues in many of our small supplies. During drought periods there can be water availability issues with these supplies, irrespective of leakage. For example, if a groundwater source does not receive enough rainfall recharge over the winter, irrespective of the volume abstracted or the amount of leakage, the source will dry up. Similarly, some of our abstractions from protected areas may be environmentally unsustainable. These issues will remain even when leakage has been reduced to low levels. It is for this reason that Irish Water progresses leakage reduction in conjunction with new sustainable supplies. A resilient supply will require sustainable interconnected sources with good raw water storage in combination with low leakage and well performing watermain infrastructure.

Whilst the lead in time for our water supply measures in the draft RWRP EM will typically take 7-10 years, Irish Water's National Leakage Reduction Plan is already in place and investing in our network. Therefore, leakage levels will be nearly halved by the time the larger preferred approaches are delivered. Investment in leakage reduction is also a continuous activity and will endure beyond the delivery stages of major infrastructure projects.

Prior to 2014, there was significant under investment in below ground water services infrastructure. Since 2014, investment has increased, and Irish Water has consistently provided year on year increases in leakage reduction.

In 2018 (following the roll out of the Leakage Reduction Programme), the rate of leakage annually was 46%; by the end of 2020 it was 40%. By the end of 2021, we had reduced leakage further to 38%. This equates to approximately 2,000 leaks being fixed every month and 166million litres of water saved every day by the end of 2021.

Irish Water has achieved a reduction in leakage level of 8% over three years. This process requires significant funding and resources, permissions (including road opening licences and land access), excavation works, pipeline construction, investigative works, traffic disruption and effective stakeholder engagement throughout.

In response to several submissions, we confirm that our leakage reduction activities, follow the same best practice processes used in other jurisdictions, including understanding of networks, pressure reduction, active leakage control and targeted water mains replacement.

In terms of the Lose Less pillar, leakage reduction activities are prioritised through using the supply demand balance and delivered via the National

Leakage Reduction Programme. Short and medium-term targets have been developed, and as these targets are approached and met; additional targets will be set. Leakage reduction is a key business priority, and the reduction activities used, including, improved operational control, pressure management, calm networks, active leakage control and targeted mains replacement are based on industry best practice. We are also trialing innovative acoustic logging technology, data intelligence systems technology, the use of satellite imaging, sniffer dogs and non-destructive testing. The development of improved data on our distribution networks will allow us to optimise our leakage reduction activities, and to facilitate an expanded programme of targeted water mains replacement. These measures are set out in section 7.3.1 of the Framework Plan.

Watermains replacement on its own is not an appropriate method to deliver leakage reduction. In the European Commission's EU Reference document Good Practices on Leakage Management WFD CIS WG PoM Case Study, there are no records of countries or jurisdictions that use largescale watermains replacement programmes as a stand-alone method to reduce leakage (even those with low leakage levels). We confirm that our leakage reduction activities, although they are starting approximately twenty years later than comparator countries, follow the same best practice processes used in other jurisdictions, including understanding of networks, pressure reduction, active leakage control and targeted water mains replacement.

Leakage reduction as a demand side measure is an intrinsic part of the Regional Water Resources Plan for the East and Midlands Region, and the remaining three regional plans (the South West, North West, and South East). Irish Water has a fully funded leakage reduction programme that that is actively progressing works and programmes across all counties in Ireland and has carried out significant works in the Greater Dublin Area (GDA). The Leakage Reduction Programme covers a range of activities, including:

- Development of leakage intelligence systems to consistently identify and track performance of our networks
- Active Leakage Control
- Pressure Management
- Watermains rehabilitation and
- Innovation studies and pilots on new technology on acoustic logging and calm networks.

However, as all leakage calculations are estimates, a deep knowledge and understanding of a very large distribution network (63,000 kilometre), and the water balance for each water resource zone is required before a fully effective programme can be developed and implemented. As a result, transformational leakage reduction programmes are iterative, and although interventions are required across a range of activities, the emphasis in the initial years must be focussed on asset and network intelligence, find, and fix and pressure

management. This can be followed by increasing levels of active leakage control and watermains rehabilitation as our knowledge of the networks grows. There is no short-cut to transforming our below ground distribution network, it requires robust and iterative planning, continuous funding, and delivery. These pillars are in place in Irish Water.

Leakage reduction will always be intrinsic to our resources planning process and will always be funded as part of each investment plan. We have a multitude of issues to address across our water supplies. We must transform our water supplies (abstractions and treatment plants), improve water quality, and improve interconnectivity and resilience between supplies by upgrading our treated water storage and trunk main network, as well as continue leakage reduction. Leakage reduction alone will not address these issues. To provide an improved Level of Service (LoS) to our customers, allow for future growth and economic development while meeting the requirements of proposed abstractions and water quality legislation and ensuring our infrastructure is resilient to climate change, significant infrastructural development will be required across the region.

As part of the preferred approach for the Eastern and Midlands region, we are proposing to reduce leakage to 21% of total demand across supplies, with demand greater than 1.5MI/day. Supplies of greater than 1.5MI/day are found in various locations around the Eastern and Midlands Region. The reason behind this is that we want to focus our efforts in the beginning on our larger supplies with the potential for greater leakage. This equates to a total leakage reduction of 158 MI/day across the region, which will bring average demand to 22%.

In one submission the total deficit within the region is summed up as 84 MI/d and compared to the projected leakage reduction of 57 MI/d. This submission has missed the point that there is no connectivity between the 134 WRZs at present. Therefore, water saved through leakage reduction in one WRZ cannot be utilised in another WRZ. Similarly, a sustainable source or surplus availability in one WRZ cannot be utilised in another WRZ. Therefore, the simple addition of leakage savings to compared to summed up deficits is a meaningless exercise, without consideration of interconnectivity between the supplies.

Leakage outside of the GDA is prioritised on an annual basis as part of the National Leakage Reduction programme therefore leakage targets are not automatically applied to the supply demand balance calculations. This allows Irish Water's leakage reduction programmes to be flexible and targeted, to meet specific emerging needs.

As set out in Section 4.12.6 further to a review of leakage targets carried out by the leakage reduction team the leakage targets for the GDA were revised from 84MI/d as set out in the draft RWRP EM to 92 MI/d in the Final RWRP EM. These revised targets were built into the SDB. This reduced the deficit in the

Supply Demand Balance for the GDA and all feasible solutions were reconsidered for this reduced deficit. Note the deficit for the GDA in the draft RWRP-EM of 194MI/d has reduced to 183 MI/d further to the adoption of higher leakage targets for the WRZ

The details of the revised SDB deficit, and revised feasible options for the GDA are reported in the Study Area 9 Technical Report. The updated version of the Supply Demand Balance is provided in Appendix 10 of the RWRP EM

At project level, when we proceed to develop the preferred approach, we will review the supply demand balance and subtract the target leakage reductions from the deficit at this stage. This ensures that the preferred approaches are not oversized, or that the needs are over emphasized.

As set out in Section 4.3.3 of the Framework Plan leakage targets for 2019 were applied to priority supplies based on: supply demand deficit, existing abstractions with sustainability issues, and drought impacts. For supplies within the Eastern and Midlands region, leakage targets of 3 MI/d were included in the supply demand balance for 2019 and it was noted that leakage targets for further years would be allocated to supplies to meet specific emerging needs. This does not mean that only 3MI/d will be applied for the region between 2019 and 2034 but rather we committed to a figure for 2019 in the supply demand balance and provided flexibility in where leakage reduction would occur after that.

Along with the proposed leakage reduction for the Greater Dublin Area (GDA), of 92MI/d, this equates to a total leakage reduction of 158MI/day. This along with the application of 21% leakage reduction to other large supplies in the region will reduce leakage to 22% of demand across the entire region. Our leakage targets will be reviewed annually and will be subject to further modification.

In one submission the total deficit within the region is summed up as 84 MI/d and compared to the projected leakage reduction of 57 MI/d. This submission has missed the point that there is no connectivity between the 134 WRZs at present. Therefore, water saved through leakage reduction in one WRZ cannot be utilised in another WRZ. For example, if 2 MI/d is saved through leakage reduction in Limerick the water cannot be used to address a Supply Demand Balance issue in Longford, unless connectivity is built between the supplies. Similarly, a sustainable source or surplus availability in one WRZ cannot be utilised in another supply where there is an unsustainable source, unless they are interconnected. Therefore, the simple addition of leakage savings to compared to summed up deficits is a meaningless exercise, without consideration of interconnectivity between the supplies.

One submission received focussed on the current watermains renewal rates and extrapolated that watermains would only be replaced every 333 years on the basis of the current rates of renewal. This is not the case, watermain renewal rates will be increased as our understanding of the distribution networks increases, and our funding of the National Leakage Reduction Programme is increased as part of each investment cycle.

At no stage has Irish Water said that it has a cap on the amount of watermains rehabilitation that will be carried out. The watermains rehabilitation aspect of our leakage reduction plan, will be based on intelligence and outcome. Renewal rates will also increase as new innovation in no-dig methods develops over time.

Our investment in leakage reduction in 2014 at the outset of Irish Water, started at €100 million per year and is currently at €120 million per year. IW plans to submit a proposal to the Commission for the Regulation of Utilities (CRU) for €1 billion euros for leakage reduction as part of the next 5-year regulated investment cycle (RC4). This will equate to €200 million per year in ring fenced funding for leakage reduction measures. Over 40% of this will be spent on watermains replacement. If approved, this represents a 100% increase in investment in leakage reduction and therefore a doubling of the rates of network renewal.

The outcome of the leakage reduction programme is built into the supply demand balance calculations for the GDA; therefore, the forecast savings are accounted for in the Regional Plan.

One submission simplified the leakage issue in the Greater Dublin Area, as being associated with the age of the water distribution network. However, it is more complex than that. At present, 53% of the network in the GDA is less than 40 years old, whilst 78% of the network is less than 60 years old. Only 1% of the distribution network is over 100 years old.

This 1% largely comprises of large diameter trunk mains, such as the 33" and 24" trunkmains from the Vartry water treatment plant. Most of these mains are in excellent structural condition with negligible leakage or deterioration in wall thickness. Occasional repairs need to be made at joints and connections, however, as the mains are cross connected and the network has local storage, such repairs can largely be conducted with no interruptions to supply. These mains would cost 10's of millions of euros to replace, with the associated works serving no purpose or delivering any outcome. On the other hand, some of the watermains constructed within the last 30 years have worse performance. This highlights the importance of an intelligence driven leakage reduction strategy, and a full understanding of our networks before we increase the pace of our

watermains replacement programmes. Irish Water has adopted a best international approach in tackling our relatively high rates of leakage. We are establishing the intelligence, systems, people, and processes to ensure that leakage rates are continuously and sustainably reduced. Approaching the issue in this way will realise the best medium to long term outcome.

As the network in the GDA is nearly 9,400 kilometres intelligence driven decision making on watermains rehabilitation is essential.

It is incorrect to say that watermains rehabilitation is the only activity that addresses background leakage. Leakage best practice clearly shows that pressure management and calm networks is key to preventing new leaks and addressing background leakage.

In response to the CRU's submission regarding approved allowances for leakage expenditure within the CRU-approved Revenue Control, this will be progressed in the same way as the Preferred Approaches, i.e., the leakage identified in the NWRP and RWRPs will be prioritised on a national basis and progressed by the National Leakage Reduction Programme through Irish Water's Capital Investment Plans. The phasing and timeframes for delivery of intermediate leakage targets will be determined through the capital investment process.

13.3 Three Pillar

13.3.1 Summary of Three Pillar Feedback

Ibec commented that it would be unrealistic to expect the resource management philosophy of 'use less, lose less' to prevent outages and quality problems becoming ever more frequent during future summer dry spells, unless such measures are complemented by upgrades to selected Water Treatment Plants, extensions to the distribution system, and the development of one or more sizeable new supply sources.

The Southern Regional Assembly (SRA) highlighted how their forthcoming Framework for Blue Green Infrastructure and Nature Based Solutions in the Southern Region will be a resource for Local Authorities and regional stakeholders. They noted that Irish Water's support for this framework when completed through the Lose Less, Use Less and Supply Smarter policy and infrastructure planning and delivery will be important for RSES implementation. The SRA again encourages collaboration with Irish Water on this framework once completed. The SRA also commented that the NWRP principles of Lose Less, Use Less and Supply Smarter need to be delivered through the final

approach to ensure sustainable supply, protection of water resources and transition to a smarter, climate resilient region.

An Fóram Uisce (AFU) noted the proposed three pillars, and Irish Water's assertion that the pillars will enable optimised capital and operational solutions to achieve the best outcomes and react to emerging issues. AFU added that the three pillars each have a role to play in achieving sustainability and resilience in water supply across the Eastern and Midlands region.

AFU suggested that the draft RWRP-EM has more emphasis across all three pillars. They recommended approaching these pillars in a more holistic way, in order to achieve simultaneous improvements at many levels.

Dublin Chamber acknowledged that work on the 'Lose Less' and 'Use Less' pillars is already under way and welcomed Irish Water's initiatives in this regard.

13.3.2 Response to Three Pillar Feedback

A key part of our proposed approach is to encourage customers to reduce usage and to reducing leakage from the 2019 baseline (38% of regional demand) to 22% of regional demand. This will be achieved through, water conservation messaging, pressure management, active leakage control, find and fix and asset replacement.

Significant infrastructural development will be required across the region to provide an improved Level of Service (LoS) to our customers and allow for future growth and economic development while meeting the requirements of proposed abstractions and water quality legislation and ensuring our infrastructure is resilient to climate change.

We explore the sensitivity of our Preferred Approach at Regional Level by testing the effect of a range of future events, such as climate change and new abstraction legislation, on the Supply Demand Balance. This allows us to understand Sensitivity of the Regional Preferred Approach to changes in Need, in turn allowing us to ensure that the Regional Preferred Approach is robust and that our Plan is adaptable. Section 8 of the RWRP-EM outlines how the regional solution is developed.

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/>

13.4 Groundwater

13.4.1 Summary of Groundwater Feedback

Roscommon County Council (RCC) noted that potential adverse impacts need to be assessed in the development of additional ground water sources at Lisbrock, Killeglan and Mount Talbot, and that the connectivity between the proposed additional ground water sources and Lough Funshinagh which is Special Area of Conservation should also be determined.

They further commented that development of additional ground water sources at Lisbrock, Killeglan and Mount Talbot will need to be assessed with respect to existing groundwater source protection areas. RCC noted that cleansing polluted groundwater bodies can take some time and therefore, Killeglan, Lisbrock and Mount Talbot sources require early action and stable long-term planning of protective measures. They noted this as a requirement under Article 7.3 of the Water Framework Directive.

Kennedy Analysis (KA) queried why Irish Water did not consider groundwater as a solution for Dublin, which they stated represents an important, naturally good quality source of water in Ireland and that groundwater is far more reliable than surface water. They also commented that there has been a lack of transparency and a failure to account for the advantages of groundwater. KA raised concerns over Irish Water not publishing the groundwater report. KA highlighted that Irish Water claimed it is no longer relying on a groundwater report previously produced for this project (the 2008 report by Eugene Daly & Associates, commissioned by Dublin City Council (the “EDA Report”)) – but it has not published the groundwater report that it is now relying on. KA maintained that this is of serious concern given that in its view, every groundwater report/review that has previously been published in relation to the Shannon pipeline project (including the EDA Report) has been proven to contain major errors.

KA noted advice given to Irish Water by the Geological Survey Ireland (GSI) to engage with them on groundwater issues to avoid supply-related, environmental, and financial consequences.

KA referred to Irish Water’s statements about groundwater as misleading. They argued that Irish Water only investigated aquifers for the GDA within 80km of downtown Dublin in their assessment despite it being clear that there is no viable groundwater within 25km of central Dublin, and that the region around

Dublin has significantly lower annual rainfall and low permeability compared to elsewhere in the country. KA claimed that Irish Water only considered groundwater options for the GDA to the East of Tullamore and argues that Irish Waters statement in this regard is also misleading as it states that groundwater for the GDA was considered across the region, extending as far as supplies in Tullamore and Carlow. KA contended that it would therefore be assumed that IW had investigated groundwater supplies across the larger part of the new Eastern and Midlands region that lies to the West of and not just groundwater supplies to the East of Tullamore.

KA claimed that Irish Water's latest conclusions in relation to groundwater conflict with the findings of its previous 2015 review. KA said that the EDA Report only considered groundwater within 80km of downtown Dublin and identified 125Mld of "developable resources" within 80km of the GDA. In 2015, Irish Water published its own update/review of the 2008 EDA report, and it came to broadly the same conclusion as the EDA report itself; that for some aquifers developable resources were higher, for others lower, but overall, the conclusion was similar. KA outlined in their submission that IW acknowledged that the general approach of the EDA report had been "reasonable and valid" and that its rationale/filtering process was "robust."

KA argued however that multiple findings in the draft RWRP-EM conflict significantly with the findings of its the 2015 report noting that the volumes that Irish Water now states are available at certain aquifers close to Dublin, conflict with the volumes stated in its 2015 report. KA argued that these different conclusions are notable because groundwater sources do not change much within a few years, or even a few decades. KA noted that extraction/environmental regulations change, but Irish Water's 2015 report already took account of the Water Framework Directive. Therefore, KA concluded that IW has reached a significantly different conclusion today to that which it reached just 7 years ago, and the latest analysis of groundwater must be published.

KA argued that Irish Water's consideration of new water sources for the region does not factor in the advantages of groundwater over surface water. KA noted that groundwater is better quality and the proposed extraction point for the Shannon pipeline means that the Shannon River water delivered to Dublin would be category S3 water. KA noted that Irish Water's analysis of the methodology did not account for the risks associated with S3 water or the need for it to go through several treatment processes to make it safe for human consumption. They remarked on the lower risk associated with groundwater, which they said is generally clean and needs minimal treatment to make it safe to drink and that Irish Water methodology did not give any 'priority' to water from protected deep wells. KA claimed this is a significant oversight within IW's

methodology, particularly given the GDA's exceptionally high (98%) reliance on river water.

Limerick Greens noted that groundwater levels are important for biodiversity within the catchment and Lough Derg. They commented that lowering the level of the lake may have a damaging effect on the groundwater levels of the surrounding catchment caused by a cumulative effect with the Shannon pipeline and other catchment abstraction. They further noted that this could impact biodiversity in this local catchment and beyond via interconnecting ecological processes, habitats, and corridors. Limerick Greens highlighted that the lake water body and associated habitats of qualifying interest could be contrary to Water Framework Directive Article 4b (ii) in ensuring a balance between abstraction and recharge.

Clare County Council's Strategic Economic Initiatives Unit did not agree with taking water from rivers, streams, and lakes. They asked if whether Irish Water had considered using wells or springs in the vicinity of the GDA.

13.4.2 Response to Groundwater Feedback

Within each of the RWRPs, IW will consider potential groundwater sources for every water supply. All options considered were compared against each other using the options assessment methodology set out in Section 8 of the Framework Plan. As part of this assessment, the resilience of all options was considered and each option was given a score, which considers the potential impact of climate change. The storage capacity, sustainability and size and scale of the abstraction relative to the size and scale of the waterbody influenced this score.

This consultation relates to the draft RWRP EM and associated documents; it was not a consultation on the Water Supply Project Eastern and Midlands Region (WSP-EM), nor is it a consultation on previous material used as part of non-statutory information initiatives. Therefore, within this consultation report we will review the submission in the context of the draft RWRP EM.

Although Ireland has relatively high rainfall, it has relatively low groundwater storage compared to other European Countries. The geology of Ireland consists predominantly of insignificant aquifers with areas of moderately productive aquifers and small localised pockets of highly productive aquifers.

In comparison, countries such as Denmark and the Netherlands are almost entirely underlain by highly productive porous aquifers. Germany is underlain predominantly by highly productive porous aquifers to the North and highly productive karst aquifers in the south.

Across Europe highly productive aquifers are generally the only types used for largescale public water supply. In countries, where highly productive aquifers are available, the public water supplies utilise them, for example Germany, Denmark, and parts of France.

In Portugal and Spain, where there is less groundwater availability, the public water supply sources are predominantly surface water (80%). In Lisbon 98% of the water supply is surface water. In Scotland and Wales over 90% of the public water supply is sourced from surface water.

In Ireland, there is relatively poor groundwater storage, and the country could be classified as not having the geological conditions to support largescale groundwater abstraction for public water supply. At a local level for small supplies, groundwater in Ireland is very important. This is evidenced in the fact that Irish Water have 800 ground water abstractions serving small villages and rural areas. The areas where there are localised pockets of highly productive gravel aquifers, they are extensively used for example in North Cork, Laois, Roscommon, and Ennis. In consideration of further exploiting this resource, we must understand the interface between groundwater and surface water, as the highly productive aquifers interact with the surface water bodies. For example, the gravels in the curragh aquifer provide the baseflow for the River Barrow and the wellfields around Tullamore provide baseflow for the River Shannon.

We must also consider the environmental impact of groundwater abstractions. Some of the most productive aquifers in the Eastern Midlands region, such as the Curragh gravels, support sensitive groundwater dependent habitats, or others support baseflow into the rivers Barrow and Boyne. As a result, we give consideration the status of the water body and or neighbouring water bodies during our options assessment.

In the draft RWRP EM, Irish Water considered all potential solutions including groundwater options for all water resource zones in the East and Midlands Regions. We did not rely on a single report for this assessment, but instead reviewed each groundwater option on a case-by-case basis. Our groundwater assessment methodology is set out in Chapter 3 of the Framework Plan and is also described in Appendix C. The assessments are carried out for every unconstrained groundwater option based on the best available data from the Geological Society of Ireland (GSI) and the EPA. The assessments are carried out by a team of expert hydrogeologists who are certified members of the International Association of Hydrogeology (IAH). We are not relying exclusively on the 2008 Eugene Daly report as that was a high-level report completed at a macro level and did not include for assessment of impact in terms of the Water Framework Directive on waterbodies local to potential abstraction points, or the feasibility of abstraction from certain aquifer types.

The RWRP-EM considered all feasible options to provide supply to the Greater Dublin Area, including groundwater options. However, due to the limited yield availability compared to the magnitude of need in the WRZ, such solutions needed to be considered in combination with many other options. When solutions for the area were considered using the methodology set out in the Framework Plan the provision of new groundwater supplies, were not determined as the proposed preferred approach for the area.

The purpose of the RWRP-EM is to look at all potential solutions across the region. It reviews every feasible option according to the methodology established in the Framework Plan. If there is good groundwater availability in an area, and it is environmentally sustainable, it will be reflected in the preferred approach.

As outlined above, the geology of Ireland means there is typically poor aquifer storage for large scale abstraction for public water supply, or there are environmental factors that preclude large scale groundwater abstraction. It is recognised that groundwater is likely to be a dependable and resilient supply of water into a climate-changed future, and Irish Water will collaborate with the GSI in realising the full potential for groundwater as an integral part of the public water supply. However, it is also recognised that climatic conditions vary significantly across the country and fluctuate across seasons. Due to geology and topography across the country many of our groundwater bodies and surface water catchments can have poor storage characteristics compared to other European countries.

The RWRP-EM sets out the proposed Preferred Approach at Plan level. Further site-based assessments will be carried out at project level to determine the yield available, connectivity with any other waterbodies and ensure that the proposed approach does not impact the water levels of adjacent waterbodies.

As part of the feasible options process, Irish Water includes a desktop assessment of the treatment requirements for each option. The costs associated with surface water options are higher to account for any increased treatment process requirements. Therefore, the benefits of groundwater are considered in the RWRP EM.

Source protection measures will also be considered at project level. To provide clarity on project level assessment an additional section, Section 6.4, on project level assessments has been provided in the RWRP-EM.

13.5 Surface Water

13.5.1 Summary of Surface Water Feedback

Inland Fisheries Ireland (IFI) highlighted that water abstraction can have a negative impact on fish species that spawn on the lake shore, or in riverine

areas where gravels become dried out. They provided a list of examples, including loss of habitat impacts, loss of spawning or nursery areas, changes to habitat quality, and drying out of riffles. They noted that both the blockage of migration pathways, and the entrainment of juvenile and larval fishes in pump intakes, are critical issues to consider, in particular from a fishery's legislative perspective.

IFI noted that abstractions have presented a significant risk to water quality and broader biological diversity during drought and heatwave conditions. They advocated for a precautionary approach and noted that Irish Water must comply with all relevant requirements of Fisheries, Water Framework Directive (WFD), Habitats Directive and other relevant legislation.

Offaly County Council noted that in Section 2 Table 2.4 of the draft RWRP-EM, the two sources identified for Tullamore, the Clodagh River and the Gageborough, in Study Area 5 and Study Area 6 are potentially at risk of exceeding the sustainable abstraction thresholds.

IFI also noted that consolidation of abstraction sites and plants should not be simply based on economic considerations. They added that, while a reduction in the total amount of abstractions is good, any suggested abstraction volumes must consider the Water Framework Directive's criteria as well as broad environmental sustainability considerations.

Inland Waterways Association of Ireland (IWAI) welcomed the decommissioning of Water Treatment Plants and the abandonment of abstractions near the canals once the Preferred Approaches have been commissioned stating that it should help to secure water supplies for the canals in years to come. However, IWAI recognised the need to retain this infrastructure in the interim.

IWAI also noted that the Boyne Navigation are seeking an assurance that the canal section of the Boyne Navigation at Staleen can share the supply of water with the abstraction facility at Roughgrange pumping station.

IWAI noted, in Section 3.2.3 of the draft RWRP-EM, the reference to the surface water yield from the River Barrow at Srowland Water Treatment Plant, and the proposal to increase abstraction at this location. IWAI expressed their concerns that increased levels of abstraction could impact on the navigability of the River Barrow in all seasons. They highlighted that the River Barrow is a shallow, fast flowing river and that any potential further reduction in river levels will result in the disrupted passage of vessels on the river. IWAI have suggested that Irish Water liaise with Waterways Ireland and Kildare County Council to assess the impact of increased abstraction on river levels for navigation before the proposal is finalised.

Clare County Council's Physical Development Directorate questioned whether the 52.7% increase in Limerick City Environ's Public Water Supply is sufficient to facilitate the export of future additional capacity if the intentions for enhanced abstraction from the Ennis source and/or the Shannon/Sixmilebridge source are unrealistic.

Ibec noted that because the draft RWRP-EM seeks to boost supplies to WRZs by a new surface water abstraction of 210Mld from the Lower Shannon in Tipperary, special attention will be required on the issue of abstraction. Ibec also noted that they are aware of the Shannon Special Area of Conservation (SAC) abstraction concerns, which could have a negative impact on the seasonal quantities available from Lough Derg. They also highlighted that because the abstraction rights will be purchased from Electricity Supply Board, Irish Water may need to wait a while to obtain the required licence. Ibec noted it may prove necessary for Irish Water to seek permission from the CRU and EPA for interim measures to secure the GDA water supply and that some of these measures may raise environmental concerns. Ibec noted that if IW fails to receive planning consent, then Ibec would anticipate growing difficulties over the coming years for new housing developments and/or for businesses seeking new water supply connections in parts of the EM region. Ibec noted such an outcome could have adverse impacts on its economic development and the quality of life of people who live and work there.

The Southern Regional Assembly stated that under the WFD, Irish Water will have to change surface water and groundwater abstractions and enhance the national water supply's sustainability from its current baseline by implementing sustainable abstraction restrictions.

Councillor Tony O'Brien from Clare County Council's noted that there is no navigation on the Royal Canal as a result of the abstraction from Lough Owel.

Councillor Joe Killeen underlined the requirement of water quality controls at points of abstraction and questioned what the impacts would be on agri-business and forestry upstream of the planned abstraction points. Cllr Killeen further questioned if it would be more difficult to get a licence for forestry, or agriculture in the area as a result.

Clare County Council's Strategic Economic Initiatives Unit noted that the base compensation flow of 10 cumecs required under primary legislation for the Old River Shannon is inadequate to allow the fish passage and habitat maintenance for which the Lower River Shannon SAC is designated. They noted that likely this is incompatible with the Habitats Directive, WFD, and Eel Regulation and may necessitate increased flow and discharge by the ESB at Ardnacrusha into the old River Shannon in the future.

The Environmental Protection Agency (EPA) noted Irish Water's commitment to an environmentally sustainable approach to water abstraction but stated that the key issue will be to guarantee that environmental monitoring is carried out on a regular basis to support water abstraction activities. The EPA welcomed Irish Water's commitment to working with the EPA and Geological Survey Ireland to develop a system to understand the sustainability of groundwater abstractions. They encouraged the careful evaluation, implementation, and monitoring of water abstractions for drinking water in the RWRP-EM area, particularly where those waters sustain protected species and specified ecosystems.

The EPA appreciated the reference to the new abstraction-related legislation which will introduce licensing for activities over certain thresholds. The EPA noted that the number of Irish Water suppliers at risk of running out of water roughly corresponds to the EPA's own estimates, but the net water shortfall is likely bigger than expected by Irish Water. As part of the licencing procedure under the upcoming abstraction legislation, this will be addressed, and the EPA will give clarity to Irish Water. The EPA noted they will also be responsible for enforcing licences issued to water suppliers under these Regulations.

The EPA outlined that the next abstractions legislation and licencing regime will determine the sustainable abstraction yield(s) and the conditions that must be met for each abstraction meaning that abstraction choices made by Irish Water as a result of this planning process may be subject to revision or conditionality in order to meet regulatory obligations.

The EPA noted that all abstractions are subject to further conditions under the forthcoming licensing regime. They noted that 47 of the preferred options are contingent on the proposed Shannon abstraction and noted the high dependency of the Regional Plan on this solution being delivered. They also noted that 87 existing abstractions are to be decommissioned but suggest delaying fully decommissioning supplies until alternative solutions have been established.

Tipperary County Council (TCC) noted the potential water sustainability impacts of pending abstraction legislation especially from the Little Brosna River serving Roscrea and the Mulkear River serving Newport and Ballina. They also noted that alternative sources are likely to be needed. TCC requested that Irish Water introduce measures to mitigate against this potential impact.

TCC noted that Irish Water has not included its estimation of sustainable abstraction within the SDB calculations but is using the sustainable abstraction assessment to assess the sensitivity of the Preferred Approaches it develops as part of the draft RWRP-EM. TCC acknowledged the assumption that existing abstractions can continue on a transitional basis and once legislation is enacted. TCC confirmed their engagement with Irish Water and other

stakeholders in further studies to determine the effect of abstractions on waterbodies.

Limerick Greens commented on Irish Water's obligation to the Precautionary Principle in relation to water abstractions within the draft RWRP-EM. They questioned whether the Eastern and Midlands total abstractions details would be made publicly available in real time on the National Register of abstractions, and whether this data can be easily queried by River Basin. They also sought clarification on whether prior authorisations are required for abstractions for groundwater and surface water and if it is possible for the cumulative level of abstraction to impact water bodies that are currently not at risk, further questioning the ability to achieve their environmental objectives under the WFD.

Limerick Greens queried whether new water abstraction licenses would be granted under appropriate surveillance and enforcement like in Northern Ireland, or if whereby a license's conditions are amended or revoked due to an impact on the environment. They noted that the Lough Derg sub catchment area land use is predominantly agricultural with many types of water abstractions on-going within the local catchment, including several temporary unlicensed and licensed abstractions on agricultural premises for their livestock and crop. They added that local catchment businesses and industry may also have licensed and unlicensed abstractions in the Lower Shannon area.

Limerick Greens noted that abstractions can impact and lower groundwater levels and asked, if combined with low water conditions in the Lough Derg water body, whether it would be possible to create a synergistic negative effect with the Ardnacrusha' existing abstractions. They also commented on uncontrolled water abstraction in the catchment and questioned if it could coincide with a peak demand event for electricity for Ardnacrusha whereby abstraction is effectively managed and controlled. They sought clarification on whether it could cause an in-combination effect with existing licensed groundwater abstractions and questioned what impact the abstractions in the Upper Shannon area will have on influent volumes flowing down into the Lower Shannon area.

In addition, Limerick Greens enquired if the proposed Shannon pipeline would continue abstracting water from the Ardnacrusha Headrace when the turbines are not generating. They also queried whether the 2% abstraction could increase to more than 5 days in an electrical power capacity deficient economy and whether the Irish Water Shannon Pipeline's 2% abstraction depends on Ardnacrusha generating power, or if it will be abstracting from the Headrace independently. On a similar note, Limerick Greens asked about the impact on biodiversity in the Lower River Shannon SAC in combination with the Ardnacrusha 2% abstraction and other catchment abstractions.

Limerick Greens asked if Irish Water and the ESB would provide a measure for the combined abstraction at Ardnacrusha through a Natural Capital Accounting framework, with the purpose of providing a no net loss compensation for offsetting ecosystem services affected and if the EPA and other designated authorities would provide a similar financial measure to appropriately compensate ecosystem services affected by catchment abstractions. They sought clarification on whether Irish Water and EPA would incorporate a monitoring action plan to ensure co-ordination with other government environmental agencies to ensure abstraction legislation is effectively enforced.

An Forum Uisce (AFU) supported the need for interconnected supplies to increase resilience and for the need of water transfers to address the water deficits in the Greater Dublin Area. They recommended that Irish Water include measures for ongoing cooperation with the Environmental Protection Agency and the Geological Survey Ireland, to build and incorporate accurate hydrological model estimates for the supply and demand across the region for the various proposed water transfers. AFU also suggested that there should be flexibility for review and adaptation of the preferred options following the assessment and incorporation of these hydrological balances, along with any new changes outlined in the upcoming Abstraction Bill. AFU also called for Irish Water to outline how the proposed water transfers will comply with the Water Framework Directive.

13.5.2 Response to Surface Water Feedback

All options considered were compared against each other using the options assessment methodology set out in Section 8 of the Framework Plan. As part of this assessment, the environmental impact of all options was considered along with other key criteria such as resilience and cost. Irish Water can confirm that consolidation of abstraction sites and plants is not simply based on economic considerations, it relates to sustainability, resilience, environmental and climate change considerations.

Irish Water acknowledges the impact unsustainable abstraction has on aquatic life and we will engage fully with the requirements of the new legislation on abstraction. It is envisaged that site-by-site assessments will be required as part of the proposed abstraction licencing regime. Irish Water will initiate the process of obtaining licences for new abstractions and regularising the licensing position of existing abstractions once the abstraction legislation has been enacted and the applicable regulatory process is in place.

Within our water resources planning process, we strive to improve environmental outcomes including the transformation of our existing supplies

and migration to sustainable abstraction through our investment plans. We take a conservative approach when conducting desktop assessments of Preferred Approaches using the methodology set out in Appendix C of the Framework Plan. Any additional legislative and regulatory requirements will be incorporated into the NWRP based on the monitoring and feedback process set out in section 8.3.8 of the Framework Plan.

The preferred approach is considered feasible at Plan Level; however, it is acknowledged that further site specific assessments will be required prior to the development of a solution. A new section, Section 6.4 has been provided in the RWRP EM to provide clarity on project level assessments. Comments provided by IWAI on the Staleen infrastructure will be considered at project level and it is not proposed to increase the River Barrow abstraction above the existing design capacity of the WTP.

Interim measures for all WRZs including the GDA are allowed for in the RWRP-EM and are outlined in Section 7.6 of the plan. These interim solutions alongside leakage and water conservation measures will allow us to maintain the existing Level of Service (LoS) to our customers while facilitating growth prior to the delivery of the Preferred Approach and in the long term these solutions will improve resilience in the network and improve the security and reliability of the supply to the GDA.

Irish Water worked with Waterways Ireland during the extreme dry weather in 2022 to ensure that the Royal Canal remained navigable while maintaining the abstraction. As noted in the RWRP EM the existing abstraction from Lough Owel is unsuitable and we are proposing to decommission the abstraction as part of the Preferred Approach. The proposed abstraction from the Parteen Basin is sustainable.

Irish Water is part of the DHLGH-led multi-stakeholder steering group considering potential solutions to improve fish migration on the Lower Shannon at Parteen Weir. IW will examine the recommendations for fish passage improvements on the Lower Shannon as it advances the design and assessments for the Water Supply Project Eastern Midlands (WSP-EM).

In response to the submission from Clare County Council's Physical Development Directorate, the current preferred approach for Ennis and Shannon/Sixmilebridge in the RWRP-EM is to increase the existing abstractions from a highly productive aquifer at Drumcliffe (Ennis) and increase the existing abstraction from Castlelake (Shannon/Sixmilebridge). IW proposes to complete yield assessment as set out in Section 6.4 of the RWRP-EM prior to the development of these Preferred Approaches. Further to these yield

assessments, if it is determined that these solutions are not feasible there is an option within the plan to augment the Ennis and Shannon/Sixmilebridge supply from the Limerick regional supply.

One of the objectives of the NWRP is to create a more interconnected system. A major benefit of an interconnected system is that peaking and uncertainty of the demand required reduces, as this is balanced across the supply system. Also as set out in section 5.2.1.2 for WRZs outside the GDA, Irish Water has an objective to reduce leakage levels to 21% of total demand for larger WRZs. This will reduce the volume of water required to be abstracted from our sources.

In response to the question from the Limerick Greens in relation to the proposed abstraction point for the NSS, the proposed WSP-EM abstraction point is situated on the eastern shore of Parteen Basin, upstream from Parteen Weir and the entrance to the Ardnacrusha headrace. The proposed abstraction is from Parteen Basin. Water levels on Parteen Basin are managed by the ESB as part its management of the Shannon hydroelectric scheme. The proposed abstraction can continue, even when the turbines at Ardnacrusha are not operating and inflows to the lake are low. The proposed abstraction can be sustained within the same normal water level operating band on Lough Derg and Parteen Basin that currently exists and with no reduction to the 10m³/s minimum statutory compensation flow down the old River Shannon.

The Irish Government is developing legislation on water abstraction. The EPA will regulate this abstraction licensing process.

The RWRP-EM assesses the abstraction of water from the Shannon and the construction of a pipeline to the east at a Plan level only. The draft RWRP-EM has been subject to Strategic Environmental Assessment and Appropriate Assessment. The draft RWRP-EM has applied the methodology, as adopted in the Framework Plan, and through that process has identified preferred approaches at water resource zone, study area and regional level.

As with all projects identified in the draft RWRP-EM, project specific, detailed environmental assessments will take place prior to any planning permission application being made and these questions will be addressed at this stage.

13.6 Reservoirs

13.6.1 Summary of Reservoirs Feedback

A stakeholder highlighted the need for a new water reservoir in Ballivor, County Meath and to monitor water quality, there considering that the water treatment plant does not meet Environmental Protection Agency (EPA) standards.

A stakeholder suggested that building more reservoirs would help alleviate the demand for water in the Eastern and Midlands region.

Councillor Eddie Fitzpatrick made a submission on behalf of residents of the Offaly side of Portarlington in which he suggested constructing a storage reservoir across the river on the Offaly side as the main water supply to Portarlington is supplied from Laois.

An Forum Uisce (AFU) recommended that the optimisation of reservoirs should be included in the options for the GDA, where the capacity of the reservoirs is assessed under different extreme scenarios. They also sought clarification on transfer works and how thresholds would be determined. They recommended that Irish Water should present emergency action plans for the Eastern and Midlands Region to illustrate resilience against extreme drought or interruption to supply including details of reservoir capacity. AFU supported both the need for interconnected supplies to increase resilience and water transfers to address the water deficits.

Councillor Johnny Flynn raised concerns as a former Chief Fire Officer of the current water flows and pressure in a very large town such as Ennis and recommended that reservoir capacity should be a minimum of 1.5 times the daily demand to adequately cater for firefighting water flows and pressure in Ennis. Councillor Flynn referenced that 24-hour storage was recognised as a minimum in the in “Municipal Water Relating to Fire Fighting and Fire Protection” paper presented by Tobin Consultants to the Chief Fire Officers Association Conference in Westport in 1986. Councillor Flynn requested that, before the finalisation and adoption of the NWRP that Irish Water assesses the correct size of the reservoirs necessary for Ennis. Councillor Flynn suggested carrying out a firefighting flow risk assessment for Ennis as noted in the UK Water guidance document The National Guidance Document on the Provision of Water for Fire Fighting and advised liaising with Clare County Fire Authority regarding the Ennis reservoir size.

13.6.2 Response to Reservoirs Feedback

The RWRP-EM sets out the proposed Preferred Approach at Plan level. The Preferred Approach for Ballivor, Portarlington and Ennis includes the allowance

for additional treated water storage at these locations. The size and location of the storage will be determined at project level following a site selection process. To provide clarity on the project level assessment an additional section 6.4, has been provided in the RWRP EM.

All solutions, including the provision of more raw water storage, were considered through the option selection process. To reduce the environmental impact of such options, we have looked to existing raw water storage such as large aquifers and existing dams. However, in some areas we have considered the provision of new raw water dams.

The RWRP-EM looks to resolve deficit at WRZ level, Study Area, and Regional level. This is Irelands first NWRP, with 539 WRZs and a very significant challenge in terms of historic underinvestment in water infrastructure to date. There are no specific guidelines for water resources planning in this jurisdiction. Irish Water investigated the approach taken in England, Scotland and Wales and conducted significant stakeholder consultation in the development of the draft RWRP-EM. We are satisfied that we have utilised the best possible methodologies, considering the condition and stage of evolution of the public water supply in Ireland, and that we have ensured that the draft RWRP-EM was as comprehensible as possible.

We are proposing to develop drought management plans for all of our supplies which will set out trigger levels for drought management measures as set out in Appendix E of the NWRP.

It should be noted that the River Shannon is the largest river in Ireland and its catchment covers 20% of the island of Ireland. It is a slow-moving water body with significant volumes of storage throughout the catchment due to the presence of lakes. This means that flood events last for long periods, however it also means the water body is less vulnerable to droughts as there is significant storage during dry weather events. It means it is a good source for water supply. The proposed abstraction is from an impounding reservoir / dam, which means you can store water when there is plenty of rain and during a drought period, the abstraction will be taken from this storage, without impacting on flows downstream of the dam.

Other capital cities look for multiple sustainable water sources. Those sources can be either surface water, or ground water sources, once they are sustainable and resilient. The purpose of the draft RWRP-EM is to find options that are sustainable and resilient. Irish Water's plan considers similar approaches and looks to balance supply from different resilient sources.

Currently water supply to the Dublin area is provided from a number of supplies, including impounding reservoir sources, groundwater sources and run of river sources. Raw water quality varies across all water supplies. While river sources are more vulnerable to pollution, we can also have issues with unacceptable levels of naturally occurring Iron and Manganese in our ground water sources.

All water supplied by the public water supply must comply with the Drinking Water Directive. IW takes a risk-based approach to our water supplies using the World Health Organisation's drinking water safety plan methodology. This ensures that our water treatment plants are designed based on the type of water abstracted from any given source and the treatment processes put in place are designed to remove all contaminants. All public water sources, including groundwater and surface water, involve water treatment.

13.7 Water Treatment Plants

13.7.1 Summary of Water Treatment Plants Feedback

A stakeholder requested that Irish Water would prioritise the acceleration of the upgrade of Trim Water Treatment Plant (WTP).

Ibec acknowledged that outdated WTPs will eventually need to be decommissioned in each region to make the system more manageable, and due to the highly fragmented nature of the public water supply system, they appreciated the bottom-up iterative approach to the Needs analysis for the current cycle of planning.

Inland Waterways Association of Ireland (IWAI) noted several references to the decommissioning of WTPs and the abandonment of abstractions near the canals once the Preferred Approaches have been commissioned. IWAI welcomed these actions as it should help to secure water supplies for the canals in years to come and recognises the need to retain this infrastructure in the interim.

Councillor Johnny Flynn noted the past failure and upgrade to Ennis WTP in his submission. Councillor Flynn highlighted that in 2005, close on 30,000 people living in Ennis and district suffered from serious cryptosporidium contamination to its drinking water, a serious health risk which led to numerous boil notices and a lengthy ban on the use of the drinking water. Councillor Flynn noted that it would take several years to get funding, design, tenders, planning and construction for a new WTP capable of providing a complete barrier to Cryptosporidium and that, in the interim 30,000 people and businesses in Ennis, could be on a permanent boil notice.

Councillor Flynn noted in November 2005, that both himself and Councillor Donal O’Bearra, gave a formal notice requesting that the County Manager would use the emergency powers available to provide immediately a temporary water filtration system for the Ennis Water supply. Councillor Flynn noted that an order was placed the following month with a UK-based company for the provision of a skid mounted membrane filtration process unit, which was installed before operation in March 2006. The temporary modular treatment plant, costing €1 million a year for the 4 years in use, provided a complete barrier to the Cryptosporidium whilst the permanent treatment was completed and officially opened at the end of April 2010.

Deputy Fergus O’Dowd noted recent experiences with Greenmount WTP and the Do Not Consume (DNC) notice in late 2021. Deputy O’Dowd noted that the WTP has struggled to cater for increases in population in the mid-Louth area and has notified Irish Water of the concerns and dissatisfaction regarding the ongoing maintenance, water quality and communication issues that continue to be experienced by residents and businesses. Deputy O’Dowd noted that the Drogheda WTP currently has a PE of 100,000 and as of last year was treating a load of approximately 84,000 according to Irish Water. Whilst Deputy O’Dowd welcomed the recent Staleen upgrades, he highlighted that the incidents that took place over recent years where the main pipes burst, showed just how debilitating and dangerous a water outage can be.

Deputy O’Dowd raised concerns that the current WTP at Staleen will be under significant pressure in the coming years as a result of significant growth in the area. He noted that appropriate and proper planning should be made now to manage Drogheda significant future capacity needs.

Roscommon County Council noted that WTP assessments are required to check design capacities and accurately determine available headroom and process losses and these need to be accurately determined.

Kildare Chamber voiced strong support for the improvement and upgrading of the WTP’s in Ballymore Eustice and Leixlip, which they added would guarantee confidence among the business industry in the water supply generation within the region.

13.7.2 Response to Water Treatment Plants Feedback

The scale of investment required to transform our water supplies is undoubtedly considerable. There are 201 individual WTPs in the Eastern and Midlands Region and the RWRP-EM notes that 181 of these WTPs require investment to reduce the risk of non-compliance with the drinking water regulations. The preferred approach includes proposals to carry out;

- Upgrades to 136 existing Water Treatment Plants, in terms of size and barrier performance.
- Development of four new Water Treatment Plants.
- Decommissioning of 66 Water Treatment Plants.

Critical projects and programmes to address potential public health issues and supply deficit issues are on-going and are not impacted or delayed by the delivery of the NWRP. Section 7.6 of the draft RWRP-EM outlines the process for developing interim options to address critical water quality and quantity issues, while we deliver our Preferred Approach through the coming investment plans. Using this process in the interim, short term capital maintenance solutions have been identified for all WTPs and these solutions are referred to in Section 6 of the Study Area Technical Reports.

WTP upgrade need is informed by the Supply Demand Balance, the barrier assessment, and the drinking water safety plan. Information such as designing capacity, headroom and process losses is fed into the supply demand balance the barrier assessment and the drinking water safety plan. Irish Water will continue to review our data and any updates will be incorporated via the monitoring and feedback process in section 8.3.8 of the Framework Plan.

13.8 Catchment Management

13.8.1 Summary of Catchment Management Feedback

An Forum Uisce (AFU) recommended the adoption of an integrated approach to Integrated Catchment Management (ICM) and the Framework for Integrated Land and Landscape Management (FILLM), noting that it could reduce dependencies on end-of-pipe approaches for addressing potential or emerging risks to the supplies. They further noted that cumulative impacts of abstractions on a catchment should be considered.

AFU also recommended that Water Stewardship should be supported and implemented based on the principles of Integrated Catchment Management and noted that it requires a catchment-scale assessment supported by the respective data and transparency in the resources used. They underlined that the Water Stewardship's contribution should be measurable and the operational use of water by Irish Water must be known and considered in every WRZ. AFU recommended the adoption of an integrated approach in the context of ICM and FILLM including source protection measures. They recommended that Irish Water outlines the key engagement with leading agencies to address source protection measures, with more consideration of front of pipe solutions. AFU recommended that Irish Water increase their staff capacity to include scientists with expertise in integrated catchment management to support this transition.

AFU stated that the Water Framework Directive, its Guidance Technical Reports, the Common Implementation Strategy reports, and many European River Basin Management Plans, recognise that monitoring and modelling of water bodies at catchment scale are necessary for all water suppliers and fundamental for the evidence they provide for planning. AFU suggested that increasing the level of control and overview over catchments and infrastructure assets, supported by more complete databases, improved methods, and scientific assessments, would lead to more transparent management, robust and coherent planning, along with integrated decision-making.

Inland Fisheries Ireland (IFI) noted that the issue of source protection should be thoroughly addressed. IFI highlighted that the availability of consistent reliable good water quality will depend on a myriad of factors, including land use and overall activity within the catchment. IFI recommended that active participation at catchment management level through supports for local projects may prove beneficial.

The Environmental Protection Agency acknowledged that the Borrisokane Drinking Water Safety Plan indicates that agriculture sources are significant proportions of the oocyst load but highlighted that no measures have been proposed to address this issue in the draft RWRP-EM. They suggested providing information on the proposed approach related to source protection and catchment management in the area.

Limerick Greens questioned whether lowering groundwater levels would influence the planning authorities' decisions in relation to planning and development applications within the Lough Derg catchment in the future. They queried whether the Irish Water aquatic monitoring strategy's monitoring and analysis work could be shared with stakeholders in real time.

Limerick Greens queried if it would be better to manage the proposed Eastern Midlands region in accordance with the existing hydrometrically defined River Basins / catchments and associated hydromorphologically mapped Ground Water and Surface Water within their watershed boundary areas, with measured flow rates – instead of an arbitrarily defined area that incorporates both Shannon and Dublin. Limerick Greens further queried if water abstraction impacts will be fully and appropriately monitored and reported to the River Basin Management Plan and National Biodiversity Action Plan within the Lower Shannon catchment. They questioned if the abstraction of just the excess floodwater from several catchments would be a viable option to provide water to impoundments in the GDA.

They further queried if the harvesting of just the Floodwater would be a better environmental option that could help reduce the impact of the flooding extent experienced in local catchments. They cited an example, i.e. could flood water from the Suir Catchment and Barrow catchment's, in combination with floodwater from the Shannon catchment be a viable option to supply the GDA reservoirs. They noted this measure would fit better for the Suir and Shannon pipeline where the pipe level is set to flood levels and can only abstract water when water level is sufficiently high. They stated that catchments flood at different times relative to other catchments, for example a flood on the River Suir does not necessarily mean there would also be a flood in the River Shannon, or River Barrow.

13.8.2 Response to Catchment Management Feedback

Irish Water will share emerging data in relation to groundwater source protection and set up a steering group including the EPA Hydrometrics Team and GSI as part of the development of further studies on existing and potential future groundwater supplies. Irish Water will also incorporate information from the GSI regional assessments, into our options assessments as it becomes available.

As part of our risk-based approach, incident plans are also being developed for our supplies. The purpose of the Drinking Water Safety Plans (DWSPs) and inclusion of water quality risk in our NWRP, is to take a proactive approach to reducing the incidence and risk of non-compliance in our water supplies. We will also seek to reduce risk through catchment measures and source protection. Irish Water is an active participant in catchment protection and will proactively engage in this process over the coming years. Implementation of source protection measures will require further collaboration with several stakeholders including, riparian owners, industry groups and the agricultural, forestry and environmental sectors and Teagasc. This participation will include source risk assessments for all our supplies, progression of DWSPs and integrated catchment management measures. Further information on our source risk assessment is included in Box 5.2 in section 5.5 and cross referenced in section 5.9 of the Framework Plan.

The RWRP-EM sets out the proposed Preferred Approach at Plan level. Further site-based assessments will be carried out at project level to determine the yield available, connectivity with any other waterbodies and any ensure the proposed approach does not impact the water levels of adjacent waterbodies.

The environmental assessment that will be completed for the Water Supply Project Eastern Midlands (WSP-EM) will be made publicly available as part of the planning application.

Due to the seasonality of rainfall in Ireland, a significant amount of storage would be required to harvest enough flood water to ensure secure supply for the GDA, particularly during dry periods and due to the environmental risks of associated with cross-catchment transfers, this is not a viable solution.

The Borrioscane DWSP example was provided to illustrate the risk assessments that we complete prior to scoping out the treatment process required at our WTPs. Source protection measures will reduce the risk; however, this is not something IW will work on independently, particularly when it comes to enforcing against the potential risks to the source. Irish Water's role in this is likely to become clear upon transposition of the recast Drinking Water Directive.

In recognition of the importance of multi-stakeholder engagement and collaboration in managing shared natural resources, Irish Water are members of an expert group chaired by the Department of Housing Local Government and Heritage (DHLGH) to make recommendations to the Minister regarding a new approach to drinking water source protection as part of the transposition of the recast Drinking Water Directive. Irish Water is also actively involved in pilot source protection projects in Ireland to trial catchment scale interventions to reduce the risk of pesticides causing exceedances in water supplies. The two key projects are the Source to Tap Project and the Pilot Drinking Water Source Protection Project. More information on these projects is provided in Box 2.4 of the RWRP-EM. Further testing has been provided in Section 5.4 to provide more information on Source Protection.

13.9 Alternatives

13.9.1 Summary of Alternatives Feedback

A stakeholder noted that if a pipeline was laid from Lough Ree to replace the abstraction from Lough Ennell/Lough Owel to the canal, then the River Brosna would be able to flow full throughout its length, as what is abstracted for Mullingar and subsequently treated, would end up either in the Royal Canal or Lough Owel. In turn they noted that Tullamore could be supplied from the Brosna. They further argued that only a fraction of the pipeline requirements would be needed to serve the Midlands, as a considerable amount would be saved by using the River Brosna as a conduit.

The same stakeholder suggested laying a backup pipeline from the Shannon to Dublin beginning at Lough Ree with water being treated in Mullingar and then travelling along the Royal Canal route line to Dublin. They noted that water would be carefully managed to pump only as and when required, in line with the flow regime of when there is surplus water in the River Shannon and optimising the use of Poulaphuca Reservoir as the primary water reservoir for Dublin as

outlined above. They argued that what is proposed is to turn Lough Derg into Dublin City Reservoir 2 with all the associated environmental risks and with the dangers of drawing down water from Lough Derg during excessively dry periods.

In addition, the stakeholder outlined that the backup pipeline would allow the optimisation of existing financial resources. They noted that optimising the use of Poulaphuca would remove the need to lay any pipeline. They further noted that dismissing the Slaney as too environmentally sensitive could be applied to any river in Ireland, including the Shannon, which could be managed in such a way that there would be no environmental threat from abstraction.

The same stakeholder advised revisiting the proposal that would take water from the River Shannon in periods of excess and provide storage in Poulaphuca for summer drought periods.

Furthermore, the stakeholder commented that the proposal to duplicate the pipeline from Poulaphuca to Dublin while ensuring security of supply is not justifiable. They noted that as only a minor portion is assigned to supplying water to Dublin and consequently to propose this without increasing the supply from the reservoir is unjustifiable. They further suggested that the duplicated pipeline would allow the proposed pipeline to act as a rising main and could backfill Poulaphuca from surplus resources during the night when demand drops in Dublin and use this to supplement the demand during the day. This, they remarked, would optimise the water available to supply Dublin.

Clare County Council's Strategic Economic Initiatives Unit (CCC-SEIU) highlighted that part of the University of Limerick (UL) South Clare Strategic Development Zone (SDZ) involves the re-opening of the Errina Canal as a functioning waterway linking the proposed SDZ's marina to the Shannon navigation system and northwards. CCC-SEIU noted that currently water navigation through Parteen Weir, which divides water flow between the Headrace Canal feeding the ESB's Ardnacrusha Hydroelectric Generating Station, to the River Shannon is not possible. This means that no navigable access is provided from the Errina Canal, which runs adjacent to the proposed site of the UL SDZ to the Shannon above Parteen.

CCC-SEIU commented that redeveloping the Errina Canal to provide access to the Shannon would omit the requirement for boats to use the ESB's lock in Ardnacrusha, providing boat handlers with a far less obstructive route from the lower River Shannon and as far north as Lough Erne. They also noted that the re-opening of the Errina Canal and the RWRP-EM are inextricably linked given the GDA water supply scheme which is being proposed as the regional solution.

Limerick Greens stated that Irish Water had failed to undertake the required assessment of alternative solutions such as fixing existing pipes, through which vast amounts of treated water is lost. They queried whether Irish Water had considered a back-up solution by having a different approach available to adapt quickly.

13.9.2 Response to Alternatives Feedback

Abstractions from Lough Ree for the GDA were considered in the RWRP-EM. However as noted in the draft RWRP-EM on the review of the water available for abstraction it was noted that the ESB minimum normal operation levels for the Shannon at Lough Ree were not maintained during the 1995 drought without an abstraction. Any abstraction at this location would therefore not be resilient, as the yield is not available and would likely have a negative environmental impact. Therefore, this option did not meet the requirements of the Environmental, Resilience or Deliverability criteria and was not progressed to the fine screening stage.

One of the interim solutions for the GDA considers increased abstraction at Ballymore Eustace by optimising storage at Poulaphouca Reservoir. It is noted that our existing abstractions from the River Liffey are significant and these may have sustainability issues in relation to the WFD, in addition to reliability issues in drought periods. On that basis, any increases in abstraction from this water body would need to be carefully planned, be temporary in nature, and may need to be facilitated via exemption processes allowed for in legislation (with associated environmental assessments, as required). Storage from Poulaphouca can be optimised by works to reduce the level of the abstraction inlet and/or by modifications to the storage curve. Consideration would need to be given to dam safety and a potential increase in flood risk along the Liffey if a proposal to change the storage curve was considered. The feasibility of these interim options will be further investigated at a project level. This solution will not resolve the entire deficit in the GDA however nor improve the Level of Service.

Ambitious leakage targets are included as part of the Preferred Approach, and we are proposing to reduce leakage to an average of 22% across the region. However, to provide a 1 in 50 level of service to our customers while meeting the requirement of a growing population, proposed new abstraction legislation, and ensuring our supplies are resilient to climate change, additional infrastructural solutions are also required.

All options considered were compared against each other using the options assessment methodology set out in Section 8 of the Framework Plan. As part of this assessment, the resilience of all options was considered and each option was given a score, which considers the potential impact of climate change. The

storage capacity, sustainability and size and scale of the abstraction relative to the size and scale of the waterbody influenced this score.

This consultation relates to the draft RWRP-EM and associated documents. It was not a consultation of the Water Supply Project Eastern and Midlands Region (WSP-EM), nor was it a consultation on previous material used as part of non-statutory information initiatives. Therefore, within this consultation report, we will review the submission in the context of the draft RWRP-EM.

The RWRP-EM determines feasible solutions to address need across the water resource zone at Plan Level. It is acknowledged that further site-specific assessments are required to determine the project design. A new section, Section 6.4 has been provided in the RWRP-EM to provide clarity on project level assessments.

13.10 Desalination

13.10.1 Summary of Desalination Feedback

Kennedy Analysis (KA) stated that desalination was not considered as an emergency back-up for the Greater Dublin Area in the draft RWRP-EM. They noted that Irish Water only considered desalination as a 100% operating option, which they stated was inappropriate considering Dublin's projected deficit consists entirely of safety buffers that would rarely be used.

KA commented on the pricing method used by Irish Water for the desalination plants. They noted that Irish Water priced them on the basis that they would be producing the entire identified volume of water every single day of the year which they stated as inappropriate given the fact that desalination can be turned on and off or be used in an emergency capacity only. They highlighted the high impact of this on the costs analysis of the desalination options and suggested that they be priced on the basis that they would only operate on a very occasional basis to meet short-term peaking and outage requirements.

KA also noted that, compared to other options which involve the development of new surface water sources and up-front costs, desalination has an advantage with the exact opposite cost profile and should be priced accordingly.

Department of Agriculture, Food, and the Marine (DAFM) noted that Desalination plan is included under one of the options for Study Area 9 but that it is still under consideration. DAFM are concerned about the possible impacts the outflows of desalination plants may have on fisheries and coastal nursing and spawning species. They highlighted that hypersalinated outflows would need to be treated appropriately to avoid any adverse impact on fish stocks. DAFM noted that in the event that there were large losses of fish and fish eggs,

this would be a major cause for concern.

DAFM requested that the evaluation of potential impacts on any commercial sea fishing activities needs to be given consideration as part of any planning/proposal process and during the development process itself.

13.10.2 Response to Desalination Feedback

As with all other strategic infrastructure, the capital costs are unique to the individual situation. This including the feasibility, location and proximity of the infrastructure to a supply as well as the consenting landscape and environmental designations and the availability of associated infrastructure such as bulk power supply. It is a gross simplification to take a process type and to assume that it is “cheap” based on the outturn cost of a single investment made in another jurisdiction over a decade ago.

Similarly, large scale and complex infrastructure does not operate on an emergency basis only. In order to operate effectively, such infrastructure would normally operate on a baseline throughput with regular peak output to ensure the effectiveness of the infrastructure and to ensure that water does not stagnate in clearwater tanks and bulk transfer mains. Therefore, if Irish Water was to build a desalination plant it would not just be switched on intermittently every few years in drought conditions, it would need to operate continuously at a reasonable throughput. As the cost of desalinated water can be 15 times the unit cost of a freshwater supply, the operational costs associated with these supplies, even when operating on a baseline throughput with intermittent peaks, can cost more than a full output from conventional water treatment plant on a continuous basis. Effectively operating a desalination plant for 3-4 weeks, would cost the same as operating a conventional plant for an entire year. Therefore, desalination is usually only used as a last resort in jurisdictions where there are no freshwater options, and where there is also high energy security such as the gulf states.

Irish Water considered desalination options as part of the RWRP EM. In general, these performed poorly under a number of criteria (not just cost) including environmental and ecology. Desalination produces a large volume of residuals which can be toxic to receiving environments. A conventional treatment process might result in 5% residuals, whereas with desalination options, for every one litre of water produced two litres of brine are produced (200% residuals). Therefore, even operating at a baseline throughput a desalination plant would produce more residuals than a conventional treatment plant. Due to the environmental designations along the east coast of Ireland, discharge of such residuals is likely to require detailed consenting process and would likely involve construction of long sea intakes and outfalls tunnelled beneath the seabed.

Whilst it falls outside this consultation process, the attached link provides some insight into difficulties with desalination infrastructure during the 2022 UK drought.

<https://www.dailymail.co.uk/news/article-11086901/Thames-Water-emergency-drought-plant-SHUT-costs-run-electricity.html>

<https://www.theguardian.com/environment/2022/aug/04/emergency-water-plant-london-unusable-despite-drought-risk>

13.11 Conclusions on Option Types Feedback

Having carefully reviewed the submissions received on the theme of Option Types, Irish Water considered that more clarity on the project development process should be provided in the RWRP-EM. This change is explained in section 13.11.1 “Clarifications” below. In addition, some of the points made in the submissions will be taken forward in other ways, as explained in section 13.11.2 “Recommendations” below.

13.11.1 Clarifications on Option Types Feedback

The following section of the RWRP-EM has been updated to reflect feedback under the theme of Options Types:

Section 5 - Update to the GDA leakage targets in Section 5.2

Additional text provided in Section 5.3 to provide more detail on;

- Irish Water’s water conservation calculator
- Recommendations from the Water Forums’ research on a Framework for Improving Domestic Water Conservation in Ireland

Additional text provided in Section 5.4 on Source protection measures.

Section 6 - Provision of a new section, Section 6.4 Project Level Summary, which outlines the project development process which includes detailed option design and site selection of additional treated water storage.

Appendix 10 – Updated version of the SDB for the GDA with new leakage targets applied.

13.11.2 Recommendations on Option Types Feedback

As noted in Section 8 Environment theme, drought plans will be developed for each WRZ, and it is planned to provide this detailed in the next iteration of the NWRP.

IW will progress pilot projects to assess the potential outcomes and benefits of rainwater harvesting over the coming years.

Irish Water will share emerging data in relation to groundwater source protection and set up a steering group including the EPA Hydrometrics Team and GSI as part of the development of further studies on existing and potential future groundwater supplies.

14. NIS

In this chapter, we summarise the key references in submissions to issues under the broad theme of “NIS.” Within the overall NIS theme, we identified three sub themes, which we set out in Figure 14.1. We deal with each of these sub-themes in this chapter, setting out first a summary of the relevant mentions in the submissions, followed by our response. The sub-themes are not dealt with in any particular order.

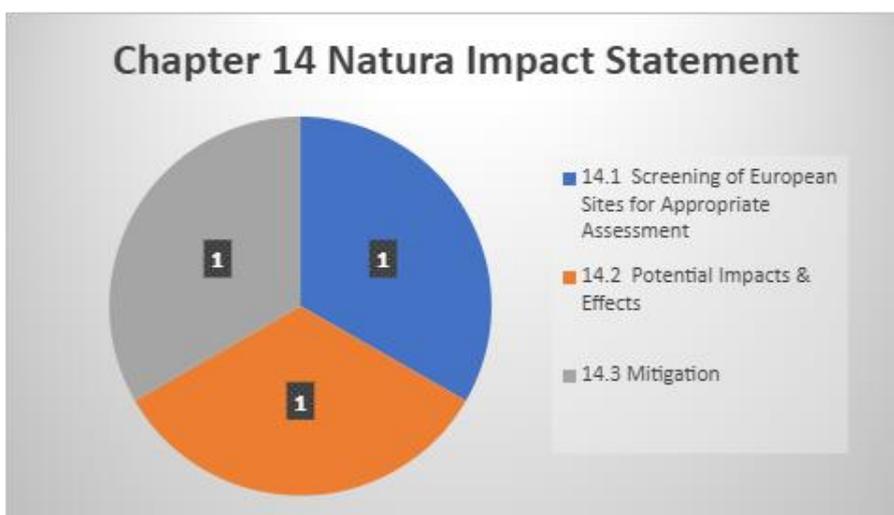


Figure 14.1 NIS

14.1. Screening of European Sites for Appropriate Assessment

14.1.1 Summary of Screening of European Sites for Appropriate Assessment Feedback

In their submission, the Department of Housing, Local Government and Heritage National Parks and Wildlife Services (DHLGH - NPWS) referred to an Appropriate Assessment (AA) screening report, dated Summer 2021 and prepared by Jacobs, that was included in Appendix A of the Natura Impact Statement (NIS). They noted that this assessment does not screen out the impacts of the Preferred Approaches (PAs) on Natura 2000 sites because not all PAs were fixed at the time the AA screening was undertaken.

14.1.2 Response to Screening of European Sites for Appropriate Assessment Feedback

In Summer 2021, Irish Water undertook Stage 1 of the AA process and prepared an AA Screening Report. The AA Screening Report confirmed that a Natura Impact Statement (NIS) for the RWRP-EM was required, and an NIS was prepared and published for consultation in December 2021. No Preferred

Approaches were screened out at this stage as the desktop assessments were not yet complete.

14.2. Potential Impacts and Effects

14.2.1 Summary of Potential Impacts and Effects Feedback

DHLGH - NPWS considered that hydrological / hydrogeological effects of water abstraction are key effects of this plan. They referred to Table 5.1 in the Natura Impact Statement (NIS) which lists broad categories of potential impacts on European sites and outlines potential effect pathways. DHLGH - NPWS noted that it does not mention effects due to water abstraction which is an operational phase impact. However, they outlined that in Appendix D (Adverse Effect on Site Integrity Tables) of the NIS, the impact 'Habitat degradation – changes in water quality (hydrological changes)' is listed as an operational impact and is linked to abstraction. DHLGH - NPWS advised that the tables in Section 6 of the RWRP-EM should clearly specify whether 'Habitat Degradation' is a construction or operational impact and whether it relates to water abstraction or not. They noted that the level of detail in Appendix D forms the crux of Appropriate Assessment and should be included in the NIS.

In relation to all Preferred Approaches (PAs) that were considered for their potential for Likely Significant Effects (LSEs) in Appendix C of the NIS, DHLGH - NPWS advised providing a clear explanation on how water table and water availability effects were ruled in or out. They noted that the NIS stated that these effects are only likely to be significant where the boundary of the scheme extends within the same ground or surface water catchment as the European site. In turn, DHLGH - NPWS requested clarification on how the catchments of qualifying interests of European sites and the zone of influence of the abstraction were defined particularly in relation to groundwater abstractions.

DHLGH – NPWS referenced the NIS where it stated that hydrological and hydrogeological impacts were assessed using the method outlined in Section 2.6.5 using typical groundwater flow distances provided for various aquifer category types. They recommended that Irish Water include more recent scientific information to underpin screening for LSEs in relation to operational water abstraction impacts on groundwater-dependant terrestrial ecosystems (GWDTE) such as the Environmental Protection Agency EcoMetrics Project.

DHLGH – NPWS referred to a specific example, the Ballyclogh Option (SA1-27) in Study Area 1 which lies within 5km of Buckroneys-Brittans Dunes and Fen SAC (Site Code 000729), a site with GWDTE Qualifying Interest (QI) dune and fen habitats. They noted that Ballyclogh will see an increase in groundwater

abstraction and that the AA screening in Appendix C states that no operational impacts are predicted. DHLGH – NPWS sought clarity on how water table and availability effects were ruled out, particularly concerning GWDTE QI habitats such as bogs, fens, dunes and turloughs. They further noted that SA1-27 is not included Section 6.2 and that there was no appraisal of LSE leading to potential Adverse Effect on Site Integrity (AESI), despite Appendix C indicating its potential for LSE.

DHLGH – NPWS referred to the sustainable abstraction limits (UKTAG) applied in the RWRP-EM. DHLGH – NPWS noted that this method is still an insufficient evidence base on which to propose bespoke e-flow standards in an Irish context at the current time and they questioned whether this method is adequate to screen out operational water availability effects on SAC Rivers for LSE and AESI.

DHLGH – NPWS highlighted that sustainable abstraction standards for lakes are similarly set at 5% and 10% of Q50 and asked for information on whether this method was used to screen out impacts of PAs and if so, what the scientific rationale behind this approach was.

DHLGH – NPWS noted that in relation to surface and groundwater abstraction in Table 4.2 potential LSEs from the management option types arising from the RWRP-EM only refers to new and increased water abstraction. DHLGH – NPWS also noted that the plan must be screened with an appropriate degree of caution and the precautionary principle applied.

DHLGH – NPWS advised that existing surface and groundwater abstraction is a key in-combination effect of the plan and that the effect of existing abstraction must be assessed in-combination with increased and new abstractions.

DHLGH – NPWS referred to Section 8 of the NIS which stated that the potential for in-combination effects on groundwater bodies has been considered in the hydrogeological assessment of the groundwater abstractions by AWN Consulting. They highlighted that the assessment which considered the likely cumulative effects of groundwater abstractions on meeting Water Framework Directive (WFD) objectives concluded that all groundwater abstractions have a good quantitative status, with a low likelihood of affecting their WFD objectives.

They added that no interaction was identified with existing Irish Water abstractions and that cumulative effects with either other planned abstractions or existing source protection areas was unlikely.

DHLGH – NPWS advised that as the AWN Consulting assessment is relied on in reaching a conclusion of no cumulative effects with other groundwater

abstractions, it should be summarised in the NIS and a copy of the report included in an appendix. DHLGH - NPWS added that meeting the WFD objectives does not necessarily mean that existing abstraction combined with future abstraction will ensure that adverse effects on the integrity of European sites will be avoided.

14.2.2 Response to Potential Impacts and Effects Feedback

Table 5.1 in the RWRP-EM NIS has been updated to include 'Habitat degradation – hydrological/ hydrogeological changes,' due to water abstraction as an operational effect. It has also been updated to identify what effects occur during operation and construction. Operational effects of water abstraction are also considered under water table/availability in Table 5.1. This will also be carried through to the other three RWRP NISs.

All future RWRP NISs (South-West, North-West and South-East) will include further information from Appendices C and D in Section 6. This will include whether impacts in relation to 'Habitat Degradation' are a construction or operational impact, and if it relates to water abstraction or not. To note, Appendix D is part of the NIS.

Where relevant, additional information with justification for ruling out operational impacts will be included in the LSE tables (Appendix C) for all future RWRP NISs.

With regards to assessing the impacts of groundwater abstractions, the domain size associated with these flow systems are considered to be 5km in Karstic aquifers, 3km in Productive Fissured bedrock, 1km in Gravel aquifers and 600m in Poorly Productive aquifers. These are the potential domains that will be used when assessing the potential impacts of groundwater abstractions on European Designated sites and/or surface waters within European sites. As this is a conservative consideration, the buffers act as a guide only. They may flag sites within a 'buffer' for further monitoring etc., but where appropriate are overruled by site specific data. Where available, site-specific data (pump test results, borehole construction information, geological constraints etc.) can be used for sites within a 'buffer' to suggest no direct linkage between abstraction and GWDTE.

In relation to qualifying interests, where specific information was available (e.g., detailed conservation objective mapping etc.) this was used in conjunction with Zone of Contribution data from hydrologists to inform the assessment. Where detailed information was lacking, a precautionary approach was taken, and potential impacts considered, and mitigation provided. The text in Section 2.6.5 of the RWRP-EM has been updated to further clarify these assessments.

In relation to Option SA1-27, a score update has been made. This option was initially given a B01 score of -1 at Fine Screening, but subsequently it was downgraded to a score of 0 due to lack of LSEs based on the assessment undertaken as part of the NIS. The Buckroney-Brittias Dunes and Fen SAC is located 4.5km from the proposed groundwater abstraction in option SA1-27. This groundwater abstraction is within a poorly productive bedrock type aquifer, meaning once it is over 600m from a European site, operational impacts can usually be ruled out, hence, impacts on the SAC were ruled out as there was no possible hydrological link. This score change had not been updated in the NIS prior to consultation, but it has been updated since. As there are no LSEs and the option has a 0 score, the option did not need to be assessed or included in Section 6.2, which follows the process outlined in Section 5.2.

The RWRP-EM has been prepared using the best available information at the time of writing and as appropriate at a plan level. Environmental considerations including biodiversity are taken into account at the earliest stage and are included in the options assessment process adopted in the Framework Plan and applied in the RWRP-EM.

It should be noted that assessments, solutions, and Preferred Approaches in the RWRP-EM are at a Plan Level, where conservative estimates for the purposes of the plan are applied. Environmental impacts and costing of projects are further reviewed at Project Level. No statutory consent or funding consent is conferred by inclusion in the RWRP-EM. Any projects that are progressed following the NWRP will require various individual environmental assessments in support of planning applications or in support of licencing applications. These site-specific assessments will include the use of, inter alia, the EPA's EcoMetrics Project information. Any such applications will also be subject to public consultation.

DHLGH-NPWS noted that in Table 4.2 - Potential LSEs, management option types arising from the RWRP-EM only refer to new and increased water abstraction in relation to surface and groundwater abstraction. Irish Water confirms, and as outlined above, all Preferred Approaches will be subject to site specific assessments as they move to project stage, including AA as required. It should be noted that the new abstraction licensing regime, which is imminent, will require all existing abstractions above 2,000m³ and all existing abstractions which are deemed "significant" to apply for a licence. Site specific assessments, including impact on biodiversity will form part of this consent process.

DHLGH-NPWS has queried the sustainable abstraction limits used in the RWRP-EM. Water Framework Directive (WFD) objectives have been considered in the RWRP-EM through a sustainable abstraction risk review. In the absence of Irish specific guidance, Irish Water has used the [internationally recognized standard], UK Technical Advisory Group WFD guidance on

baseflows. When Ireland-specific standards come into place, we will update our environmental risk assessments as part of the next iteration of the NWRP. The application of these conservative abstraction standards ensures that any new or increased abstractions from rivers are likely to support conservation objectives for the most sensitive environmental sites. Through the abstraction legislation, process abstractions will have to go through the AA process which will require detailed site-specific information. This process will be governed by the EPA.

Existing abstractions are considered in the cumulative assessment undertaken by Irish Water of their abstractions and proposed new abstractions. The AWN report is a methodology document setting out the process for the groundwater assessment and cumulative assessments rather than an assessment itself and an overview of the methodology is set out in Appendix C of the Framework Plan. To note, the potential in-combination effects from surface and groundwater abstraction on European sites, are considered in the in-combination assessment undertaken in the NIS (Section 7 and Appendix E). As noted in Section 6.4 of the RWRP-EM, yield assessments will be carried out at project level prior to the development of any new source and outputs from the hydrological and hydrogeological assessments will be a key factor in the determination of the level of environmental assessments required, as these will provide more information on the boundary of any potential environmental impacts.

14.3 Mitigation

14.3.1 Summary of Mitigation Feedback

In their submission, the Department of Housing, Local Government and Heritage National Park and Wildlife Services (DHLGH-NPWS) welcomed the removal of options with potential for significant impacts on the environment, including options that could result in Adverse Effects to Site Integrity (AESI) from Coarse and Fine Level Project Screening. DHLGH-NPWS specifically welcomed the plan to discontinue abstraction from several Special Areas of Conservations (SACs) with sensitive and threatened water-dependant Qualifying Interest species and habitats.

DHLGH-NPWS referred to the scale of water being abstracted, which has potential hydrological and hydrogeological impacts on multiple of these sites, and for which a high level of definition and details of the various aspects and components of the plan exist. In this regard, DHLGH-NPWS raised concerns about the level of detail provided in relation to further assessment and data to inform potential impacts, to rule out adverse effects on site integrity.

They stated that a commitment must be made to establish eco-hydrological connections, through field-based monitoring for specified sites that may be sensitive to abstraction. They added that conceptual and water balance models must be developed for sensitive habitats in order to understand their water requirements and resilience to changes that may be incurred by water abstraction pressures.

Furthermore, DHLGH-NPWS advised that the 'Use Less' options included in the Appropriate Assessment screening report in Appendix A could be included as mitigation in the Natura Impact Statement, where necessary and appropriate. They outlined the measures which include:

- Use of water efficient products and processes in new and refurbished housing developments and working with building standards to ensure that water efficiency measures are included in standards regulations as mandatory.
- Encouraging uptake of water efficiency measures, such as more efficient appliances, repairing leaks, and using water audits.
- Actively pursuing business customers and industry for partnerships that involve water efficiency goals.
- Investigating how to use water within Irish Water's existing assets more efficiently through improved treatment processes and recycling effluent water for appropriate uses.
- The recycling of treated wastewater or grey water provides a critical supplementary water source for non-potable activities therefore alleviating stress on primary water sources. Grey water refers to the water used in baths, sinks, washing machines, and other kitchen appliances.
- In periods of drought, when potable water is in short supply, grey water can be a potential alternative water source for activities such as agricultural and landscape irrigation, industrial process, and toilet flushing.
- Domestic water metering can build a better understanding of water use and network pressures to improve water efficiency and therefore water security and identify leaks. Water meters with advanced analytics to undertake flow balances across the network can allow Irish Water to gain a better understanding of the whole network from the abstraction point to the customers.

DHLGH-NPWS noted that Objective 5 of Irish Water's National Biodiversity Action Plan is to promote the use of nature-based solutions for water protection and wastewater treatment. DHLGH-NPWS considers that wider catchment management measures, such as collaboration with external stakeholders, landowners, and community groups, should be considered as mitigation. DHLGH-NPWS advised that the performance indicator 'environmental

monitoring of the implementation of the plan' must be provided for in the plan which must monitor the effects of the plan implementation on the environment.

14.3.2 Response to Mitigation Feedback

The methodology has been designed such that sustainable abstraction is at the core of the option selection process. As mentioned above, environmental considerations including biodiversity are taken into account at the earliest stage and are included in the options assessment process adopted in the Framework Plan and applied in the RWRP-EM. Options that are identified as not likely to meet estimated sustainable abstraction parameters based on a conservative plan-level assessment are removed at Coarse Screening.

As stated in section 13.2.2 above, the assessments undertaken in the NIS are at a Plan level. All Preferred Approaches identified will be subject to additional site specific assessments and modelling. The assessment undertaken at plan level with the best available information is considered appropriate to be able to rule out AESI at this stage, the requirement for further assessment at project level is standard and would identify any potential impacts at project level and provide appropriate design or mitigation at project level to ensure AESI are avoided.

No project level assessment would rely solely on desk-based information as outlined in the NIS in Section 6.3.3.2. It is stated that "Where preferred approach options are within or hydrologically/hydrogeologically linked to European sites, detailed surveys of habitats within the affected area will be undertaken to locate and avoid sensitive habitats to ensure there is no loss of QI Annex I habitats or Annex II species." Section 6.3.5 also states that "this list of assessments is non-exhaustive and must be reviewed at the project stage, taking into account project-specific survey information or studies." This text has been updated in the RWRP-EM NIS and will be carried through the other RWRP NISs. As mentioned above, site specific data will be collated at project level, including use of the EcoMetrics Project information.

Mitigation measures at the plan level have been included in Section 6.3.3.2 of the RWRP-EM NIS and in the NISs for each of the regional plans. The "Use Less" option has been added to these mitigation measures.

Objectives of the Irish Water Biodiversity Action Plan will also be implemented where appropriate. This has been added to the mitigation measures in Section 6.3.3.2.

It should be noted that at project level, it would need to be assessed that these measures are appropriate and would be effective.

14.4 Conclusions on NIS Feedback

Having carefully reviewed the submissions received on the theme of Natura Impact Statement, Irish Water considered that more clarity on certain points should be provided in the Natura Impact Statement. These proposed changes are explained in section 14.4.1 regarding “Clarifications” below.

14.4.1 Clarifications on NIS Feedback

The following section of the Natura Impact Statement has been updated to reflect feedback under the theme of Outside the Scope:

Section 2 - Text updates to Section 2.6.5 in the NIS on abstractions following feedback from the DHLGH-NPWS.

Section 5 - Updates made to Table 5.1 in the NIS on construction and operational impacts resulting in habitat degradation – hydrological / hydrogeological changes now included following recommendations from the DHLGH-NPWS.

Section 6 -

- Updates to Section 6 in NIS on whether habitat degradation impacts are related to construction or operation and if related to a surface or groundwater abstraction following recommendations from the DHLGH-NPWS.
- Text updates to Section 6.3.3.2 in NIS about future project-level surveys of European sites with a hydrological/hydrogeological link to Preferred Approach options following feedback from the DHLGH-NPWS.
- Addition of the “Use Less” mitigation measures in Section 6.3.3.2 following feedback from the DHLGH-NPWS.
- SA1-27 score updated following feedback from the DHLGH-NPWS.
- Additional information on ruling out operational impacts from abstractions included in subsequent NISs following recommendations from the DHLGH-NPWS.

- Reference has been made to the Irish Water Biodiversity Action Plan in the RWRP-EM following recommendation from the DHLGH-NPWS.

15 Water Resource Planning

In this chapter, we summarise the key references in submissions to issues under the broad theme of “Water Resources Planning.” Within the overall Water Resources Planning theme, we identified six sub themes, which we set out in Figure 15.1. We deal with each of these sub-themes in this chapter, setting out first a summary of the relevant mentions in the submissions, followed by our response. The sub-themes are not dealt with in any particular order.

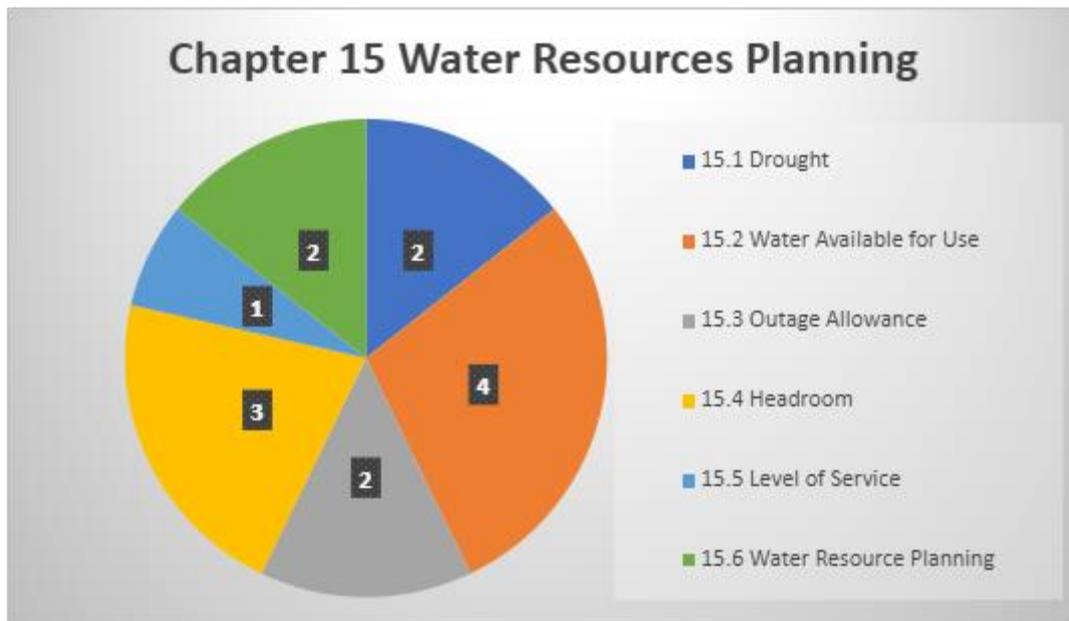


Figure 15.1 Water Resource Planning

15.1 Drought

15.1.1 Summary of Drought Feedback

Kildare Chamber noted that increased periods of drought will make sourcing high quality water a greater challenge for Irish Water. They also welcomed Irish Water’s commitment to working with the Environmental Protection Agency (EPA) to develop and investigate systems to better understand the sustainability of the regions groundwater sources.

An Forum Uisce (AFU) commented that there is poor communication around water scarcity and droughts in Ireland. They recommended that Irish Water improve their communications and education strategies to increase awareness of water scarcity and drought in Ireland as a proactive measure rather than in crises management.

AFU outlined the request from the European Commission stating that Irish Water should develop Drought Management Plans as part of the NWRP and recommended adding an urgent action in the RWRPs to develop these Drought Management Plans. AFU further noted that these plans should be made publicly available and indicate how much capacity there is throughout the region during extended drought periods.

15.1.2 Response to Drought Feedback

The objective of the Preferred Approach for the RWPR -EM is to provide the 1 in 50 level of service in a DYCP. Therefore, we are proposing to move away from vulnerable sources which we struggle to maintain supply from to more resilient sources of supplies which will be less vulnerable to dry weather events. This will reduce the impact to customers during the droughts and periods of dry weather.

Irish Water has conducted an extensive media campaign nationally, to inform customers of the impact the dry weather was having on supplies and to encourage consumers to conserve water throughout the summer. This media campaign commenced in June 2022 and continued until early September.

Drought plans will be developed for each WRZ, and it is planned to provide this detail in the next iteration of the NWRP. These drought plans will be developed in line with the abstraction legislation and note measures required for different water levels at our sources. The drought plans will be unique for each supply.

15.2 Water Available for Use

15.2.1 Summary of Water Available for Use Feedback

Ibec noted that Irish Water's projections of WAFU against likely future annual or peak period demand suggest a substantial and growing deficit when benchmarked to the internationally accepted 1-in-50-year standard. They stated that less than half of the WRZs meet this threshold, which could imply supply risks for over two million domestic users, and thousands of businesses in the Easter and Midlands region, particularly Study Areas 4 Mullingar and Study Area 9 GDA.

Kennedy Analysis (KA) stated that deployment problems within the Greater Dublin Area (GDA) water supply have historically been a major contributing factor to Dublin's water shortages. They added that infrastructure problems and deployment limitations should not be applied in the GDA for the purposes of calculating water available for use (WAFU). They advised that infrastructure

issues should be addressed first and should not contribute to the need for the development of a new raw water source.

15.2.2 Response to Water Available for Use Feedback

The RWRP-EM notes that 75% of the supplies do not meet a 1 in 50-year Level of Service (LoS) in normal weather conditions. The Preferred Approaches determined in the RWRP-EM will resolve issues across the supplies, however, due to the current condition of our supplies, it will take many capital investment cycles to deliver the preferred approach across all supplies.

To ensure we can support growth while transforming our supplies, we also include interim measures within our RWRP-EM. Interim measures will be progressed to support growth as part of our current regulated investment cycle. However, it should be noted that such measures do not improve Levels of Service, they prevent current levels from deteriorating further.

Water supply to the Greater Dublin Area (which includes parts of Kildare, Meath, and Wicklow) is provided by a number of water sources and treatment plants that form part of an interconnected water resource zone. As these forms a complex network, the water available for use has been determined using a water resource planning tool known as Aquator. The Aquator model enables us to assess the deployable output for the combined supplies for all weather conditions (normal, dry, drought and winter), for an appropriate level of service. The model demonstrates that the supply to the Dublin area in the dry year critical period providing a 1 in 50 level of service is limited by the raw water supplies. Therefore the water available for use for the GDA is limited by the volume of raw water available in a 1 in 50 year dry weather event. This means that the water available for use is not limited by infrastructure constraints as suggested in the submission from KA.

A 5% outage allowance has been applied to the yield estimated by the Aquator model to determine the water available for use. More details of the Aquator model can be found in Section 3 of the Framework Plan.

The water available for use for the GDA is limited by the volume of raw water available in a 1 in 50 year dry weather event. Therefore the water available for use is not limited by the network or the WTP output. Therefore addressing infrastructural issues in the WRZ will not increase the water available for use. A new sustainable source of supply is required to increase the water available for use.

An outage allowance is applied to the WAFU to allow for unplanned and planned outages in the network which maybe ongoing during a planning scenario event such as the DYCP. In a typical WRZ it is never assumed that all plants can run at sustainable output all of the time. Output will need to be

reduced for servicing and upgrading components of the WTPs for example replacing filter beds that have come to end of life or complete replacement of WTPs. These upgrade works can extend for periods of months or years depending on the work involved. For example when the Vartry WTP upgrade works were being carried out, output at the plant had to reduce by 30MI/d for 10 months from Feb 2021 to Nov 2021. If we had experienced a dry weather event in 2021 that 30MI/d would not have been available for supply and therefore an outage allowance is required to be applied to the estimated WAFU. Box 3 of Appendix 9 of the RWRP EM provides more examples of the requirement for outage allowance.

15.3 Outage Allowance

15.3.1 Summary of Outage Allowance Feedback

Kennedy Analysis (KA) argued that in previous Supply Demand Balances for the GDA the “outage” provision was reported within the “demand” projections in a transparent manner, with the exact size of the outage provision in Mld stated for every year within the projection table. KA claimed that Irish Water now provides for “outage” on the supply side, that it is deducted from Water Available For Use (WAFU). KA argued this as unacceptable as the outage provision is a key figure and that to redact it is opaque and does not allow for proper scrutiny.

KA highlighted that Water Treatment Plants (WTPs) do not operate at 24-hour output all of the time but can do so when required. KA claimed that to assume that WTPs can operate at 24-hour output for the purposes of this type of water projection is entirely appropriate for the purposes of the SDB and in line with international best practice. KA claimed that in all previous projections for the Shannon pipeline project, 24-hour output was used to calculate WAFU. KA further noted that the need for treatment modules to be taken out of commission and the risk of failure at WTPs is provided for through the “outage” provision. KA argued that the WAFU calculation in Irish Water’s latest projections for the GDA assume that in the dry year critical period scenario (DYCP) Dublin’s WTPs will operate at just 22-hour output and that the effect of using 22-hour output is to introduce an additional 8% outage provision ($2\text{hrs} / 24\text{hrs} = 8\%$).

KA claimed that Irish Water already includes a significant outage provision in its SDB Projections and to include an outage provision and to assume that WTPs will never operate at greater than 22-hour output during the DYCP is not realistic and amounts to double counting of outage. KA argued that this inappropriately inflates the projected 2044 water deficit for the GDA by over 57Mld. KA concluded that Irish Water’s use of 22-hour output as well as an outage provision is inappropriate, not in line with international best practice and must be addressed. They noted if Irish Water’s projected 2044 deficit for the

GDA is 194Mld and claimed if the outage and output error is corrected then the 2044 deficit is reduced to 137Mld.

The CRU noted that it would be useful to see how the Outage rate has been derived and how the utilisation factor has been dealt with.

15.3.2 Response to Outage Allowance Feedback

This consultation is on the draft RWRP EM, and therefore is not a consultation on previous information that may have been published as part of previous project specific consultations.

An outage allowance is applied to the WAFU to allow for unplanned and planned outages in the network which maybe ongoing during a planning scenario event such as the DYCP. In a typical WRZ it is never assumed that all plants can run at sustainable output all of the time. Output will need to be reduced for servicing and upgrading components of the WTPs for example replacing filter beds that have come to end of life or complete replacement of WTPs. These upgrade works can extend for periods of months or years depending on the work involved. For example when the Vartry WTP upgrade works were being carried out, output at the plant had to reduce by 30MI/d for 10 months from Feb 2021 to Nov 2021. If we had experienced a dry weather event in 2021 that 30MI/d would not have been available for supply and therefore an outage allowance is required to be applied to the estimated WAFU. Box 3 of Appendix 9 of the RWRP EM provides more examples of the requirement for outage allowance.

The water available for use for the GDA is limited by the volume of raw water available in a 1 in 50 year dry weather event. Therefore the water available for use is not limited by the WTP output. The WTP output is only considered the limiting factor in the water available for use when it is less than the 1 in 50 yield from the source. It is not the limiting factor in the determination of the water available for use in the GDA.

The maximum throughput of our WTPs, the 24-hour capacity, is the maximum volume of water that can be produced based on the hydraulics of the plant and is the maximum volume of water we can treat during a period of peak need. This output cannot typically be maintained for periods longer than 24 - 48 hours without potentially impacting output water quality. Running the plant at 24-hour output capacity results in the suspension of the backwash process, which is a critical preventive maintenance process. The suspension of this process leads to water quality issues and can result in a reduction of the hydraulic capacity of the plant and damage to filter media over time. The period of time full output can be maintained is dependent on the treatment processes and the raw water quality.

Therefore, when considering the sustainable treatment capacity element of the supply assessment we need to limit the WTP output to the volume of water the WTP can sustainably treat while maintaining the required water quality standards.

When we state 20-hour production in NYAA, we are referring to the rate of throughput of a water treatment plant, i.e., the flowrate through the plant is 20 hours/24 hours. However, it is expected that the plant will be operating over a 24-hour period.

In our standard designs we optimise a throughput of 20/24 hours in normal conditions. This is standard design and allows WTPs to increase output above optimum operational to recover storage levels after a planned or unplanned outage.

In dry weather and drought conditions, water sources are the limiting factor in water available for use, as if there is no water in the source it does not matter whether a water treatment plant is operated for 22/24 hours or 24/24 hours, the WAFU will be limited by supply availability.

Within the NWRP we allow the Water Treatment Plants to operate 24/24 hours during Winter Critical Period, when source yield is not an issue. It would be inappropriate to not consider an outage allowance during drought periods, as these periods can last for many months. Planned and unplanned outages can occur in the normal way during these periods. In fact, often large-scale capital maintenance is planned for summer periods when schools are shut and manufacturing may be reduced.

15.4 Headroom

15.4.1 Summary of Headroom Feedback

Kennedy Analysis (KA) commented that Irish Water has significantly increased the safety buffers such as headroom and peaking available to the Greater Dublin Area which now amount to 55%, in comparison to 35% in Irish Water's 2016 report, when measured on a like-for-like basis. KA argued that this is above international best practice and has been introduced in an opaque way.

Kennedy Analysis claimed that peaking is being applied to headroom which results in an inappropriately inflated headroom provision. KA claimed that in Irish Water's projections, peaking of 13%, for the GDA "dry year critical period" scenario is being inappropriately applied to total demand which includes headroom and results in an inappropriately inflated headroom provision.

Kennedy Analysis went on to note that both they and the CRU flagged this issue in their submissions on the NWRP framework consultation and that Irish Water's response document did not, in their opinion, address the point in any detail.

The CRU noted that the draft RWRP-EM provides little information on the modelling and data used to calculate target headroom.

15.4.2 Response to Headroom Feedback

The methodology Irish Water used in for developing our supply demand balance is set out within the NWRP Framework Plan. Within the Framework document, for this iteration of the NWRP, we have set a 1 in 50 Level of Service standard for all of our supplies. This equates to a 2% probability of failure or the reliability we require from our supply sources. In practical terms a large abstraction from a small supply source would have a lower level of service than a small abstraction from a large supply source. In most European Countries, and UK utilities, the Level of Service ranges from 1 in 100 year to 1 in 500 year for large urban supplies. Therefore Irish Waters initial target to improve the resilience of all of our supplies is not inflated.

The public consultation is not on a specific project, nor does it include a critique of projections carried out as part of other consultations. In the RWRP-EM there are only two safety factors included in our supply demand balance, an outage allowance applied to the deployable output of our supplies (Water Available for Use) and a Headroom factor applied to demand to account for uncertainty in forecasts.

For the Greater Dublin Area, the outage allowance amounts to 5% of the Deployable output and a headroom of 8% applies to the demand side calculations.

The NWRP and the RWRP EM clearly define how headroom is applied to the SDB in Figure 2.7 of the framework plan and Figure 3.3 of the RWRP EM headroom is a key component of total demand. The estimated Normal Year Average Demand is estimated total average demand therefore it includes headroom. NYAA represents the estimated normal year average demand that we could be expected to provide supply for. It is critical that peaking is applied to the estimated average demand that IW could be expected to provide supply for. It is industry practice across all engineering projects to allow for uncertainties.

The methodology for determining headroom is set out in Appendix I of the Framework Plan. Appendix I also provides a breakdown of how headroom for the GDA was calculated.

The submission from KA on this topic frames peak water use as a safety buffer which it is not. Headroom is the safety buffer peaking is a normal occurrence in all water supplies, in the same way as it is in energy supply. Peaks happen on a daily basis, with more water used in the morning and evening than at night. In some supplies with manufacturing, there can be a seasonal profile. In high tourist areas there can be peaks for an entire summer. Demand in most water supplies peaks during drought periods. Peaking is applied to the total estimated average demand. It is critical that peaking is applied to the total estimated

average demand that IW could be expected to provide supply for. It is industry practice across all engineering projects to allow for uncertainties.

As water is essential for public health, we must ensure continuity of supply and must therefore design our supplies to withstand peak periods, such as those that occur between night and day, we utilise network storage of treated water. Peaking rated is observed above total estimated average demand, as it is an event that occurs as a matter of course and can be anticipated. For example, an energy transmission company would observe a peak in demand for electricity between 5pm and 7pm. They would report that peak as a value above the average demand. They would not break down how much energy was lost to through the transmission network and then recalculate the peak based on an estimate of what may be being consumed.

It is exactly the same for water supply. For example, In the GDA we can observe that on an average day 570 MI/d was recorded flowing through our meters while on a peak day that volume can increase to 630 MI/d. As leakage is reduced over time, peaking can become more pronounced.

In response to the submission from KA noting that Ireland's water problems are solely due to poor infrastructure is incorrect. While we acknowledge significant infrastructural upgrades are required, for x% of our supplies we have determined that the water for available for use is limited by the yields of the source. For example, the supply to the GDA is limited by the volume of raw water available in a 1 in 50 year dry weather event. The water shortages during 2018 summer drought were not related to infrastructure issues, instead they were a direct result of falling water levels at our raw water sources including our aquifers sources. The water available for use in the GDA WRZ is not limited by the network or the WTP output. Therefore infrastructural upgrades will not reduce the deficit at this WRZ and an additional source of supply is required.

Currently 53% of the network in the GDA is less than 40 years old, whilst 78% of the network is less than 60 years old. Only 1% of the distribution network is over 100 years old. Some of these pipes that are older than 100 years old perform well, do not burst frequently and have low levels of leakage compared to the overall distribution network.

Water mains replacement is an integral part of our leakage reduction programme as summarised in in section 7.3.1 of the Framework Plan.

A submission from KA noted that the current watermains renewal rates and extrapolated that watermains would only be replaced every 333 years on the basis of the current rates of renewal. This is not the case, watermain renewal rates will be increased as our understanding of the distribution networks increases, and our funding of the National Leakage Reduction Programme is increased as part of each investment cycle.

At no stage has Irish Water said that it has a cap on the amount of watermains rehabilitation that will be carried out. The watermains rehabilitation aspect of our leakage reduction plan, will be based on intelligence and outcome. Renewal rates will also increase as new innovation in no-dig methods develops over time.

As set out in the draft RWRP–EM our current leakage targets for the Eastern and Midlands region, are 158MI/day across the region, which will reduce leakage to 22% of demand across the region. However additional infrastructural solutions alongside these leakage reductions are also required to provide the target Level of Service.

The outcome of the leakage reduction programme is built into the supply demand balance calculations for the GDA; therefore, the forecast savings are accounted for in the Regional Plan.

It is also incorrect to say that watermains replacement is the only activity that addresses background leakage. Leakage best practice clearly shows that pressure management and calm networks is key to preventing new leaks and addressing background leakage .

The methodology Irish Water used in for developing our supply demand balance is set out within the NWRP Framework Plan. Within the Framework document, for this iteration of the NWRP, we have set a 1 in 50 Level of Service standard for all of our supplies. This equates to a 2% probability of failure or the reliability we require from our supply sources. In practical terms a large abstraction from a small supply source would have a lower level of service than a small abstraction from a large supply source. In most European Countries, and UK utilities, the Level of Service ranges from 1 in 100 year to 1 in 500 year for large urban supplies. Therefore Irish Waters initial target to improve the resilience of all of our supplies is not inflated.

The public consultation is not on a specific project, nor does it include a critique of projections carried out as part of other consultations. In the RWRP-EM there are only two safety factors included in our supply demand balance, an outage allowance applied to the deployable output of our supplies (Water Available for Use) and a Headroom factor applied to demand to account for uncertainty in forecasts.

For the Greater Dublin Area, the outage allowance amounts to 5% of the Deployable output and a headroom of 8% applies to the demand side calculations.

The NWRP and the RWRP-EM clearly define how headroom is applied to the SDB in Figure 2.7 of the Framework Plan and in Figure 3.3 of the RWRP-EM headroom is a key component of total demand. The estimated Normal Year Average Demand (NYAA) is estimated total average demand therefore it includes headroom. NYAA represents the estimated normal year average demand that we could be expected to provide supply for. It is critical that peaking is applied to the estimated average demand that IW could be expected

to provide supply for. It is industry practice across all engineering projects to allow for uncertainties.

The methodology for determining headroom is set out in Appendix I of the Framework Plan. Appendix I also provides a breakdown of how headroom for the GDA was calculated.

The submission from KA on this topic frames peak water use as a safety buffer which it is not. Headroom is the safety buffer while peaking is a normal occurrence in all water supplies, in the same way as it is in energy supply. Peaks happen on a daily basis, with more water used in the morning and evening than at night. In some supplies with manufacturing, there can be a seasonal profile. In high tourist areas there can be peaks for an entire summer. Demand in most water supplies peaks during drought periods. Peaking is applied to the total estimated average demand. It is critical that peaking is applied to the total estimated average demand that IW could be expected to provide supply for. It is industry practice across all engineering projects to allow for uncertainties.

As water is essential for public health, we must ensure continuity of supply and must therefore design our supplies to withstand peak periods, such as those that occur between night and day, we utilise network storage of treated water. Peaking rated is observed above total estimated average demand, as it is an event that occurs as a matter of course and can be anticipated. For example, an energy transmission company would observe a peak in demand for electricity between 5pm and 7pm. They would report that peak as a value above the average demand. They would not break down how much energy was lost to through the transmission network and then recalculate the peak based on an estimate of what may be being consumed.

It is exactly the same for water supply. For example, In the GDA we can observe that on an average day 570 MI/d was recorded flowing through our meters while on a peak day that volume can increase to 630 MI/d. As leakage is reduced over time, peaking can become more pronounced.

15.5 Level of Service

15.5.1 Summary of Level of Service Feedback

An Forum Uisce acknowledged Irish Water will invest in their human and structural asset base as interim and long-term solutions to improve their Level of Service (LoS). They also suggested that infrastructure, human capacity and communication challenges could be included in the barriers mentioned in p.102

of the draft RWRP-EM report, to highlight the need for these investments and to reduce failure incidents, disruptions of water supply, and ensure a sustainable provision of water.

15.5.2 Response to Level of Service Feedback

The target level of service is required to ensure continuity of supply to our customers in the area during drought periods.

Irish Water acknowledges that investment is required in resources and communication to reduce failure incidents, disruptions of water supply.

Irish Water has undertaken a review of how we respond to incidents across our assets and how we effectively manage and communicate to limit disruptions to our customers. In the past year, Irish Water has been working on 'Project Connect,' which has established organisational structures, designed, and implemented processes and introduced regular reporting and ways of working to ensure a safe clean and secure supply of water for our customers.

The barriers referred to in page 102 of the RWRP-EM are treatment specific barriers used to assess infrastructural issues at our WTPs.

Achieving an appropriate Level of Service across our supplies will be a major undertaking, but it will transform our supplies, ensuring that they are sustainable and resilient to climate change.

15.6 Water Resource Planning

15.6.1 Summary of Water Resource Planning Feedback

Clare County Council's Planning Department, Economic Development Directorate emphasised the interdependence of land use planning with water and wastewater infrastructure and noted that Irish Water must have an appreciation of the role it plays in influencing land use planning and development.

Future Proof Clare noted that a proposal for a new data centre in Ennis is currently in planning. They added that according to the documentation submitted, the peak demand of water usage is up to 1,000,000 litres of water per day which amounts to just less than half of the total domestic water demand for the entire town of Ennis. They argued that Irish Water had no objections or observations to this data centre, besides the standard conditions like the signing of a connection agreement, to follow Irish Water Standards and separating distances.

Future Proof Clare highlighted that in 2021 in the GDA, there were 70 data centres in operation with another additional 45 data centres already under construction or in the planning or post planning stage. They further highlighted that the average data centre uses a lower estimate of 500,000 litres per day which, when multiplied by the 115 datacentres in the GDA, accounts for a minimum fresh, potable water demand of 57.5 Ml/d, (or 10% of the total water supply in the GDA). They noted that this daily average will rise exponentially when the temperature rises above 27 degrees Celsius, which coincides with the time when farmers and growers need water the most for food crops and animals and which must be prioritised above data centres and all other industry. Future Proof Clare detailed how climate breakdown means warmer and drier summers and therefore increased requirements for cooling. They further noted that peak use of water in data centres is currently limited to a small number of days within the calendar year, but these limited days are predicted to rise, which will result in exponentially more water demand.

Future Proof Clare stressed that Irish Water, Local Authorities, and the Irish Government must stipulate that no fresh, potable water from the public mains shall be used for the cooling of data centres. They argued that these developments should be fully self-sufficient in harvesting, storing, and reusing rainwater and ensuring that run-off does not contaminate local aquifers nor pose a risk of flooding. They further noted that data centres must be able to cope with protracted heatwaves which are more likely to occur due to further climate breakdown.

15.6.2 Response to Water Resource Planning Feedback

The Water Services (No. 2) Act, 2013 provides for Ministerial Direction on the form and content of our Water Services Strategic Plan and the Minister has set out the requirement for the plan to address the delivery of six strategic objectives. One of these objectives is to Support Social and Economic Growth.

It is therefore our objective to provide the required water and wastewater services to land zoned for housing or non-domestic development as set out in the NPF, RSES and Local Authority development plans and to provide water supply to any commercial operations which obtain planning permission. Irish Water provides a connection agreement if capacity in the public network is available.

Data centres do use water for cooling purposes, however, to put water use from data centres in context, water usage nationally for data centres is less than 0.2% of overall total demand and, due to the use of advanced technology in this area, we do not envisage this level of demand significantly increasing.

Also, we have strategies in place to mitigate demand from data centres, such as limiting peak flows to the development and ensuring the developer provides adequate private storage to manage needs during periods of peak demand.

Irish Water will review trends in domestic and non-domestic demand over the coming years and assess the impacts of Covid-19 as per our monitoring and feedback process in section 8.3.8 of the Framework Plan. One of the benefits of a more interconnected water supply network will be the flexibility to adapt to changing growth patterns.

15.7 Conclusions on Water Resource Planning Feedback

Having carefully reviewed the submissions received on the theme of Water Resource Planning, Irish Water considered that no updates or further recommendations to the RWRP EM are required.

16 Outside the Scope of the RWRP-EM

In this chapter, we summarise the key references in submissions to issues under the broad theme of “Outside the Scope of the RWRP-EM.” Within the overall Out of Scope theme, we identified five sub themes, which we set out in Figure 16.1. We deal with each of these sub-themes in this chapter, setting out first a summary of the relevant mentions in the submissions, followed by our response. The sub-themes are not dealt with in any particular order.

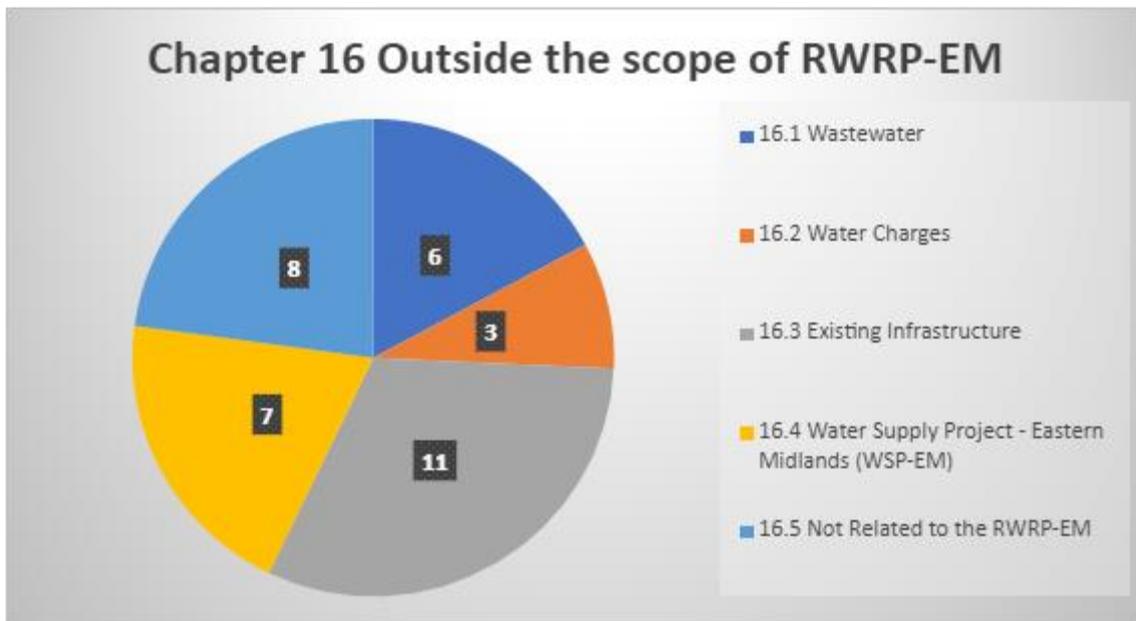


Figure 16.1 Outside the Scope of the RWRP-EM

16.1 Wastewater

16.1.1 Summary of Wastewater Feedback

A stakeholder reported that they had seen coverage on social media and in local newspapers of ongoing wastewater problems in Naas, Newbridge, Kildare, and Enfield. They added that various towns across Ireland are discharging sewage into watercourses.

A stakeholder noted their intention to build a home in Cloughjordan Eco Village. The stakeholder added that they understood all building has been postponed due to lack of investment in water and sewerage in this area by Irish Water. They requested further information as to how this situation could be rectified as part of the Irish Water plans.

Ibec echoed concerns raised on wastewater and stated that Ireland faces EU sanctions for continuing to discharge inadequately treated municipal sewage at

multiple locations, including Dublin Bay. Ibec added that poor water quality in Ireland's estuarine regions can be a serious problem not only for marine life, but also for leisure and tourism activity.

Several Elected Representatives from Clare County Council (CCC) highlighted that Clare's water and wastewater systems are one of the county's biggest challenges. They added that they are keen to have this discussion with Irish Water and for the public and media to be in attendance. CCC's Elected. They further requested that Irish Water meet with them again to discuss other issues, including planning of water and wastewater schemes across the county, as well as issues facing rural communities. They added that 52 areas, including many villages in Clare have no wastewater infrastructure, and voiced disappointment that they are unaware of any plans to develop infrastructure for these communities.

Clare County Council's Planning Department and Economic Development (CCC-PDEDD) Directorate welcomed the Framework Plan and the development of the draft RWRP-EM but stated that there is a critical and more urgent need for a long-term plan for wastewater infrastructure. They requested that Irish Water prioritises the preparation of a similar long-term Wastewater Resource Plan to inform similar regional plans to provide clarity on the long-term programme for investment in wastewater infrastructure. They added that the zoning of residential land, as set out in the Clare County Development Plan (CDP) 2023-2029 and Core Strategy, highlighted the lack of, and need for, a long-term plan for wastewater infrastructure and for alignment between the wastewater infrastructure capital investment programme and the development plan cycle.

CCC-PDEDD noted that in Clare there are 85 settlements identified in the CDP, 50 of which have no public wastewater infrastructure available to them. They argued the need for Irish Water to address the under-investment in wastewater infrastructure across rural areas that has resulted in the disparity whereby rural counties are at a disadvantage to more urbanised counties in terms of the availability of services.

Fergus O'Dowd TD raised concerns in relation to the Drogheda plant being considered as a location for the proposed sludge hub for the Eastern-Midlands region. Deputy O'Dowd added that he has previously contacted Irish Water on the matter to outline various reasons why Drogheda would be a poor choice for the Hub, including the proximity to local schools that lie on the arterial routes to the plant (and the associated road safety dangers of this), the physical location of the plant near Drogheda, and the current malodour issues that would be exacerbated by any additional requirements.

16.1.2 Response to Wastewater Feedback

Although wastewater considerations are outside of the scope of the RWRP-EM the growth figures from the regional assemblies and the local authority development plans are used to inform both the NWRP and the intervention plans for our wastewater treatment plants and networks.

Irish Water acknowledges that both water and wastewater treatment capacity are essential for growth and economic development. Irish Water also has a wastewater asset planning team, which develops short, medium, and long-term projects and programmes to address our wastewater asset base through the Drainage Area Plans programme. This programme targets critical wastewater networks that require a detailed performance assessment and improvement strategy as a result of a number of factors including planned development growth, reported flooding issues and poor environmental performance.

Significant funding will continue to be required to transform our wastewater treatment facilities and networks through the regulated capital investment planning process.

We review emerging contaminants as part of the Drinking Water Safety Plan approach. Therefore, descaling chemicals and emerging contaminants are considered in that context.

It should be noted that agglomerations without an existing public sewer are outside the remit of Irish Water. As such, Irish Water cannot engage with the members of Clare County Council on the areas mentioned in Clare that currently do not have public wastewater infrastructure.

Irish Water regularly engages with members of Clare County Council through quarterly Councillor Clinics that are held in person and online. A dedicated 'Local Representative Support Desk' is also available Monday to Friday and members can log any queries they have relating to water, or wastewater services there.

Every wastewater treatment project is fully considered for environmental assessment and requires consent from both the planning authorities and the EPA before it can operate. The National Wastewater Sludge Management Plan sets out a nationwide standardised approach to ensure that treated wastewater sludge across the country is effectively managed, stored, transported, and re-used or disposed of in a sustainable way, to the benefit of the public and the environment we all live in.

All comments received on wastewater treatment will be shared with the relevant Irish Water team for their review.

16.2 Water Charges

16.2.1 Summary of Water Charges Feedback

One stakeholder outlined their awareness of political opposition to water fees. They voiced the opinion that the public should contribute financially towards the cost of replacing old pipelines, suggesting a contribution in the region of €100 per year.

A stakeholder expressed their opposition to the Shannon Pipeline project and suggested introducing water charges to prevent water wastage. In addition, they advised using the money saved to address leakage issues.

A stakeholder supported the introduction of water metres and noted it as disappointing that it is not a resource that is paid for by the general public. The stakeholder highlighted that other European Countries charge their citizens and it is accepted.

16.2.2 Response to Water Charges Feedback

Domestic water charges are a matter of Government policy.

16.3 Existing Infrastructure

16.3.1 Summary of Existing Infrastructure Feedback

One stakeholder voiced their frustration at long-running problems with drinking water and wastewater problems in the heavily populated areas of North Kildare and called for works to resolve these problems as soon as possible.

Kennedy Analysis (KA) argued that Ireland's water problems are not due to a shortage of water, but instead are due to poor infrastructure and neglected water pipes and argued that problems with infrastructure have been the root cause of every water outage or shortage in Dublin's recent history, from the harsh winter of 2010 to the drought of 2018.

KA noted that mains bursts cause unexpected water outages and an unreliable water supply with old, ageing water pipes that cannot withstand the continued effects of cold snaps and dry spells. KA commented that to continue to neglect pipes and pumping more water into the supply system is ineffectual. They highlighted that the life expectancy of water pipes is around 80-100 years and recommended that an appropriate proportion of the pipes should be replaced every year. KA noted that some of Ireland's water pipes are over 160 years but

are replaced by Irish Water at a rate of 0.3% per year meaning it could be another 333 years before some of Ireland's pipes are replaced. KA noted that replacing water pipes is inconvenient and disruptive, but necessary, and commented that to date Dublin has avoided updating water pipes due to high water availability. They noted that increasing volumes of water have been pumped into the supply system to offset the increasing volumes of leakage, and further noted that pipes have now become so unreliable that mains bursts and water outages are regular occurrences. They stated this hampers industry and reduces the quality of life for Dublin's residents, whilst also wasting water that has been expensively treated through leakage.

Ibec highlighted that existing infrastructure is generally situated in urban areas or areas that have undergone considerable development in recent decades. They then argued that this pattern of suburbanisation policies has resulted in sprawl and has not been conducive to the planning, provision and upgrading of strategic infrastructure such as water and wastewater. They added that a substantial proportion of the water infrastructure within the Dublin area dates from the late 19th century, despite the considerable development which now exists around this infrastructure, which Ibec argued has increased pressures on the infrastructure whilst hindering the potential for upgrades or enhancements.

Wicklow County Council identified eleven small water supplies that may be classed as small public water supplies but have not been included in the draft RWRP-EM plan for County Wicklow. They added that the status of such small water supplies may require the adjudication of the relevant regulator in due course. WCC added that they previously sought the transfer of these assets to Irish Water when it was established, and that they continue to seek the transfer of these supplies to Irish Water. They also requested that these eleven supplies be included in the review to RWRP-EM.

Clare County Council's Elected Representatives cited one example of a household granted planning permission in December 2021 to install a water connection. CCC added that although the groundworks are complete, they still had water supply issues. CCC added that the household had problems with trying to reach the right person at Irish Water to help resolve the issue.

Clare County Council's Strategic Economic Initiatives Unit reported that work has commenced on the preparation of background studies and the consideration of the scope of a future masterplan for the Roche Facility in Clarecastle, following a grant and planning permission being awarded for its phased demolition and remediation. They noted that the proposed use will be non-domestic employment generating. They also requested for the capacity provision to enable future development on site to be provided for in any future plans.

Roscommon County Council commented that the critical requirements listed in Table 2.4 Study Area 5 Critical Infrastructure Projects and Need Identification in the draft RWRP-EM contain some inaccuracies. They are namely item 2 which should also include additional ground water and Water Treatment Plants upgrades, Item 3 which should read rising main noting that the rising main can be repaired without impact on supply and item 4 additional boreholes are available on the site also.

Councillor Eddie Fitzpatrick queried what Irish Water's Policy is on repair times for emergencies, bursts and low pressure or supply. Councillor Fitzpatrick also referenced recent outages where several estates were without supply and questioned if Optimum Circulation was in use. Councillor Fitzpatrick also asked if there is regular scouring and flushing of main lines, and what the Irish Water programme for upgrading main pipelines was.

A stakeholder suggested addressing the leaks in the current water pipe network of the Dublin region to address water shortages in the Greater Dublin Area before going ahead with the Regional Preferred Approach.

Another Stakeholder commented that Irish Water has not considered a major mains replacement to fix water supply issues and that any further water supply plans will be hindered by the current water pipe infrastructure.

One stakeholder asked if replacing lead water pipes or rerouting the water through new pipes in Middle Third, Killester is on Irish Water's resource plan. They argued this would solve all issues, increase water supply, remove lead, and negate the use of calcium to line the pipes.

This stakeholder also stated that they have previously reported the water quality issues, namely high levels of calcium and mineral deposits. However, they stated that they were told that the old lead pipes in the area mean that the water requires calcium and mineral content to line the pipes and prevent health issues arising from the lead. The stakeholder argued that the high levels of mineral deposits in the water are themselves posing a health risk, and have also damaged their kitchen and bathroom appliances, which they have to frequently descale.

TD Fergus O'Dowd reported that Drogheda is dealing with significant odour issues emanating from the wastewater treatment plant and the surrounding water infrastructure, which has undergone assessment and minor repairs and upgrades. Deputy O'Dowd then referenced a report carried out by Irish Water which also outlines that the network in some areas of Drogheda is not fit for purpose and will need upgrading or replacing in order to address the flow issues which are adding to the malodour issues, in particular along the Dublin Road.

16.3.2 Response to Existing Infrastructure Feedback

As set out in Section 10.2 of the draft RWRP EM, Irish Water acknowledges that there are significant issues across the region with 75% of the supplies not meeting the target 1 in 50 Level of Service in normal weather conditions and 90% of supplies are associated with a high risk for one of our barriers and therefore do not conform to the conservative Quality risk reduction standards we have set for ourselves as a water utility.

The purpose of the RWRP-EM is to identify the Preferred Approach and interim solutions we need to develop in order to transform our water supplies in the Eastern and Midlands Region over the short, medium, and long-term. The Plan when delivered, will achieve the standards we set for ourselves in the Framework Plan, including:

- At least a 1 in 50 LoS, across all water supplies in all-weather scenarios including normal, dry, drought and winter conditions.
- Ensuring that the correct barriers are in place at all our sources, treatment plants and within our distribution networks, to ensure that risks to water Quality are reduced to an acceptable level.
- Ensuring that all of our supplies are environmentally sustainable and resilient to climate change.

However, the issues with the public water supply relate to a number of factors including compliance, water quality risk, environment, level of service, sustainability of water sources, ageing existing infrastructure, residuals, drought, resilience, climate change, population growth and economic development, interconnectivity of supplies as well as issues such as network performance and leakage. Typically, problems with the public water supply cannot be related to a single issue or cause and cannot be solved with a single solution such as leakage reduction alone.

Through our Connection and Developer Services function, Irish Water has an early engagement process in place (Pre-Connection Enquiry) to provide an early indication of the feasibility of connecting a development and what capital upgrades might be required to cater for this development. Once Irish Water completes the review of an applicant's Pre- Connection Enquiry, a confirmation of feasibility is issued which will indicate if any capital upgrades are required. It may refer to a Project Works Services Agreement (PWSA), which may be required when further studies are needed to identify the solution to facilitate the relevant development. The scope and extent of each PWSA vary depending on the extent of the required studies and works. Further information can be found on our website www.water.ie.

To ensure the satisfactory completion of a development, the Water Services Planning Guidelines under section 28 of the Planning and Development Act 2000 (as amended) require that any grant of planning permission or approval

requiring direct and indirect connection(s) to water services infrastructure must include a condition requiring the applicant or developer to enter into a connection agreement(s) with Irish Water prior to the commencement of development.

The Planning Guidelines were designed to ensure developments only progress where Irish Water commits to servicing the relevant development. Customers can apply for a connection once they have submitted an application for planning permission, however Irish Water will only issue a connection offer once planning permission has been granted. We will forward comments on the installation of service connections and concerns about the Pre-Connection Enquiry, Project Works Service Agreement, and Physical Connection processes to our Connection Developer Services Team.

To ensure we can support growth while transforming our supplies, we also include interim measures within the RWRP EM, and these interim measures are set out in the Study Reports. For example, the interim measures for Staleen WTP is to “upgrade of WTP to maximise output capacity to allow for growth prior to the delivery preferred approach.”

In response to the submission from KA noting that Ireland’s water problems are solely due to poor infrastructure is incorrect. While we acknowledge significant infrastructural upgrades are required, we have determined that the water for available for use is limited by the yield for 222 of our WTPs ,see Figure 6.4 in the Framework Plan . For example the supply to the GDA is limited by the volume of raw water available in a 1 in 50 year dry weather event. The water shortages during 2018 summer drought were not related to infrastructure issues, instead they were a direct result of falling water levels at our raw water sources including our aquifers sources. The water available for use in the GDA WRZ is not limited by the network or the WTP output. Therefore infrastructural upgrades will not reduce the deficit at this WRZ and an additional source of supply is required.

Currently 53% of the network in the GDA is less than 40 years old, whilst 78% of the network is less than 60 years old. Only 1% of the distribution network is over 100 years old. Some of these pipes that are older than 100 years old perform well, do not burst frequently and have low levels of leakage compared to the overall distribution network.

Water mains replacement is an integral part of our leakage reduction programme as summarised in in section 7.3.1 of the Framework Plan.

A submission from KA noted that the current watermains renewal rates and extrapolated that watermains would only be replaced every 333 years on the basis of the current rates of renewal. This is not the case, watermain renewal rates will be increased as our understanding of the distribution networks increases, and our funding of the National Leakage Reduction Programme is increased as part of each investment cycle.

At no stage has Irish Water said that it has a cap on the amount of watermains rehabilitation that will be carried out. The watermains rehabilitation aspect of our leakage reduction plan, will be based on intelligence and outcome. Renewal rates will also increase as new innovation in no-dig methods develops over time.

As set out in the draft RWRP–EM our current leakage targets for the Eastern and Midlands region, are 158MI/day across the region, which will reduce leakage to 22% of demand across the region. However additional infrastructural solutions alongside these leakage reductions are also required to provide the target Level of Service.

The outcome of the leakage reduction programme is built into the supply demand balance calculations for the GDA; therefore, the forecast savings are accounted for in the Regional Plan.

It is also incorrect to say that watermains rehabilitation is the only activity that addresses background leakage. Leakage best practice clearly shows that pressure management and calm networks is key to preventing new leaks and addressing background leakage.

Water leaving Irish Water's treatment plants is lead free and our records show that there are no lead public water mains in Ireland. Any lead pipework which is present is in the service connection between the watermain and the private property. Irish Water is responsible for any lead pipework in the public water distribution network and we have a programme in place to replace all public side lead services with approximately 50,000 services replaced to date. This pipe replacement is being carried out on a planned basis under our Leakage Reduction Programme.

Most of the remaining lead pipework is however on private property and this is the responsibility of the homeowner. There are government grants available to assist homeowners with the costs of this and further information on this is available at the following location: <https://www.gov.ie/en/publication/9e6f3-lead-remediation-grant-scheme/>

In addition, where a homeowner has gone through the process of replacing the private side lead pipework, Irish Water will fast track the replacement of any lead pipework remaining on the public side through our customer opt in process. Further information on this can be found at the following location: <https://www.water.ie/iw-documents/our-projects/Updated-Step-by-step-guide-to-Customer-Opt-in-Lead-Pipe-Replacement-Scheme.pdf>

Rerouting of mains will not assist in the reduction of lead. While the calcium is beneficial in that it will make the water less aggressive to all metals such as Iron, Copper and Lead it is naturally occurring in the source water and is not added by Irish Water. The quality of the water supplied by Irish water is

monitored for compliance by the EPA and HSE and the levels of Calcium and minerals in the water is compliant with drinking water regulations and does not pose a risk to health.

Small amounts of mineral salts such as calcium are often found in drinking water and are naturally occurring and not harmful to health, typically higher levels are often observed in bottled waters. Calcium can slow the rate at which Lead is released from Lead pipes, but it is not an effective or robust mitigation if lead pipes are present.

Irish Water note the submission in regards the network issues in Middle Third Killister and this information will be used to inform the prioritisation of future works.

One submission received focussed on the current watermains renewal rates and extrapolated that watermains would only be replaced every 333 years on the basis of the current rates of renewal. This is not the case, watermain renewal rates will be increased as our understanding of the distribution networks increases, and our funding of the National Leakage Reduction Programme is increased as part of each investment cycle.

At no stage has Irish Water said that it has a cap on the amount of watermains rehabilitation that will be carried out. The watermains rehabilitation aspect of our leakage reduction plan, will be based on intelligence and outcome. Renewal rates will also increase as new innovation in no-dig methods develops over time.

The outcome of the leakage reduction programme is built into the supply demand balance calculations for the GDA; therefore, the forecast savings are accounted for in the Regional Plan.

Currently 53% of the network is less than 40 years old, whilst 78% of the network is less than 60 years old. 1% of the distribution network is over 100 years old.

This 1% largely comprises of large diameter trunk mains, such as the 33" and 24" trunk mains from the Vartry WTP. These mains are in excellent structural condition with negligible leakage or deterioration in wall thickness. Occasional repairs need to be made at joints and connections, however, as the mains are cross connected and the network has local storage, such repairs can largely be conducted with no interruptions to supply. These mains would cost €10's of millions of euros to replace, with the associated works serving no purpose or delivering any outcome. On the other hand, some of the watermains constructed within the last 30 years have worse performance.

As the network in the GDA is nearly 9,400 kilometres intelligence driven decision making on watermains rehabilitation is essential.

It is also incorrect to say that watermains rehabilitation is the only activity that addresses background leakage. Leakage best practice clearly shows that

pressure management and calm networks is key to preventing new leaks and addressing background leakage¹.

We acknowledge the comment from Ibec that suburbanisation policies have resulted in sprawl and has not been conducive to the planning, provision and upgrading of strategic infrastructure such as water and wastewater. We would note that this development has resulted in a fragmented network which the NWRP looks to interconnect. Population density in Ireland has also resulted in increased length of main per capita when compared to other countries and this presents significant challenges in resolving issues such as leakage.

As set out in Section 2 of the draft RWRP-EM, a key objective of the RWRP-EM is to ensure that water infrastructure can support the proposed growth policies at national, regional, and county level. Growth projections used within our draft RWRP-EM were based on best available data from the National Planning Framework (NPF) and Regional Spatial Economic Strategies (RSES's) at the time of compiling our draft RWRP-EM.

We recognise the ongoing work between the Regional Assemblies and the local authorities over the course of the development of the Local Authority Development Plans. As these plans are finalised, Irish Water will incorporate the increasingly refined growth rates into our demand forecasts.

We note the comment received from WCC regarding 11 small supplies. There are ongoing conversations between Irish Water, the Department of Housing, Local Government and Heritage and the relevant Local Authorities regarding such small supplies.

The RWRP-EM determines a preferred approach to resolve need at Water Resource Zone (WRZ) Level. Details of local infrastructure required to service specific areas, such as the Roche Facility, will be considered in more detail at project level. To provide clarity on this point we have provided additional text in Section 6.4 regarding project level assessments.

Further to the submission by Roscommon County Council updates have been made to Table 2.4 in Appendix 5 of the RWRP EM.

Irish Water has an extensive programme of works underway at Drogheda Wastewater Treatment Plant and on the local wastewater network. The works are progressing well and are part of a priority project being implemented in relation to the management of wastewater treatment in Drogheda.

¹ European Commission -EU Reference Document: Good Practices on Leakage Management WFD CIS WG PoM, 2015 Figure 3 page 25
https://circabc.europa.eu/sd/a/1ddfba34-e1ce-4888-b031-6c559cb28e47/Good%20Practices%20on%20Leakage%20Management%20-%20Main%20Report_Final.pdf

Irish Water has also commissioned an independent odour analysis and report of Drogheda Wastewater Treatment Plant. Irish Water continues to engage with the local community and their representatives, including Deputy O'Dowd, on this matter.

Following the Site Selection process for the Sludge Hub project, Drogheda WWTP has not been selected as a Sludge Hub site for the East Midlands. Drogheda WWTP will continue to operate as it currently does.

16.4 Water Supply Project - Eastern Midlands

16.4.1 Summary of WSP-EM Feedback

Fáilte Ireland noted that the draft RWRP-EM is a separate project to the Water Supply Project – Eastern and Midlands (WSP-EM) but highlighted that the issues relating to water levels in water bodies, especially with regard to navigability and water quality, are key where water-based activities are supported.

Several Elected Representatives from Clare County Council argued that more engagement on the Water Supply Project (WSP) is needed in Clare, adding that the project is causing real problems for the communities there. They added that there has been no mention of community gain in any discussions about the WSP-EM. They highlighted that there are 52 unserved areas in County Clare and called for Irish Water to take steps to reduce this number as it moves forward with the WSP. They further raised concerns that the planned WSP-EM will not benefit communities in Ennis or Limerick. They added that the €2.75 million recently allocated by Irish Water to County Clare will only cover areas with existing Irish Water infrastructure.

Councillor Joe Killeen from Clare County Council raised the planned reduction in power generation at Ardnacrusha. Cllr Killeen queried what the percentage decrease in power generation at Ardnacrusha would be, arguing that Irish Water should be helping to drive the transition away from coal and towards renewables.

Dublin Chamber stated that they have made numerous submissions to the Commission for Energy Regulation, the Department of Environment, and Dublin City Council on the WSP-EM. They added that they have supported calls for a new water source for the Dublin region since the need was first identified in the Greater Dublin Water Supply Strategic Study, published by the Department of Environment in 1996. They highlighted that they have engaged extensively with Irish Water on this project in recent years, participated in the comprehensive consultation process and made several submissions articulating the concerns of the business community. Each of their submissions stressed the essential

requirement of a world-class water system for Ireland, emphasising the importance of this infrastructure for Ireland's citizens, businesses, visitors, and future foreign direct investment.

Dublin Chamber added that, considering the estimated Water Supply Project-Eastern Midlands (WSP-EM) cost of €1.3 billion, it was essential that due and appropriate consideration was given to the needs assessment of the project to ensure maximum possible return on investment. They added that their previous submissions to Irish Water set out that the criteria for evaluation should include the following:

- Current and projected population in the Region
- Economic growth
- Dublin's competitiveness versus other city-regions
- Growth in domestic and non-domestic demand
- Demand from Large Water Users.

Dublin Chamber welcomed the inclusion of these factors as the primary drivers for evaluation and fully supported the findings of the February 2015 WSP Eastern and Midlands Region Project Need Report. They welcomed the approach of this study, which they note was in line with international best practice in infrastructural planning and outlined why the investment is appropriate and necessary.

Limerick Greens noted that after the proposed pipeline is laid, there will be a 20-meter wayleave required each side of the pipe which would not be of use to landowners affected by the line of the pipe to the GDA. Limerick Greens added that this line would need to be managed locally to ensure no trees of problematic root types affect the pipe and no excavation or building takes place for the same reason.

Kennedy Analysis (KA) claimed that every set of projections of Dublin's water demand published in relation to the Shannon pipeline project in 2006, 2010, 2015 and 2016 can now be observed to have significantly over-estimated future water consumption while making claims about leakage reduction plans that were not fulfilled. KA argued that projections from the Supply Demand Balances (SDB) produced for the GDA in 2006 and 2010 can now be verified as a significant amount of time has passed as they each made projections of how large the various elements of demand would be in 2019. KA highlighted that the 2015 and 2016 SDBs used base-year data from 2011 and that though only five to six years have passed since the 2015 and 2016 SDBs were published, KA believe the projections were wrong.

KA argued that the inaccuracy in short-term projections is significant as the short-term projections are the ones for which Irish Water should have had the most accurate data. KA claimed that the WSP-EM can no longer be justified for the GDA alone. The project is now being justified by the inclusion of other regions such as Mullingar and the cost analysis of those regions must reflect this. KA argued that the original proposal was to build the Shannon pipeline to supply the Dublin region alone and the water demand projections that were produced and predicted noted there would be enormous growth in Dublin's water consumption. However, KA claimed that in the intervening 25 years it has become clear that, provided leakage in the GDA is addressed, the future water needs of the GDA alone will not be enough to justify the building of the Shannon pipeline.

KA noted that the draft RWRP-EM proposes that Dublin become the "parent supply" and that certain towns/regions receive water from the Shannon pipeline directly. KA agreed that conceptually this has its merits – but only if correct analysis concludes that it is cheaper/better to undertake the Shannon pipeline project (with all of the costs and risks that that entails), plus build the additional infrastructure required to pipe water from the Shannon pipeline to those particular regions, rather than simply upgrading/consolidating local WTPs and using good, resilient local raw water supplies. KA argued however, this analysis has not been done meaningfully, transparently, or correctly. KA noted that 21% leakage targets were not factored in to the regional SDBs and another key issue is that the cost analysis of the newly included towns/regions should reflect the fact that the Shannon pipeline project could not be justified if the concept of supplying additional regions (beyond the GDA) had not been built into the latest plan. KA cited an example, whereby IW proposes that the Shannon pipeline will deliver 37Mld (out of 278Mld) to the Mullingar region, i.e., 13.3% of the water from the Shannon pipeline proposal is for the purposes of Mullingar. An appropriate proportion of the costs of the Shannon pipeline project itself must therefore be ascribed to the Shannon option for the Mullingar region.

Clare County Council's Strategic Economic Initiatives Unit highlighted that if the abstraction point for the GDA scheme coincides with the sluice/lock on the Kilmastulla River then both projects will be at risk. They also noted a water quality issue which may arise at the abstraction point due to boats idling which can lead to increased exhaust fumes and oil pollution from the engine.

16.4.2 Response to WSP-EM Feedback

This Consultation Report summaries the consultation conducted between December 14, 2021, and April 08, 2022, and relates to the draft RWRP EM and associated documents. It was not a consultation of the Water Supply Project

Eastern and Midlands Region. Therefore, within this consultation report we will review the submission in the context of the draft RWRP EM.

Some of the submissions question the need for a new supply to the GDA. For this iteration of the NWRP, we have set a target 1 in 50 Level of Service standard for all of our supplies. This equates to a 2% probability of failure or the reliability we require from our supply sources. As set out in Section 10.2 of the draft RWRP EM, there are significant issues across the region with 75% of the supplies not meeting the target 1 in 50 Level of Service in normal weather conditions and 90% of supplies are associated with a high risk for one of our barriers and therefore do not conform to the conservative Quality risk reduction standards we have set for ourselves as a water utility.

In most European Countries, and UK utilities, the Level of Service ranges from 1 in 100 year to 1 in 500 year for large urban supplies. Therefore, Irish Waters initial target to improve the resilience of all of our supplies is by no means inflated. This is also in the backdrop of increased regulation, for instance, proposed abstraction legislation and the recast Drinking Water Directive, which may impact the availability of our supplies further. Action is needed.

The issues with the public water supply relate to a number of factors including compliance, water quality risk, environment, level of service, sustainability of water sources, ageing existing infrastructure, residuals, drought, resilience, climate change, population growth and economic development, interconnectivity of supplies as well as issues such as network performance and leakage. Typically, problems with the public water supply cannot be related to a single issue or cause and cannot be solved with a single solution such as leakage reduction alone.

For instance, leakage reduction and water conservation measures also will not resolve the issues in many of our small supplies. During drought periods there can be water availability issues with these supplies, irrespective of leakage. For example, if a groundwater source does not receive enough rainfall recharge over the winter, irrespective of the volume abstracted or the amount of leakage, the source will dry up. Similarly, some of our abstractions from protected area may be environmentally unsustainable. These issues will remain even when leakage has been reduced to low levels.

It is for this reason that Irish Water progresses leakage reduction in conjunction with new sustainable supplies.

The Plan identified a significant deficit for the Greater Dublin Area (GDA) and a pipeline from Shannon to Dublin (the NSS) was identified as the Preferred Approach to meet the need. When the NSS was compared to 11 other feasible combinations of solutions, it was determined as the solution with the least

impact to the environment and more information can be found on this in Appendix 9 of the RWRP EM. Desalination solutions were considered as feasible options for the Greater Dublin Area at fine screening; however, we discounted via the option selection process and more information can be found in Appendix 9 of the RWRP EM.

The draft RWRP-EM identified the NSS as the Preferred Approach for the GDA first. The estimated level of sustainable abstraction at the source (i.e. the estimate of the water that can be taken from the source whilst maintaining the required environmental flow as set out in Appendix C of the Framework Plan) recognised that this source had the potential to supply much more than the GDA. The NSS was identified as the Preferred Approach for WRZ's in the vicinity of the GDA and along the benefitting corridor. The NSS is justified and indeed identified as the Preferred Approach at WRZ level for the GDA; however, it also has the potential to benefit other areas.

This consultation is on the RWRP EM, which follows the methodology set out in the NWRP Framework Plan. As part of the water resources planning process, Irish Water reviews the water resource zones individually and then collectively at study area and regional level. This allows us to identify the supplies where the preferred approach is a local option and those that would be better served by larger interconnected regional options. Within the RWRP EM we have followed this prescribed process for each supply (water resource zone) One of the regional options involves connectivity between 36 individual supplies, including Mullingar and the Greater Dublin Area. This type of option has the added benefit of addressing some historical issues with fragmented supplies and unsustainable local sources.

As a final check in chapter 8 of the RWRP EM, we recalibrated the Supply Demand Balance for the proposed GDA Regional WRZ (to account for the lower peaking and headroom requirements across the proposed larger interconnected water resource zone) and compared the total cost of the larger regional option (including all associated infrastructure to connect the smaller WRZs) to an alternative approach whereby all WRZs remain separate and are resolved using one-off or local options only. The objective of the exercise is to ensure that we can achieve the best outcome for water users across all supplies, the exercise is entirely objective and does not pre-determine any outcome. Therefore, if a regional approach provides a better outcome for 35 supplies, it is selected. If 36 local options perform better than the single regional option, the local options would be selected.

It should be noted that the River Shannon is the largest river in Ireland and its catchment covers 20% of the island of Ireland. It is a slow-moving water body with significant volumes of storage throughout the catchment due to the presence of lakes. This means that flood events last for long periods, however it also means the water body is less vulnerable to droughts as there is significant

storage during dry weather events. It means it is a good source for water supply. The proposed abstraction is from an impounding reservoir/dam, which means it is possible to store water during periods of high rainfall, and during a drought period, the abstraction will be taken from this storage, without impacting on flows downstream of the dam.

In relation the submission from KA in relation the application of leakage targets to the SDB to large supplies only. We are not reporting leakage targets in the SDB for all water resource zone level yet, in order to allow Irish Water to react to issues that emerge. Certain networks may have a lot of data uncertainties, and the best approach in those areas is to re-establish DMAs, calibrate bulk meters etc. In other areas where there is high growth we can focus resources in order to ensure that we can support housing requirements. For these reasons, the leakage targets are not applied to the individual SDB for the water resource zones. However, the overall target is set and will be achieved.

The criticism of our approach is time limited, as Irish Water has invested in an international standard leakage intelligence system (Netbase). This system takes millions of live data points from our GIS, telemetry, non-domestic meter systems, in order to track leakage in a uniform way across all of our supplies. The calibration and configuration of this system will take a number of years, but it has been established, and will allow us to report on an individual supply basis.

In response to KA submission on growth projections these are in line with the National forecast which have been taken from the NPF, RSES and the Local Authorities County Development Plans. More information on demand projections can found in Section 4.3.2.1 of the Framework Plan.

Irish Water acknowledge that, as with every infrastructure project, there will be environmental impact in rolling it out. The SEA process concluded at plan level that the implementation of the NWRP that schemes can have both positive and negative potential effects on the water environment, biodiversity, and landscape and visual amenity and potential significant combined negative effects for carbon emissions. To address the potential negative effects, mitigation measures and a monitoring framework will be implemented alongside recommended developments. The SEA identified that in the long-term, the plan will bring benefits in terms of greater security of water supply to the population, tourism industry and recreational amenities, human health, and the local economy. Additionally, the newer, or upgraded, more reliable assets within the system will result in greater adaptability to the impacts of climate change; with benefits to the water environment from the replacement of abstractions identified as potentially unsustainable for meeting WFD or protected area obligations and will give greater flexibility to respond to future sustainability reductions. The AA process resulted in a determination at plan level that the RWRP-EM would not give rise to adverse effects on the integrity of any European site

The SEA and AA embeds environmental considerations into the plan making process and set a framework for identifying mitigation and monitoring so that these can be part of decision-making and can inform option design and costing as schemes developed at a project level and studied further prior to consenting and licencing.

In response to the questions posed by several elected representatives from Clare County Council on Community Gain fund this is a project specific query and will be

It should be noted that agglomerations without an existing public water services are outside the remit of Irish Water. The Department of Housing and Local Government Housing have recently announced a fund available to Local Authorities to address these areas. www.gov.ie/en/press-release/f2fa6-minister-obrien-announces-50-million-in-funding-to-improve-the-waste-water-needs-of-rural-villages/

In response to the submission from the Limerick Greens on wayleaves, the RWRP-EM sets out the proposed Preferred Approach at Plan level. Issues such as wayleaves will be considered at project level.

In response to Councillor Joe Kileen's question, on an average year-round basis, the offsetting hydropower generation required for the proposed drinking water abstraction would equate to less than 2% of the power generated at Ardnacrusha. This is a worst-case figure based on the drinking water abstraction operating at peak abstraction volumes on a constant basis however the actual average abstraction rates will typically equate to a reduction of around 1% of Ardnacrusha's power output. Achieving sustainability is a core objective of Irish Water and the proposed abstraction will contribute to alleviating issues of unsustainable abstractions at existing supplies.

16.5 Not Related to the RWRP-EM

16.5.1 Summary of Not Related to the RWRP-EM Feedback

A stakeholder requested clarity regarding water supply by Irish Water to their home in Rathmolyon County Meath situated between Killballyporter and Cherryvalley.

Offaly County Council advised that it would be more efficient for Local Authorities if there was an internal system within Irish Water that coordinates the programme areas such as Asset Planning, Operations and Minor Works.

They noted this would ensure that the different sections within Irish Water were aware of the activities of their colleagues.

Ibec noted that demand will be highest for land that is ready to go for development, starting with land that has already been granted planning permission. They further remarked that it is critical that funding is leveraged by local authorities and other stakeholders to ensure sites can be provided with the necessary supporting utilities such as water.

Councillor Flynn suggested that if the proposed abstraction from Lough Derg is to go ahead it should include a financial model such as a tax per 100 litres of water abstracted paid annually to Clare County Council to fund the construction of Wastewater Treatment Plants in over 55 Clare villages and small towns currently without sewerage treatment.

Councillor Eddie Fitzpatrick referred to end users and noted that they are provided with reference numbers when they report an issue. However, he further commented that customers were not receiving a response and thus, sought clarification on Irish Water's policy for responding to end users with survey results. He also requested further information on the monitoring system with regard to resolved and unresolved issues.

An Forum Uisce (AFU) addressed a range of high-level issues relative to the Eastern and Midlands Region. AFU recommended that Irish Water should increase investment in community engagement through the inclusion of community liaison officers across the country, which will support awareness campaigns and allow two-way communication between Irish Water and the public. They noted that this would allow communities to be involved and co-create community projects for water conservation, supporting an integrated approach to water management and source protection initiatives.

Longford County Council (LCC) stated that they will continue to proactively engage with the NWRP process and reaffirm the point that local authorities are concerned that once the Single Public Utility has been established that the input and needs of local authorities will be restricted. They requested that a formal comprehensive quarterly meeting be held in the similar format to that of the current local authority / Irish Water Service Level Agreements Tier 2 meetings which would include the Senior Managers from the local authority and the following functional areas of Irish Water; Asset Strategy, Asset Planning, Asset Deliver, Asset Operations, Connection and Developer Services. LCC explained the purpose of these meetings would be to ensure that the ongoing development needs of the county are adequately supported and matched with investment by Irish Water and to remove the risk of delays to development due to deficits in existing or even proposed Irish Water Infrastructure.

Future Proof Clare commented that Irish Water is also responsible for the protection of rivers and lakes from pollution by human activities, including

agricultural, industrial, and domestic contamination and the following abuses: fracking and mining.

Future Proof Clare cited a live application by Tamboran Resources (PLA216) to start fracking near the source of the River Shannon. which may lead to contamination of the River Shannon. They also cited mining in areas of groundwater vulnerability and near catchment area aquifers including the River Shannon.

Future Proof Clare highlighted that in Aughinish Alumina huge volumes of Red Mud are being stored on the edge of the River Shannon, which is highly toxic and currently seeping into the River Shannon. They further commented that current proposals to increase the Red Mud Storage and to carry out rock blasting poses an unacceptable risk in the Shannon Estuary and Irish Water should work proactively to prevent this from happening.

Limerick Greens commented that the ESB Hydro-electric plant at Ardnacrusha is a significant barrier to the free movement of fish species and as such conflicts with the Water Framework Directive Habitats Directive and the Fisheries Consolidation Acts 1959 as amended. Limerick Greens queried if the draft RWRP-EM would consider the likelihood of the future decommissioning of the Ardnacrusha Hydro-electric power premises in the proposed Shannon Pipeline project as a probability when considering all of the alternative options in a SEA

16.5.2 Response to Not Related to the RWRP-EM Feedback

The stakeholder query regarding supply to Rathmolyon was logged with Irish Water's customer team who responded directly to the customer.

Internal teams within Irish Water collaborate closely with each and with staff in Local Authorities across the country.

Issues such as taxation are a matter of Government policy.

Irish Water welcomes the commitment by Longford County council to continue to proactively engage with the NWRP process in future. Irish Water will shortly be engaging with Local Authorities as plans for the full integration of water services progress in line with the Framework for the Future Delivery of Water Services. Irish Water welcomes all comments and feedback in terms of how the future engagement will be managed and is open to taking suggestions on board for the continuation of a positive and effective working relationship on key issues of importance for both Local Authorities and Irish Water into the future.

Sometimes it can take time to coordinate a response to a query across various teams within Irish Water and indeed our colleagues in Local Authorities. We monitor response times and close out to ensure that queries are logged and responded to as quickly as possible. We have followed up with Cllr Fitzpatrick

directly to make sure that all of the queries he has submitted via our dedicated Local Representative Support Desk have been responded to at this juncture.

Implementation of source protection measures will require further collaboration with several stakeholders including, riparian owners, industry groups, the agricultural, forestry and environmental sector and Teagasc. In recognition of the importance of multi-stakeholder engagement and collaboration in managing shared natural resources, Irish Water are members of an expert group chaired by the Department of Housing Local Government and Heritage (DHLGH) to make recommendations to the Minister regarding a new approach to drinking water source protection as part of the transposition of the recast Drinking Water Directive. Irish Water is also actively involved in pilot source protection projects in Ireland to trial catchment scale interventions to reduce the risk of pesticides causing exceedances in water supplies. The two key projects are the Source to Tap Project and the Pilot Drinking Water Source Protection Project more information on these projects are provided in Box 2.4 of the RWRP EM.

Irish Water has processes in place to make observations and/or objections, where appropriate, on planning applications which may impact drinking water sources. This may include explorative drilling near ground water sources, septic tanks near groundwater and surface water source and developments which may result in discharges to waterbodies upstream of drinking water abstractions.

Ardnacrusha is owned and operated by ESB. Any proposal to decommission the plant would not be considered in the RWRP EM.

16.6 Conclusions on Out-of-Scope Feedback

Having carefully reviewed the submissions received on the theme of Outside the Scope, Irish Water considered that more clarity on certain points should be provided in the RWRP EM. These proposed changes are explained in section 16.6.1 “Clarifications” below. In addition, some of the points made in the submissions will be taken forward in other ways, as explained in section 16.6.2 “Recommendations” below.

16.6.1 Clarifications on Outside the Scope of the RWRP-EM Feedback

The following section of the RWRP EM has been updated to reflect feedback under the theme of Outside the Scope:

Section 6 - Provision of a new section, Section 6.4 Project Level Summary, which outlines the project development process which includes having regard to local development plans.

Appendix 5 Study Area 5 Technical Report – Updates to items 2,3 and 4 in Table 2.4 Critical Infrastructure Projects and Need Identification.

16.6.2 Recommendations on Outside the Scope of the RWRP-EM Feedback

Irish Water will continue to consult with Regional Assemblies and local authority housing and planning functions on the development of Capital Investment Plans.

17. Next Steps

Following on from the public consultation, submissions and observations received will be taken into consideration, and the RWRP-EM updated. The final RWRP-EM will then be produced, accompanied by a Strategic Environmental Assessment Statement and an Appropriate Assessment Determination.

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.

18. Glossary

Table 18-1 Stakeholder Organisations & Technical Glossary

Term	Description
AA	Appropriate Assessment
AESI	Adverse Effects to Site Integrity
AFU	An Fóram Uisce
ALC	Active Leakage Control
ASSAP	Agricultural Sustainability Support and Advisory Programme
BGI	Blue-Green Infrastructure
CAP	Climate Action Plan
CAP	Common Agricultural Policy
CARO	Climate Action Regional Offices
CCC	Clare County Council
CCCPDEDD	Clare County Council's Planning Department, Economic Development Directorate
CCCPDD	Clare County Council's Physical Development Directorate
CCCSEIU	Clare County Council's Strategic Economic Initiatives Unit
CDP	County Development Plan
CRU	Commission for the Regulation of Utilities
CSL	Customer Side Leakage
DAERA	Department of Agriculture, Environment and Rural Affairs
DAFM	Department of Agriculture, Food, and the Marine
DAU	Department of Tourism, Culture, Arts, Gaeltacht, Sport, and Media – Development Applications Unit

DECC	Department of the Environment, Climate and Communications
DHLGH-NPWS	Department of Housing, Local Government and Heritage – National Parks and Wildlife Services
DI	Distribution Input
DMA	District Metered Area
DSS	Decision Support Systems
DWD	Drinking Water Directive
DWI	Drinking Water Inspectorate
DWR	Drinking Water Regulations
DWSP	Drinking Water Safety Plan
DYAA	Dry Year Annual Average
DYCP	Dry Year Critical Period
EAP	Environmental Action Plan
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EM	Eastern and Midlands
EMRA	Eastern and Midlands Regional Assembly
EPA	Environmental Protection Agency
ESB	Electricity Supply Board
E&Y	Ernest and Young
FILLM	Framework for Integrated Land and Landscape Management
FPC	Future Proof Clare
GDA	Greater Dublin Area
GHG	Greenhouse gas
GMO	Genetically Modified Organisms
GSI	Geological Survey Ireland

GWDTE	Groundwater-Dependent Terrestrial Ecosystems
GWS	Group Water Schemes
HSE	Health Service Executive
IAH	International Association of Hydrogeology
Ibec	Irish Business and Employers Confederation
ICARUS	Irish Climate Analysis and Research Units
ICM	Integrated Catchment Management
ICMSA	Irish Creamery Milk Supply Association
IDA	Investment & Development Agency Ireland
IEN	Irish Environmental Network
IFA	Irish Farmers Association
IFI	Inland Fisheries Ireland
IPCC	Intergovernmental Panel on Climate Change
ISME	Irish Small & Medium Enterprise Association
IUCN	International Union for Conservation of Nature
IW	Irish Water
IWA	International Water Association
IWAI	Inland Waterways Association of Ireland
KA	Kennedy Analysis
LAWPRO	Local Authority Waters Programme
LCC	Longford County Council
LCCC	Limerick City and County Council
LoS	Level of Service
LSE	Likely Significant Effects

LMS	Leakage Management System
MASP	Metropolitan Area Strategy Plan
MCA	Multi Criteria Analysis
MCC	Meath County Council
MUR	Meter Under Registration
NBS	Nature-Based Solutions
NDD	Non-Domestic Demand
NDP	National Development Plan
NFGWS	National Federation of Group Water Schemes
NICCAP	Northern Ireland's second Climate Change Adaptation Programme
NIEA	Northern Ireland Environment Agency
NIS	Natura Impact Statement
NPDWAG	National Pesticides and Drinking Water Action Group
NPF	National Planning Framework
NPO	National Policy Objectives
NPWS	National Parks & Wildlife Service
NSS	New Shannon Source
NTT	Not to transfer at this stage
NWRP	National Water Resources Plan
NYAA	Normal Year Annual Average
OCC	Offaly County Council
OFWAT	Water Services Regulation Authority
OPR	Office of the Planning Regulator
OPW	Office of Public Works
PAs	Preferred Approaches
PCC	Per Capita Consumption
PCE	Pre-Connection Enquiry Process

PCR	Public Consultation Report
PHC	Per Household Consumption
PPN	Public Participation Network
PS	Public Supply
PWSA	Project Works Service Agreement
RBMP	River Basin Management Plan
RCC	Roscommon County Council
RCP	Representative Concentration Pathways
RPO	Regional Policy Objectives
RSES	Regional Spatial Economic Strategies
RSPA	River Shannon Protection Alliance
RWRP	Regional Water Resources Plans
RCC	Roscommon County Council
QI	Qualifying Interest
SA	Study Areas
SAC	Special Areas of Conservation
SEA	Strategic Environmental Assessment
SELL	Sustainable Economic Level Leakage
SDB	Supply Demand Balance
SDGs	Sustainable Development Goals
SID	Strategic Infrastructure Development
SRA	Southern Regional Assembly
SDZ	Strategic Development Zone
STVGP	Small Towns and Villages Growth Programme
TCC	Tipperary County Council
T&IC	Transport and Infrastructure Council
UFW	Unaccounted-For Water
UL	University of Limerick

WAFU	Water Available for Use
WCC	Wicklow County Council
WCP	Winter Critical Peak
WmCC	Westmeath County Council
WFD	Water Framework Directives
WG	Water Group
WRZ	Water Resource Zone
WSP-EMR	Water Supply Group Eastern and Midlands Region
WSP	Water Supply Project
WTP	Water Treatment Plant

Appendix A RWRP-EM Brochure

Introduction

The National Water Resources Plan (NWRP) is Irish Water's 25-year strategic plan for the public water supply in Ireland.

The NWRP allows us to plan for our water supplies in consistent way and to transform the public water supply in Ireland over the next 25-years. It allows us to identify the needs within our existing supplies, and to consider the challenges and opportunities that will arise. These include, changing policy and legislation, climate change, environmental sustainability, growth and economic development.

Within the NWRP we will assess all of the 535 individual supplies that form the national public water supply and develop a clear approach to address the current and future needs across these supplies.

What is the objective of the National Water Resources Plan?

The objective of the NWRP is to meet our customer and communities needs over the short, medium, and long term, by ensuring safe, secure, sustainable, and reliable water supplies.



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What is happening now?

As this is the first NWRP, the preparation of the plan has been divided into two distinct phases, the combination of which will become the final NWRP.

In Phase 1 the Framework Plan, we set the standards we would like our supplies to achieve and processes we will follow to address needs across our supplies. Following public consultation in early 2021, the Framework Plan is now complete and can be found at www.water.ie/nwrp

In Phase 2 of the NWRP, we summarise the needs across the 535 individual water supplies and identify the solutions to address these needs. Due to the large number of supplies in Ireland, we will deliver Phase 2 as four Regional Water Resource Plans:

- Regional Water Resources Plan: North West
- Regional Water Resources Plan: South West
- Regional Water Resources Plan: South East
- Regional Water Resources Plan: Eastern and Midlands



Figure 1. Regional Areas of the NWRP

Each of the four draft RWRPs and associated environmental reports will have their own public consultation phases, which will be carried out over the course of 2021/2022.

As part of each Regional Plan we will:

- Apply the Framework methodology to the water supplies in the region
- Develop regional solutions for all water supplies within these group areas

The first Plan to be consulted on will be the draft Regional Water Resources Plan: Eastern and Midlands (RWRP-EM).

At the end of Phase 2 the outcome of the four plans will be combined and prioritised collectively.



Regional Water Resources Plan Eastern and Midlands

The above map outlines the area which is covered by the RWRP-EM. A full list of townlands, towns, settlements and counties included in the RWRP-EM can be found www.water.ie/rwrp/easternmidlands

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What is the Eastern and Midlands Region?

The RWRP-EM is the largest of the four regions defined as part of the NWRP in both land area and population size. It includes 19 counties encompassing 24 Local Authorities. The Region covers approximately 20,900 square kilometres extending from the Shannon Estuary in the south west, towards the large River Boyne catchment and Greater Dublin Area (GDA) in the north east. The Region is the primary economic Region of Ireland containing Dublin and Limerick City which provides more than 1 million jobs.



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What are the issues in the Region?

In the Eastern and Midlands Region there are 201 Water Treatment Plants that feed water into 134 stand-alone water supplies known as water resources zones (WRZs). These WRZs provide water to all of the cities, towns, villages and rural properties in the Region that are connected to the public water supply.

When we view these supplies using the risk standards, we set out in the Framework plan, we have identified the following needs which must be addressed as part of the draft RWRP-EM:

- 66% of the WRZs do not have the correct capacity to meet current or future needs
- 90% of the Water Treatment Plants need some form of investment to reduce risk to water quality
- 70% of the WRZs at risk of interruptions to supply
- Some of our water abstractions may be unsustainable

How do we review this in our draft regional plan?

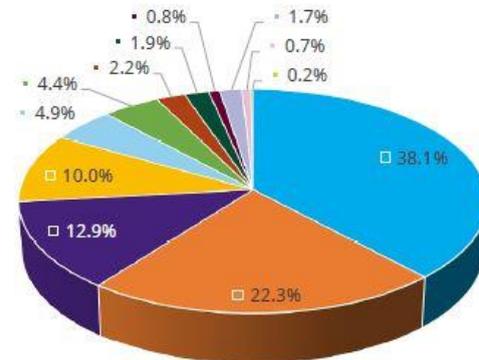


Within the Plan we identify solutions to address these needs, under three pillars, Use Less (water conservation), Lose Less (leakage reduction) and Supply Smarter (sustainable water supplies).

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As part of the draft RWRP-EM, we reviewed 1,128 unconstrained options, and developed 591 feasible options to address the needs we identified in the Region.

These feasible options included an extensive list of option types, including, groundwater and surface water sources, reservoirs and water transfers.



- Groundwater (225)
- Rationalisation (132)
- Surface water (76)
- Cross Study Area Supply (59)
- Network Improvements (29)
- Upgrade Water Treatment Plant (26)
- Transfers (13)
- Conjunctive Use (11)
- Effluent Reuse (5)
- Desalination (10)
- River Bank Filtration (4)
- Advanced Leakage Reductions (1)

We then assessed these to develop a preferred approach for each of the water supplies.

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reference to any other area of the Irish Water business should be sent directly to those project teams; unless applicable to how they are included in the RWRP-EM. Information on Irish Water projects and contact details can be found on www.water.ie

In line with the General Data Protection Regulations (GDPR) effective from 25 May 2018, Irish Water's updated Privacy Notice, is available to view online at www.water.ie/privacy-notice

Have your say

Any member of the public wishing to make a submission can do so by email or post as follows: **by 14 March 2022**

Email: nwrp@water.ie
 Post: National Water Resources Plan,
 Irish Water, P.O. Box 13216,
 Glenageary, Co. Dublin
 Freephone: 1800 46 36 76

A dedicated helpline is available for anyone who would like to discuss any aspect of the consultation prior to making a submission.

Scope of the Consultation Questions

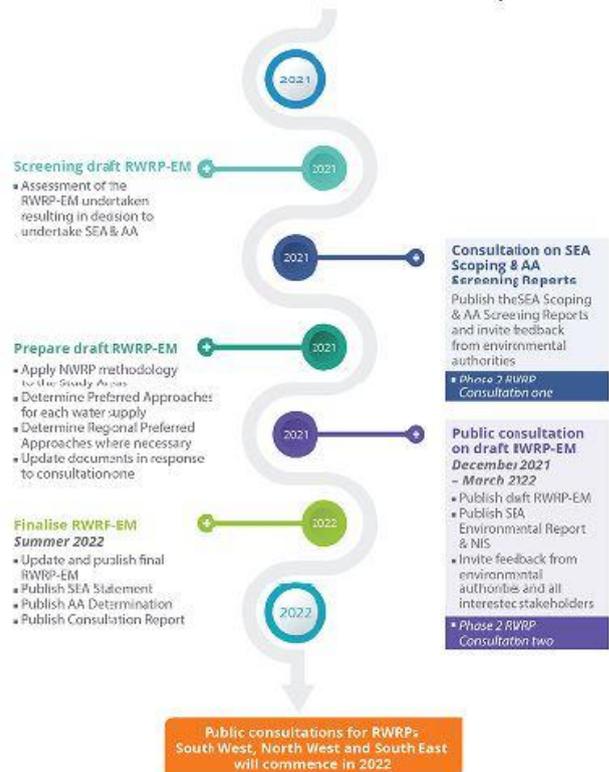
In order to help members of the public or organisations in making a submission, and to ensure clarity on the scope of what we would like consultees to consider in their feedback, Irish Water is inviting submissions on the following specific consultation questions:

1. The Eastern and Midlands Region baseline is discussed in Section 2 of the draft RWRP-EM. Do you have any comments on the Eastern and Midlands Region or in respect of the population growth and economic development and how this is considered in our water resources planning approach?
2. Within the Eastern and Midlands Region we consider 134 water supplies (Water Resource Zones) represented across nine (9) Study Areas. Do you have any comments on the Study Area delineation?
3. Section 3 of the draft RWRP-EM and each of the Technical Appendices 1-9 outline the Need (Deficits) in both Quantity and Quality across the Region and in each of the Study Areas. Do you have any comment on the Need (Deficit)?
4. Section 6 and the Technical Appendices 1-9 of the draft RWRP-EM summarises our Options Development Process. Do you have any comments on how the Feasible Options for the Water Resource Zones (WRZs), Study Areas and the Region have been identified?

5. Section 7 sets out how the Preferred Approach is identified at WRZ and Study Area Level. Each Preferred Approach will outline how it intends to address the Need in the relevant study area. Technical Appendix for Study Areas 1-9 and Environmental Review for Study Areas 1-9 sets out how the Preferred Approach has been developed in more detail. Have you any feedback on any of the WRZ Preferred Approaches or Study Area Preferred Approaches?
6. The draft RWRP-EM will look at a range of solutions to meet the Need in a Water Resource Zones or Study Area. These solutions are not limited by distance, therefore, some solutions for the Water Resource Zones or Study Areas will utilise regional transfers. For example, there are 33 Water Resource Zones in the draft RWRP-EM which are capable of benefitting from regional transfers. Section 8 of the draft RWRP-EM outlines how the regional solution will be developed and compared against solutions that do not involve a regional transfer. Have you any comments on the Regional Preferred Approach?
7. Interim Solutions are outlined in Section 7 and 8 of the draft RWRP-EM and in each of the Technical Appendices 1-9. Have you any comments on this as a strategy of reducing risk to water supplies while developing our Preferred Approaches?
8. Do you have any comments on the Strategic Environmental Assessment (SEA) Environmental Report and Natura Impact Statement (NIS) which accompany the draft RWRP-EM?
9. We have produced a draft-RWRP-EM Consultation Roadmap. Do you have any comments on this?
10. How would you like Irish Water to communicate with you as the RWRPs progress?

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RWRP Eastern & Midlands Public Consultation Roadmap



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Next Steps

1. Once the consultation period has concluded, all feedback received during public consultation will be reviewed by the National Water Resource Plan team and relevant feedback will be incorporated into the final Regional Water Resource Plan Eastern and Midlands.
2. Consultation on the Strategic Environmental Assessment (SEA) Scoping Report for the second Regional Water Resource Plan: South West (RWRP-SW) is completed. The SEA Scoping Report was provided to specified environmental authorities, for the purposes of initial, non-statutory consultation on the scoping of the SEA for the South West Region. Following this process, the feedback obtained will be considered and reflected in the documents published for public consultation in early 2022 comprising the draft RWRP-SW and associated SEA Environmental Report and Natura Impact Statement.
3. The remaining two Regional Water Resource Plans, the North West and South East, will be consulted on in the same way, comprising both non-statutory screening and scoping consultation with environmental authorities, followed by statutory public consultations in 2022.
4. The submissions and observations received from the public consultation outlined above will be taken into consideration before adopting all four RWRPs. Once the complete NWRP has been finalised, comprising the Framework Plan and the four Regional Water Resources Plans and together they will be treated as a unified single plan.

Contact details

To make a submission on the RWRP Eastern and Midlands or for further information please contact:

Email: nwrp@water.ie National Water Resources Plan,
Web: www.water.ie/nwrp Irish Water,
Freephone: 1800 46 36 76 P.O Box 13216,
Glenageary, Co. Dublin

General Irish Water queries

9am-5.30pm, Mon-Fri

Telephone: **Callsave 1850 448 448 or +353 1 707 2824**

Minicom: **LoCall 1890 378 378** (for hearing impaired customers with their own minicom equipment).

Please note that the rates charged for 1850 (Callsave) and 1890 (LoCall) numbers may vary across different service providers. Calls made using mobiles may be more expensive.

This publication is available in Braille, on CD and in large text format on request by calling **1850 448 448**.

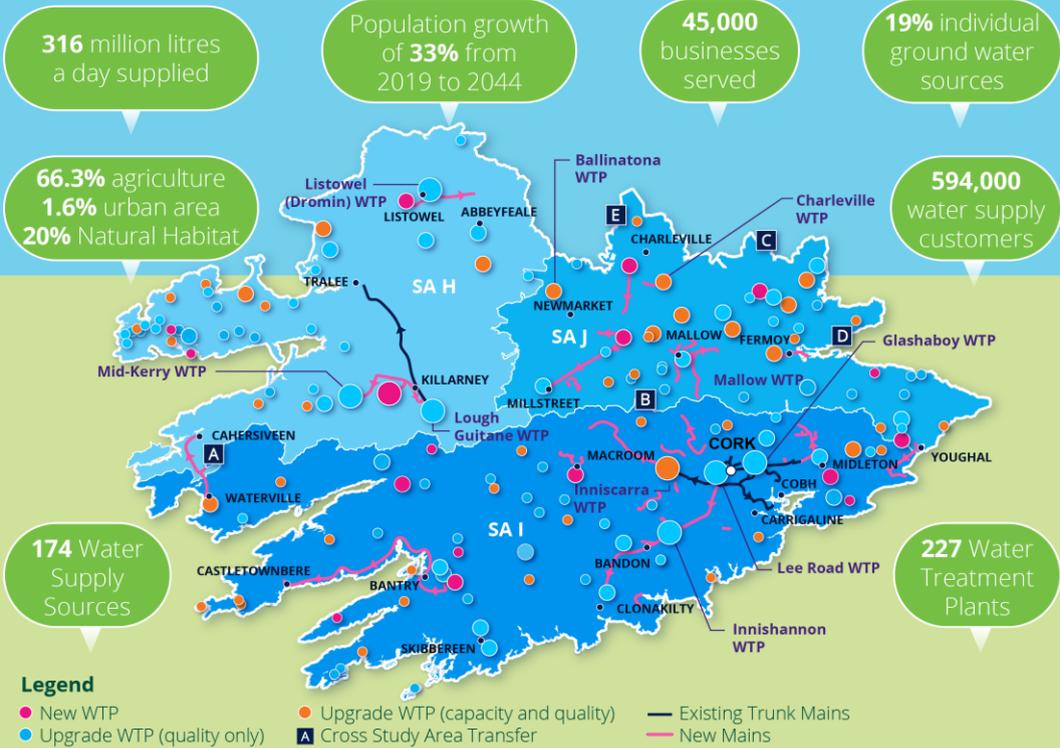


Appendix B RWRP-EM Infographic

Regional Water Resources Plan (RWRP) South West Region



The plan will set out how we can **balance the amount of drinking water we can supply with the demand for water that is needed over the short, medium and long term.**



Key Positive Outcomes of the RWRP South West

<p>Reducing leakage to 23% of regional demand through pressure management, active leakage control, find and fix and asset replacement.</p>	<p>We will improve the level of service provided to all customers in the Region for all-weather events significantly reducing the risk of outages and water restrictions.</p>	<p>93% of customers in the region will obtain the water from an interconnected supply</p>	<p>Upgrades to 137 existing water treatment plants in terms of size and barrier performance.</p>	<p>We will provide 17 new WTPs</p>	<p>We will decommission 90 WTPs</p>
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Our three pillar approach will ensure we have a safe, secure, reliable and sustainable drinking water supply for everyone

Lose Less

Reduce leakage

Use Less

Improve water efficiency

Supply Smarter

Improve infrastructure

Appendix C Press Release

Press Release

Irish Water seeks public feedback on its draft Regional Water Resources Plan for the Eastern and Midlands Region

Draft Regional Water Resources Plan Eastern and Midlands assesses the needs within the 134 public water supplies in the region in terms of quality, quantity, reliability, and sustainability.

The draft Regional Water Resources Plan Eastern and Midlands when delivered, will provide a strategic transformation from the existing fragmented supply to a more resilient and sustainable interconnected supply.

The identified solutions will support growth and economic development across the Eastern and Midlands Region

Reducing leakage in the regions from the existing baseline of 38% of regional demand to less than 22% of regional demand.

Statutory Public Consultation runs from 14 December 2021 to 14 March 2022

Irish Water today begins a three-month public consultation on the draft [RWRP EM] which sets out the options for providing a more secure, reliable, and sustainable water supply for 2.5 million customers in this region over the next 25 years.

Irish Water's National Water Resources Plan will be the first resources plan for entire public water supply in Ireland. The National Plan will identify the needs across our existing supplies and the challenges and opportunities that we face over the coming years including, legislation, climate change, the environment, growth, and economic development. The National plan will allow us to understand the actions and activities required to transform our water supplies in order to provide a safe, secure, reliable, and sustainable water supply for our current and future customers. The National Plan will also provide a transparent roadmap for how Irish Water will plan for its water assets in order to align with national policy.

Given that this is Ireland's first water resources plan and the scale of the area to be covered, the National Plan is being rolled out in two phases. Following the adoption of the National Plan -Framework Plan (the Framework Plan) in the summer of 2021 Irish Water is now moving to phase 2 of the National Plan. This phase involves preparing four Regional Water Resources Plans where we apply the process set out in the Framework Plan to all of the 539 individual water supplies that make up the public water supply in Ireland.

The four regions are;

Regional Water Resources Plan: North West
Regional Water Resources Plan: South West
Regional Water Resources Plan: South East

Regional Water Resources Plan: Eastern and Midlands

Each Regional Plan will be subject to its own consultation and, once adopted, all of the Regional Plans and the Framework Plan will be treated as a unified National Plan. The first regional plan to be developed is the draft Regional Plan

There are 201 Water Treatment Plants (WTPs) in the Eastern and Midlands Region, which collectively serve 2.48 million people or 60% of the population of Ireland, via approximately 19,000 kilometres of distribution network and 134 Water Resource Zones. These treatment plants also serve 76,000 businesses. The region itself covers approximately 20,900 square kilometres extending from the Shannon Estuary in the south west, towards the large River Boyne catchment and Greater Dublin Area (GDA) in the north east.

The draft RWRP-EM describes the Eastern and Midland Region and the current challenges faced now and into the future in terms of delivering a safe, secure, and resilient water supply. It identifies progress made to date, for instance, leakage reductions, capital investment works, and works in progress. It applies the methodology as adopted in the Framework Plan to (i) identify the Need across the 134 Water Resource Zones, in terms of quality, quantity, reliability and sustainability of supply, and (ii) identify Plan level solutions to meet this Need across the region.

Speaking as the public consultation on the draft plan was launched, Angela Ryan, Water Resource Strategy Specialist for Irish Water said, “The development of the draft plan will allow Irish Water for the first time to review water supply needs collectively across the entire Eastern and Midlands Region covering a broad spectrum of risk including quality, quantity, reliability, and sustainability. It will allow us to consider local options to resolve these needs and larger regional options that can address multiple supplies. The preferred options from the draft plan include:

- Reducing the number of Water Resource Zones (WRZ) in the Eastern and Midlands Region from 134 to 93 and developing larger interconnected WRZs for the urban areas in the region. This will allow a move away from a fragmented supply, with large variations in levels of service, to an interconnected supply with better outcomes for all water users.
- Upgrades to 136 existing water treatment plants, in terms of quantity and quality performance.
- Development of four new water treatment plants (WTPs).
- Proposed decommissioning 66 WTPs.
- Interconnecting 50 supplies via 860 kilometres of trunk mains.
- Reducing leakage from the current level of 38% of regional demand to less than 22% of regional demand by 2033. This represents a 45% reduction in leakage from 2019 to 2034. This will be achieved through find and fix, pressure management, active leakage control and asset replacement

Some of the outcomes and benefits of this regional preferred approach include improved performance across all water supplies in terms of quality, quantity which

will result in less frequent interruptions to supply and fewer boil water. The draft Regional Plan will also offer key benefits in terms of transformation of our supplies, including the ability to cater for growth and economic development in a sustainable way, improved interconnectivity between our supplies to ensure balanced regional development, and new sustainable water sources that are adaptable to climate change such as the New Shannon Source which is coming from the largest catchment in Ireland.” explained Angela.

Irish Water are now seeking feedback on the public consultation for the draft RWRP: EM and associated SEA Environmental Report and Natura Impact Statement, the documents are available to view on our website at www.water.ie/rwrp/easternmidlands

A thirteen-week statutory public consultation will run from the 14 December 2021 to 14 March 2022.

Submissions can be made by post or email by 14 March 2022.

Email: nwrp@water.ie

Post: National Water Resources Plan, Irish Water, PO Box 13216, Glenageary, Co. Dublin

This public consultation is everyone’s opportunity to feed into the process of how Irish Water identifies the water supply issues in the region and determines what the options are to provide a more resilient water supply to customers within the region.

Public webinars will be facilitated in January and February 2022. These webinars will provide information on the draft Regional Water Resources Plan Eastern and Midlands and allow opportunities to pose questions to inform submissions. If you would like to be part of an online public webinar on the draft Regional Water Resources Plan Eastern and Midlands and associated environmental reports, you can provide an expression of interest on our website at www.water.ie/rwrp/easternmidlands

Irish Water are also seeking feedback on how it will develop options to address any problems identified, before applying them to specific areas.

All submissions will be taken into consideration and responses to the issues raised will be summarised in a Consultation Report which will be published on www.water.ie/nwrp.

ENDS

Notes to the editor:

Irish Water seeks feedback on Shannon-Dublin pipe plan

■ Vocal opposition to project in north Tipperary

By Peter Gleeson

IRISH Water is currently seeking public feedback on its plan to pipe water from the Shannon river through north Tipperary and on to Dublin.

The public consultation on the controversial plan, which will involve the laying of the pipe on farmlands right through north Tipperary, began on December 14 and is due to end on March 14.

Concerns - and in many cases outright opposition - to the plan have been expressed by landowners and local politicians due to issues such as fears about the impact of the pipe on farms and cost of the project, which Irish Water has conceded will now exceed the original estimate of €1.3 billion.

The plan involves abstracting water from the Shannon at the Parteen Basin, near Bredhill, which would then be treated at a plant close to the village before being pumped along a 170km long pipe to a reservoir in Peamount in south Dublin.

The water would also be available for connection to towns and villages in the midlands along its route.

The Irish Farmers Association (IFA) says the pipeline is "one of the most intrusive infrastructural developments to be imposed on landowners since the development of motorways".

The IFA estimates that 500 landowners will be impacted in north Tipperary, Offaly, Kildare and Dublin, but Irish Water has said compensation will be available to farmers whose lands are on the route of the pipeline.

The laying of the pipe will require acquisition of a 50 metre corridor through lands during construction and the retention by Irish Water of a permanent 20 metre corridor thereafter.

PROJECT IS 'NECESSARY'

Irish Water says the project is necessary, it representing the first major upgrade to Ireland's infrastructure in

60 years.

The project aims to meet the needs of the east and midland regions - over 40 per cent of the population of the country - until 2050.

The plan currently out for public consultation assesses the needs within the 134 public water supplies in the east and midlands in terms of quality, quantity, reliability and sustainability.

Irish Water says that the plan, when delivered, "will provide a strategic transformation from the existing fragmented supply to a more resilient and sustainable interconnected supply", and support growth and economic development across the east and midlands.

Politicians in north Tipperary and those opposed to the plan have said much of the water pumped to Dublin would be lost through leaking pipes in the city.

But Irish Water says its plan includes an aim of reducing leakage in the east and midlands "from the existing baseline of 38 per cent of regional demand to less than 22 per cent of regional demand."

Angela Ryan, Water Resource Strategy Specialist for Irish Water, said: "The development of the draft plan

will allow Irish Water for the first time to review water supply needs collectively across the entire Eastern and Midlands Region covering a broad spectrum of risk including quality, quantity, reliability and sustainability.

"It will allow us to consider local options to resolve these needs and larger regional options that can address multiple supplies."

Ms Ryan said some of the outcomes and benefits of this regional preferred approach include improved performance across all water supplies in terms of quality and quantity, which will result in less frequent interruptions to supply, and fewer boil water notices.

"The draft Regional Plan will also offer key benefits in terms of transformation of our supplies, including the ability to cater for growth and economic development in a sustainable way, improved inter-connectivity between our supplies to ensure balanced regional development, and

new sustainable water sources that are adaptable to climate change such as the New Shannon Source which is coming from the largest catchment in Ireland."

CRITICISM

The pipeline plan has been criticised by Tipperary Fianna Fáil TD Jackie Cahill who says there is "serious opposition across north Tipperary to the

proposed 170km water pipeline."

Cahill told Taoiseach Micheál Martin in the Dáil last year: "There is huge unease in the north of my county in relation to this pipeline. There are landowners along the proposed route that have already suffered from a motorway going through their land. I would seriously question Irish Water's use of capital in this regard, when an awful lot of our towns and villages need money invested in existing wastewater treatment plants and others lie without a plant at all."

Cahill asked: "How can we justify draining the Shannon for use in Dublin, spending vast sums of money, all the while almost half of all water in Dublin is lost through leaks and our waterways are polluted across the country through lack of adequate wastewater treatment facilities?"

North Tipperary Councillor Seamus Morris has said the pipe would result in destruction of some of the best farmland in north Tipperary and he feels the project would amount to "environmental vandalism" and an improper

use of tax payers money.

Another Tipperary TD Mattie McGrath has called on the Government to abandon the plan. "We are literally throwing billions of euro down the drain and this needs to be re-examined as it will cause huge delays on all other water treatment and wastewater treatment system upgrades, which are also urgently required in towns and villages around the country," warned Deputy McGrath.

Irish Water says it would take four years to complete the project, which it hopes to start in 2023/2024 if everything goes to plan.

It says the water from the Shannon is needed to supply the midlands

Cuireann Uisce Éireann síneadh ama leis an gcomhairliúchán poiblí ar an bPlean Náisiúnta um Acmhainní Uisce Dréacht-Chreatphlean

Síneadh Ama leis an gComhairliúchán Poiblí

Tá Uisce Éireann tar éis comhairliúchán poiblí trí mhí a reachtáil ar an bPlean Náisiúnta um Acmhainní Uisce Dréacht-Chreatphlean, ag tabhairt breac-chuntas ann ar conas a bhogfaimid i dtreo soláthar uisce óil a bheidh inbhuanaithe, slán agus iontaoifa do 2.5 milliún cuistaiméara sna 25 bliana romhainn, agus ár dtimpeallacht á caomhnú againn ag an am céanna.

Déanann an Dréacht-Chreatphlean, na Tuairiscí Timpeallachta agus an Measúnacht Tionchar Natura a théann leis, measúnú ar na riachtanais a bhaineann leis an 134 soláthar uisce sa réigiún ó thaobh cáilíocht, méid, iontaofacht agus inbhuanaitheacht.

Is é seo an an chéad Plean Náisiúnta um Acmhainní Uisce riamh in Éirinn.

Is féidir na doiciméid seo a fheiceáil agus a íoslódáil ag www.water.ie/nwrp agus in oifigí do Rialtas Áitiúil agus chun na sonraí sin a aimsiú, téigh chuig www.water.ie/nwrp

Déanfar aighneachtaí scríofa maidir leis an Dréacht-Chreatphlean, na Tuairiscí Timpeallachta agus an Measúnacht Tionchar Natura a mheas ach iad a sheoladh chuig Uisce Éireann Dé hAoine, **25 Márta 2022**.

Ní mór aiseolas a sheoladh ar ais roimh Dé Máirt **12 Aibreán 2022**.

Ríomhphost: nwrp@water.ie

Post: An Plean Náisiúnta um Acmhainní Uisce, Uisce Éireann, Bosca OP 13216, Gleann na gCaorach, Co. Bhaile Átha Cliath

Irish Water extends public consultation on the Draft Regional Water Resources Plan: Eastern and Midlands (RWRP-EM) Public consultation extension

Irish Water has been carrying out a three month public consultation on the draft RWRP-EM which sets out the options for providing a more secure, reliable and sustainable water supply for 2.5 million customers in this region over the next 25 years.

The draft RWRP-EM and accompanying environmental reports, including the Strategic Environmental Assessment (SEA) and the Natura Impact Assessment (NIS), will assess the needs within the 134 water supplies in the region in terms of quality, quantity, reliability and sustainability.

Irish Water's National Water Resources Plan will be the first resources plan for the entire public water supply in Ireland.

The documents can be viewed and downloaded at www.water.ie/nwrp and at your local authority's planning office. For details of those locations please visit www.water.ie/nwrp.

A written submission or observation with respect to the Draft RWRP-EM and associated environmental reports and NIS made to Irish Water by **Friday 25th March 2022** will be taken into consideration before the finalisation of the Draft RWRP-EM.

Comments and feedback can be sent to Irish Water by **Friday 25th March 2022**.

Email: nwrp@water.ie

Post: National Water Resources Plan, Irish Water, PO Box 13216, Glenageary, Co. Dublin

A dedicated helpline is available for anyone who would like to discuss any aspect of the consultation prior to making a submission, **Freephone:** 1800 46 36 76

Ag cosaint ár n-uisce don saol atá romhainn



Safeguarding our water for our future



Irish Water publishes the draft Regional Water Resources Plan Eastern and Midlands | Public Consultation

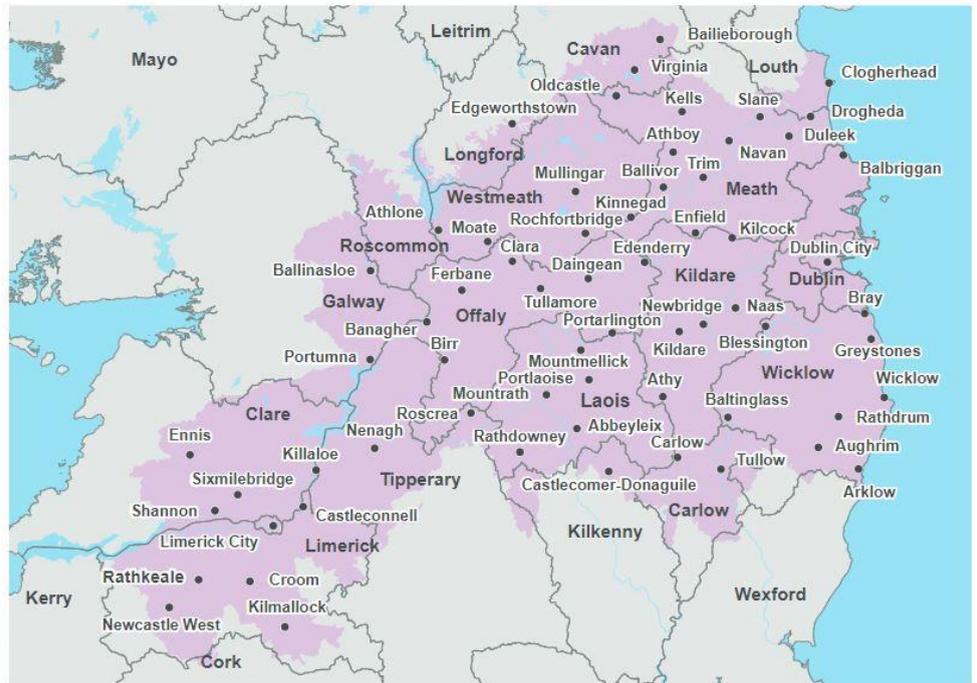


Irish Water has published the draft Regional Water Resources Plan for the Eastern and Midlands (RWRP EM). The RWRP EM is the first of four Regional Water Resources Plans, that will set out Irish Waters 25 year strategy to improve and transform the public water supply system in Ireland. As part of the draft RWRP EM Irish Water will review needs across 134 water supplies in the region in terms of quality, quantity, reliability and sustainability, and identify options to address these needs. The plan will allow us to consider local options that can resolve needs within individual supplies and regional options that can address needs across multiple supplies.

The outcome of the draft RWRP EM will involve:

- Improved performance across all of the water supplies resulting in fewer interruptions to supply or risk of boil water notices
- Strategic transformation from the existing fragmented supply to a more resilient and sustainable interconnected supply that is adaptable to climate change

A 13-week public consultation on the draft RWRP EM is now underway. This consultation will inform the development of the final RWRP EM. The consultation will run from 14 December 2021 to 14 March 2022. Please see a map which outlines the area which is covered by the RWRP EM. A full list of townlands, towns, settlements and counties included in the RWRP EM can be found www.water.ie/rwrp/easternmidlands. Hard copies of the draft RWRP EM and associated documents are available to be viewed at Local Authority Planning offices during office opening hours. A full list of the Planning Offices is available on our website.



Irish Water is inviting feedback from members of the public, and interested stakeholders on the draft RWRP EM and associated Strategic Environmental Assessment (SEA) Environmental Report and Natura Impact Statement (NIS), which are available at www.water.ie/rwrp/easternmidlands.

Comments and feedback can be sent to Irish Water by **Tuesday 14 March 2022**:
 Email: nwrp@water.ie
 Post: **National Water Resources Plan, Irish Water, P.O. Box 13216, Glenageary, Co. Dublin**
 Freephone: **1800 463676**

All submissions received will be reviewed and taken into consideration and relevant feedback will be incorporated into a Post Consultation Report and/ or the final RWRP Eastern and Midlands which will be published in 2022, alongside the SEA Statement and AA Determination.

Irish Water is inviting you to join a public webinar on the draft Regional Water Resources Plan Eastern and Midlands Public Consultation

Irish Water has published the draft Regional Water Resources Plan for the Eastern and Midlands (RWRP EM). The draft RWRP EM is the first of four Regional Water Resources Plans, that will set out Irish Water's 25-year strategy to improve and transform the public water supply system in Ireland.

A 13-week public consultation on the draft RWRP EM is now underway until March 14, 2022. This consultation will inform the development of the final RWRP EM. Irish Water is inviting feedback from members of the public and interested stakeholders on the draft RWRP EM and associated Strategic Environmental Assessment (SEA) Environmental Report and Natura Impact Statement (NIS).

Irish Water is hosting a number of public webinars to discuss the draft RWRP – EM plan and associated environmental reports, and to answer any questions you may have that will assist you in making your submission. To register to join one of our public webinars please visit our website www.water.ie/rwrp/easternmidlands

Submissions on the draft RWRP- EM should be sent to Irish Water by Tuesday **14 March 2022** via:

Email: **nwrp@water.ie**

Post: **National Water Resources Plan, Irish Water,
P.O. Box 13216, Glenageary, Co. Dublin**

Freephone: **1800 463676**

All submissions received will be reviewed and taken into consideration and relevant feedback will be incorporated into a Post Consultation Report and/ or the final RWRP Eastern and Midlands which will be published in 2022, alongside the SEA Statement and AA Determination.



Appendix E Media Coverage

Media	Date
Tipperary Mid-West Radio	1 February 2022
Limerick 95FM	2 February 2022
Kildare FM	1 February 2022
Anglo Celt	13 January 2022
Kilkenny people	13 January 2022
Clare Champion	13 January 2022
Meath Chronicle	13 January 2022
Drogheda independent	13 January 2022
Offaly Independent	13 January 2022
The Corkman	13 January 2022
Dublin People	13 January 2022
Leinster Leader	13 January 2022
Leinster Express	13 January 2022
Limerick Leader	13 January 2022

Longford Leader	13 January 2022
Tipperary Star	13 January 2022
The Nationalist Series	13 January 2022
Wicklow People	13 January 2022
Connacht Tribune	13 January 2022
Midland Tullamore	13 January 2022
Nenagh Guardian	13 January 2022
Roscommon Herald	13 January 2022
Westmeath Examiner	13 January 2022
Westmeath Independent	13 January 2022
Wexford People	13 January 2022
Irish Examiner	14 December 2021
Irish Times	14 December 2021
Irish Independent	14 December 2021
The Farmers Journal	16 December 20201

The Irish Times	15 March 2022
The Irish Independent	15 March 2022
The Irish Independent	25 March 2022

Appendix F Planning Counters & Libraries

Local authority	Location	Address
Carlow County Council	Planning Department	Carlow County Council, Athy Road, Carlow R93 E7R7
Cavan County Council	Planning Department	Cavan County Council, Cavan Courthouse, Farnham Street, Cavan H12 R6V2
Clare County Council	Planning Department	Clare County Council, Áras Contae an Chláir, New Road, Ennis, Co. Clare V95 DXP2
Cork City Council	Planning Department	Cork City Council, City Hall, Anglesea Street, Cork T12 T997
Cork County Council	Planning Department	Cork County Council, County Hall, Carrigrohane Road, Cork T12 R2NC
Donegal County Council	Central Library	Donegal Central Library, St Oliver Plunkett Rd, Letterkenny, Co. Donegal F92 R273
Dublin City Council	Planning Department	Dublin City Council, Civic Offices, Wood Quay, Dublin 8 D08 RF3F
Dun Laoghaire-Rathdown County Council	Planning Department	Dun Laoghaire Rathdown County Council, Civic Hub, Dundrum Office Park, Main Street, Dundrum, Dublin 14 D14 YY00
Fingal County Council	Planning Department	Fingal County Council, County Hall, Main Street,

		Swords, Co. Dublin K67 X8Y2
Galway City Council	Planning Department	Galway City Council, City Hall, College Road, Galway H91 X4K8
Galway County Council	Planning Department	Galway County Council, Áras an Chontae, Prospect Hill, Galway H91 H6KX
Kerry County Council	Planning Department	Kerry County Council, Co Buildings, Rathass, Tralee, Co. Kerry V92 H7VT
Kildare County Council	Planning Department	Kildare County Council, Áras Chill Dara, Devoy Park, Naas, Co. Kildare W91 X77F
Kilkenny County Council	Planning Department	Kilkenny County Council, County Hall, John Street, Kilkenny R95 A39T
Laois County Council	Planning Department	Laois County Council, Áras an Chontae, JFL Ave., Portlaoise, Co. Laois R32 EHP9
Leitrim County Council	Planning Department	Leitrim County Council, Áras An Chontae, St. Georges Terrace, Carrick on Shannon, Co. Leitrim N41 PF67
Limerick City & County Council	Planning Department	Limerick City & County Council, Dooradoyle Road, Dooradoyle, Limerick V94 WV78
Longford County Council	Planning Department	Longford County Council, Áras An Chontae, Great Water Street,

		Longford N39 NH56
Louth County Council	Planning Department	Louth County Council, Town Hall, Crowe Street, Dundalk, Co. Louth A91 W20C
Mayo County Council	Planning Department	Mayo County Council, Áras an Chontae, The Mall, Castlebar, Co. Mayo F23 WF90
Meath County Council	Planning Department	Meath County Council, Buvinda House, Dublin Road, Navan, Co. Meath C15 Y291
Monaghan County Council	Planning Department	Monaghan County Council, 1 Dublin Street, Monaghan H18 X982
Tipperary County Council	Planning Department	Tipperary County Council, Civic Offices, Nenagh, Co. Tipperary E45A099
Offaly County Council	Planning Department	Offaly County Council, Áras an Chontae, Charleville Road, Tullamore, Co. Offaly R35 F893
Roscommon County Council	Planning Department	Roscommon County Council, Áras an Chontae, Roscommon Town, Co. Roscommon F42 VR98
Sligo County Council	Planning Department	Sligo County Council, Sligo City Hall, Quay St, Abbeyquarter North, Sligo F91 PP44
South Dublin County Council	Planning Department	South Dublin County Council, County Hall, Tallaght, Dublin 24 D24 A3XC

Waterford City & County Council	Carrickphierish Library	Carrickphierish Library, Gracedieu Rd, Carrickphierish, Co. Waterford X91 NN9F
Westmeath County Council	Planning Department	Westmeath County Council, Áras an Chontae, Mount Street, Mullingar, Co. Westmeath N91 FH4N
Wexford County Council	Planning Department	Wexford County Council, Customer Service Unit Block B, County Hall, Carricklawn, Wexford Y35 WY93
Wicklow County Council	Planning Department	Wicklow County Council, County Buildings, Whitegates, Wicklow Town, Co. Wicklow A67 FW96

Appendix G Sample Stakeholder Email

NWRP Phase 2- Regional Water Resources Plan

Dear Stakeholder,

Irish Water is developing its first National Water Resources Plan (NWRP) that will outline how we move towards a sustainable, secure, and reliable drinking water supply for everyone over the next 25 years whilst safeguarding our environment. As this is our first National Water Resources Plan, we have divided it into two distinct phases, the combination of which will form our overall NWRP.

Phase 1, The Framework Plan is now complete following a 12-week statutory consultation period with accompanying SEA Environmental Report and Natura Impact Statement. The NWRP Framework Plan is available at www.water.ie/nwrp.

We are now in Phase 2 NWRP - Regional Water Resources Plans (RWRPs), which comprises the development of four RWRPs covering the North West Region, South West Region, South East Region, and Eastern Midlands Region, respectively. The first to be developed will be the RWRP Eastern and Midlands (RWRP-EM).

Irish Water are now seeking feedback on the draft RWRP-EM and associated SEA Environmental Report and Natura Impact Statement. A 13 -week statutory public consultation will run from 14 December 2021 to 14 March 2022 during which time the draft RWRP-Eastern and Midlands and associated environmental reports can be viewed and downloaded at www.water.ie/rwrp/easternmidlands and at your local authority's planning office during their normal opening hours.

If you would like to make a submission, please send it by email or post by 14 March 2022.

Email: nwrp@water.ie

Post: National Water Resources Plan, Irish Water, PO Box 13216, Glenageary, Co. Dublin

The following consultation questions have been prepared in order to guide you in making a submission:

1. The Eastern and Midlands Region baseline is discussed in section 2 of the draft RWRP- EM. Do you have any comments on the Eastern and Midlands Region or in respect of the population growth and economic development and how this is considered in our water resources planning approach?
2. Within the Eastern and Midlands Region we consider 134 water supplies (Water Resource Zones) represented across nine (9) Study Areas. Do you have any comments on the Study Area delineation?
3. Section 3 of the draft RWRP-EM and each of the Technical Appendices 1-9 outline the Need (Deficits) in both Quantity and Quality across the

- region and in each of the Study Areas. Do you have any comment on the Need (Deficit)?
4. Section 6 and the Technical Appendices 1-9 of the draft RWRP-EM summarises our Options Development Process. Do you have any comments on how the Feasible Options for the Water Resource Zones (WRZs), Study Areas and the Region have been identified?
 5. Section 7 sets out how the Preferred Approach is identified at WRZ and Study Area Level. Each Preferred Approach will outline how it intends to address the Need in the relevant area. Each, Technical Appendix for Study Areas 1-9, and Environmental Review for Study Areas 1-9 will set out how the Preferred Approach has been developed in more detail. Have you any feedback on any of the WRZ Preferred Approach or Study Area Preferred Approach?
 6. The draft RWRP-EM will look at a range of solutions to meet the Need in a Water Resource Zones or Study Area. These solutions are not limited by distance, therefore, some solutions for the Water Resource Zones or Study Areas will utilise regional transfers. For example, there are 33 Water Resource Zones in the draft RWRP-EM which are capable of benefitting from regional transfers. Section 8 of the draft RWRP-EM outlines how the regional solution will be developed and compared against solutions that do not involve a regional transfer. Have you any comments on the Regional Preferred Approach?
 7. Interim Solutions are outlined in Section 7 and 8 of the draft RWRP- EM and in each of the Technical Appendices 1-9. Have you any comments on this as a strategy of reducing risk to water supplies while developing our Preferred Approaches?
 8. Do you have any comments on the Strategic Environmental Assessment (SEA) Environmental Report and Natura Impact Statement (NIS) which accompany the draft RWRP-EM?
 9. We have produced a draft-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?

All feedback received during public consultation will be reviewed by the NWRP team and relevant feedback will be incorporated into the final RWRP Eastern Midlands. Submissions from individuals will be reported anonymously and feedback from organisations will be attributed to them. How feedback from the consultation has influenced the final RWRP Eastern Midlands will also be detailed in the consultation report and SEA Statement which will be published on www.water.ie/rwrp/easternmidlands

View our updated Privacy Notice at www.water.ie/privacy-notice which is in line with the General Data Protection Regulation (GDPR) effective from 25 May 2018.

This is your opportunity to feed into the process of how we identify the issues and determine what the opportunities are for water supply in your area. We are also seeking your feedback on how we will develop options to address any problems identified, before applying them to specific areas and options.

Consultation on the Strategic Environmental Assessment (SEA) Scoping Report for the second RWRP South West is underway. The SEA Scoping Report was provided to specified Environmental Authorities, for the purposes of initial, non-statutory consultation on the scoping of the SEA for the South West Region. Following this process, the feedback obtained will be considered and reflected in the documents published for public consultation in early 2022.

The remaining two Regional Water Resources Plan, North West and South East will be consulted on in the same way, comprising both non-statutory screening and scoping consultation with Environmental Authorities, followed by statutory public consultation, during 2022.

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

In line with the statutory requirements, once adopted, the NWRP will become Irish Water's strategic framework for the delivery of water services, which in turn will assist in planning projects and programmes to address water supply issues in conjunction with updates to applicable national policies. These will then be prioritised and brought forward through our regulated 5-year investment cycles.

Irish Water will be in contact in regards a briefing, over the coming weeks. to discuss the draft RWRP-EM plan and associated environmental reports, and to answer any questions you may have that will assist you in making your submission.

Please do not hesitate to contact us if you would like further information

Yours sincerely,

A handwritten signature in black ink, appearing to read 'Angela Ryan', with a long horizontal flourish extending to the right.

Angela Ryan
Water Resource Strategy Specialist

Appendix H Interested Bodies Briefings

Stakeholder name	Date of Briefing
Waterways Ireland	18 January 2022
Local Authority Waters Programme (LAWPRO)	22 February 2022
Ibec IDA, CIE, Dublin Chamber, ICMSA, Southern Regional Assembly	21 January 2022
HSE	17 January 2022
National Federation Group Water Schemes	3 March 2022

Appendix I Local Authority Councillor Briefings

Local Authority Councillor Briefings	Date
Wicklow County Council	31 January 2022
Dublin City Council	31 January 2022
Kildare County Council	1 February 2022
Meath County Council	3 February 2022
Limerick County Council	3 February 2022
Louth County Council	7 February 2022
Roscommon County Council	7 February 2022
Clare County Council	14 February 2022
Laois County Council	11 February 2022
Westmeath County Council	21 February 2022
Dun Laoghaire Rathdown	22 February 2022
Galway County Council	23 February 2022
Offaly County Council	9 February 2022
South Dublin County Council	10 February 2022
Fingal County Council	16 February 2022
Longford County Council	16 February 2022
Carlow County Council	17 February 2022
Clare County Council	25 February 2022

Wexford County Council	1 March 2022
Kilkenny County Council	3 March 2022
Tipperary County Council	4 March 2022

Appendix J Public Webinars Q&A Document

Public Consultation of the draft Regional Water Resource Plan – East and Midlands.

Questions and Answers from Public Webinars

Introduction

This document is a record of both questions raised (during or shortly afterwards), and answers given at public webinars that Irish Water held in relation to the National Water Resources Plan: Regional Water Resources Plan-Eastern and Midlands (RWRP-EM) from the 2nd of February to the 23rd of February. This document is being provided in the interests of transparency, and to assist stakeholders with preparing their submissions on the draft RWRP-EM, which are due by 14 March 2022.

The questions and answers are set out in as verbatim a way as possible. We believe we have captured them accurately, although the webinars were not recorded. The answers given here are as given at the webinars and, where we have more information, we have added that in as well. This document also sets out questions submitted in writing by email following the webinars. Irish Water has grouped these questions into broad themes for ease of reference but has not edited the questions themselves.

A small number of questions were determined to be out of scope of the consultation process that Irish Water (IW) is currently undertaking. If a question submitted is not on the list below, IW confirms that the question was considered to be out of scope.

In some cases, the responses will provide references to sections of the draft RWRP-EM or the Framework Plan, which can be downloaded from the following websites:

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

Framework Plan and appendices - <https://www.water.ie/projects/strategic-plans/national-water-resources/>

In relation to submissions to date, Irish Water received 83 submissions on the Framework Plan. So far on the current consultation on the draft RWRP-EM, we have received 21 submissions, with the closing date for submissions being 14 March 2022. We anticipate receiving a significant number of submissions on the draft RWRP-EM. We believe it would benefit the draft RWRP-EM to receive as many submissions as possible.

RWRP: EM – General

This Report is based on population and economic data/forecasts from before COVID. This is clearly inappropriate given the demographic changes expected in the aftermath of the Pandemic. Covid is likely to have the largest impact on Irish demographics for many decades. Surely this context needs to be taken into account until the implications of Covid are clear, rather than justifying the biggest infrastructural project in the history of Ireland on the basis of outdated data that is highly likely to be wrong.

The base year used by Irish Water in the development of its NWRP is 2019, as 2018 was a significant drought year, and a National Water Conservation Order was issued for much of the summer period. Similarly, in 2020, restrictions related to Covid-19 may have altered the baseline demand figures for that year. Long term impacts of Covid-19 on demand will need to be assessed over the coming years before significantly altering forecasts. Irish Water therefore remains of the view that it is appropriate to use 2019 as the base year.

Irish Water will review trends in domestic and non-domestic demand over the coming years and assess the impacts of Covid-19 as per our monitoring and feedback process in section 8.3.8 of the Framework Plan. One of the benefits of a more interconnected water supply network will be the flexibility to adapt to changing growth patterns.

You said 88 sources are struggling; is that the Midlands area or nationwide?

This figure refers to 88 supplies in the Eastern Midlands region, which are not currently reaching our optimum Level of Service (see section 3.2.1.2 of the draft RWRP-EM for further information on Level of Service).

Will the new plan serve areas which have historically not been served by a public supply? (i.e., businesses/houses on private supplies)

The draft RWRP-EM addresses existing public water supplies; however, IW recognises that there are some individual households, or group water schemes that would like to be taken in charge onto the public network. IW has a process for connection applications that is managed through our Connections and

Developer Services team. Pre-connection enquiries can be submitted at <https://www.water.ie/connections/pre-connections/>.

Further information about group schemes is available from the National Federation of Group Water Schemes (NFGWS), advice and contact details can be found on their website <https://nfgws.ie/>

When will the transformation of the rest of Ireland be looked at?

We are out for consultation on the draft RWRP-EM until 14 March. Irish Water will then review submissions and consider where changes should be made to the draft RWRP-EM in response. Irish Water will also complete the environmental assessments required in respect of the plan, which will also be informed by public consultation. It may take 3 to 4 months after that until the plan is adopted.

Irish Water intends to issue the draft Regional Water Resources Plans for the three remaining regions (South West, North West, and South East) for public consultation later this year. We anticipate that all four Regional Water Resources Plans will be finalised and adopted by early 2023.

There are significant excavation works planned in the coming years for inner city Dublin and the greater Dublin area to facilitate the retirement, removal and replacement of the Fluid filled transmission and distribution network cables (>100km of cables in this area). This work will require huge excavation works and would be an obvious opportunity to repair the current water system and enhance it with new pipe work for improved capacity and integrity.

Irish Water facilitates and aligns with delivery of other works, including local authority projects, when possible. An example would be the recent cycle path between Clontarf and the city centre. IW coordinated with Dublin City Council to complete the replacement of approximately 6 kilometres of watermains as part of development of the cycleway.

IW also has a working group with Bus Connects, to understand where there will be works coming up and whether IW works can be aligned. Irish Water sees these projects as an opportunity to reduce impact to our customers and the wider public while obtaining value for money in mains rehabilitation investment. However, this approach is not always feasible due to budget constraints and the need to address priority supplies. To give an idea of scale, there are 9,000km of water mains in the Greater Dublin Area (GDA). The current programme of mains replacement in that area includes 40% of the funding available nationally for leakage reductions. Irish Water prioritises mains replacement in the areas of greatest need i.e., lengths of mains with the highest historical burst frequency.

Significant works were undertaken during the lockdown period at times when it was possible to do so in compliance with government guidelines on COVID. COVID restrictions did result in periods of time where construction works were not allowed, and this coupled with altered working practices to limit the spread of COVID within our operation crews did limit the volume of work which could be completed.

Why are Irish Water not campaigning to users to conserve water?

We cannot look at any aspect of the natural world as separate. This plan seems to be doing exactly that. If an overall broader vision was adopted into IW plans, then the public would be experiencing an ongoing, all-out, robust campaign to conserve water and reduce water wastage. Then this Plan may be very different. Statutory bodies seldom go to the source of the problem.

"Use Less" is one of the three "pillars" that Irish Water has used to develop options to address identified need. Under the 'Use Less' pillar, conservation activities are underway at present, and Irish Water is committed to helping our customers become more efficient in their water use. Presently Irish Water is actively promoting water conservation in schools, business and communities through activities including:

National and Local Media Campaigns;
Targeted Sectoral campaigns;
Green Schools;
Water Stewardship Scheme;
First Fix Free Scheme; and
Development of an online water conservation application which will provide tips on how to conserve water in the home.

Irish Water also works with stakeholders to support policy change, such as developing water efficiency standards in Building Regulations and social housing.

Are you also engaging with farmers? What do they think of this plan?

Yes, we do engage with farmers and farming organisations. IW is committed to engaging with as many people as possible on the NWRP. We welcome input and feedback from farmers.

How have IW accounted for the growth of Limerick, Clare and Tipperary County population expansion over time and its associated water requirements?

As set out in Section 2 of the draft RWRP-EM, a key objective of the RWRP-EM is to ensure water infrastructure can support the proposed growth policies at national, regional, and county level. Growth projections used within our draft

RWRP–EM were based on best available data from the National Planning Framework (NPF) and Regional Spatial Economic Strategies (RSES's) at the time of compiling our draft RWRP–EM. The growth rates in the NPF for the keys towns of Limerick, Nenagh and Ennis by 2040 are 61%, 30% and 30% respectively.

With regard to international best practice, what elements of the plan reflect learnings from other countries who have done something similar?

The Methodology in the Framework Plan aligned with the approach applied in the UK (England and Wales) due to the similarities between the legislative framework for water services, catchment level populations, water asset bases and water supply asset bases, while recognising existing constraints such as data limitations. However, Ireland is relatively unique in the European context, with the fragmented nature of its water supply due to the way in which Ireland's water supplies were developed historically. Therefore, the plan for Ireland has to be bespoke for the Irish context. There are 134 water supplies in the Eastern and Midlands region. A more interconnected network allows for more flexibility and a more secure water supply for the region.

The similarities and differences between our resources plan and those used in other jurisdictions and the reasons for those difference is included in Section 2 of the Framework Plan.

Which government organisation will be enforcing the new regulations regarding un-licensed abstractions in catchments? Will it be IW?

As outlined at Section 3.7.2 of the Framework Plan, the Government is currently developing new legislation dealing with water abstractions. Under this legislation, the Environmental Protection Agency (EPA) will be the licensing authority and the intention is that the local authority will be in charge of regulating sub-threshold abstractions.

RWRP: EM – Project Costs and Timelines

Can you give any estimate on cost of pipeline? Construction and annual running costs for the time period in question?

At plan level an outline design and estimated cost is developed for each feasible option, which captures the scale of the project and allows for a comparison of costs between other feasible options. At this stage, designs, costings, and environmental assessments are desk-based and considered at plan level. As preferred approaches progress to project level, we conduct more detailed costings and cost benefit analysis. These are to meet the requirements of the Department of Public Expenditure and Reform and our regulator, the CRU.

How do you propose to finance it with competing demands, for example housing?

Irish Water is funded through central government and submits business plans to the CRU for both operating and capital costs for our revenue controls periods, which typically cover 5-year periods. The outputs from NWRP will be used in future submissions for funding. It is envisaged that it will take several funding cycles to deliver all works required, so the proposed works will need to be prioritised over future funding cycles.

The 60s and 70s saw massive growth in midland towns such as Mullingar. At the time Westmeath County Council chose to abstract water from Lough Owel, which had previously been the main feeder supply of the Royal Canal. The canal was closed at that time however the council gave an undertaking to provide an alternative supply should the canal ever reopen. We are now 12 years beyond the canal reopening, yet no supply has been provided. IW have inherited this obligation to resupply. We believe the Shannon abstraction plan will eventually supply Mullingar which will then free up the Lough Owel supply for the canal. What is the timeframe for completion of this proposed pipeline? In recent years, the restricted supply given to the canal from the Lough Owel feeder has resulted in the canal being closed to navigation for much of the year. Again, re abstraction from Lough Owel... what is the timeframe for completion of the Shannon Abstraction Plan?

The proposed preferred approach for the Mullingar area, as set out in the draft RWRP-EM is to provide supply to the area from a connection to the pipeline transferring supply from the New Shannon Source to the Dublin area. The transfer pipeline is an inflight project and will have to go through its own statutory consenting process before works can commence, therefore we do not have a definite timeline for the completion of these works.

Irish Water is committed to providing an alternative source of water for Mullingar however, in the meantime we will continue to work with Waterways Ireland to safeguard water supply to the Mullingar area.

RWRP: EM – Calculations, leakage, volumes

Given the sheer size/length of the new water mains planned, how will they be protected to prevent leakage? And what is the cost benefit of such a large project versus increased attempts at reducing leakage and waste?

Within the regional plan, it is proposed to construct an additional 800km of trunk main. This is in the context of 19,000km of existing main in the region at present. Therefore, it is a small percentage increase overall.

The proposed new mains are trunk mains with very few connections off them; they interconnect one area to another; therefore, they are usually high flow mains and less susceptible to leakage. Where leaks occur, they are easily found and repaired.

The consultation ongoing at present is on the draft RWRP-EM and not a specific project. Major projects identified in the draft RWRP EM will all be subject to a cost benefit analysis.

What is your target 2034 leakage (in Mld) for the GDA?

Surely you know what your 2034 leakage target is (in Mld) for the GDA? This is a key (and basic) piece of data that is fundamental in terms of allowing scrutiny.

Irish Water is working towards reducing leakage in the Greater Dublin Area (GDA) from 215 MI/d in 2019 to 131 MI/d by the end of 2033, which is the current target for the GDA applied within the draft RWRP-EM. This target represents 21% of projected demand at that time. This is a net reduction of 84MI/day between 2019 and 2033.

Although it is a 25-year plan, IW has adopted these targets up to 2033. As we approach 2033, we will again review the leakage targets. We anticipate leakage reducing to 21% in the Dublin Area and across supplies with demand greater than 1,500m³/day by then. This will reduce leakage levels across the entire region to an average of 22%.

Whilst carrying out our sensitivity analysis for the Plan, we reviewed the potential of achieving further leakage targets in the GDA and applied an additional 65ML/d of leakage savings (over and above the current target net reduction of 84 MI/day). This combined reduction would result in a leakage level of less than 10%. Our sensitivity analysis, set out in Appendix 9 of the draft RWRP-EM, showed that the preferred approach identified in the RWRP-EM is adaptable to further leakage reductions, including a leakage level of 10%.

Are there specific areas with an extremely high leakage rate?

IW is committed to addressing the current level of leakage across our supplies. In 2018, the rate of leakage nationally was 46%; by the end of 2020 it was 40%. By the end of 2021, we had reduced leakage further to 38%.

As part of the preferred approach for the Eastern and Midlands region, we are proposing to reduce leakage to 21% of total demand across supplies, with

demand greater than 1.5MI/day. This equates to a total leakage reduction of 141MI/day across the region, which will bring average demand to 22%.

Leakage reduction will always be intrinsic to our resources planning process and will always be funded as part of each investment plan. We have a multitude of issues to address across our water supplies. We must transform our water supplies (abstractions, treatment plants), improve interconnectivity between supplies by upgrading our treated water storage and trunk main network, as well as continue leakage reduction.

The consultation document states that (outside the GDA) you will only assume 3MI/d of leakage savings between 2019 and 2034. Are you suggesting that this amounts to reducing leakage across the entire region (as your slide a moment ago suggests) to 21%?

You have shown a slide tonight that suggests this plan involves cutting leakage to 21% across the entire region. However, tucked away within this 1,000-page document, it is made clear that this is NOT actually the case. For the vast majority of water resource zones, the SDBs (supply demand balances) assume that leakage will not be cut to anywhere close to 21%. Indeed, for multiple areas, the plan is not to cut leakage at all. How can you justify using such a misleading slide?

My question about leakage (your 21%/22% claim) was not answered. Your own document states that you do not reflect the full SELL reductions in your SDB. Across the entire region (ex-the GDA) - instead, you are only reflecting a reduction of 3MI/d into your SDB. How do you justify this, given your claim to reduce to 22% across the region?

Leakage outside of the GDA is prioritised on an annual basis as part of the National Leakage Reduction programme therefore leakage targets are not automatically applied to the supply demand balance calculations. This allows Irish Water's leakage reduction programmes to be flexible and targeted, to meet specific emerging needs.

However as set out in Section 4.3.3 of the Framework Plan leakage targets for 2019 were applied to priority supplies based on: supply demand deficit, existing abstractions with sustainability issues, and drought impacts. For supplies within the Eastern and Midlands region, leakage targets of 3 MI/d were included in the supply demand balance for 2019 and it was noted that leakage targets for further years would be allocated to supplies to meet specific emerging needs. This does not mean that only 3MI/d will be applied for the region between 2019 and 2034 but rather we committed to a figure for 2019 in the supply demand balance and provided flexibility in where leakage reduction would occur after that.

The draft RWRP–EM provides more details of our current leakage targets for the Eastern and Midlands region, which are to reduce leakage in supplies with demand greater than 1.5MI/day to 21% of total demand by 2033. Supplies of greater than 1.5MI/day are found in various locations around the Eastern and Midlands Region.

This along with the proposed leakage reduction for the Greater Dublin Area (GDA), of 84MI/d, equates to a total leakage reduction of 141MI/day, which will reduce leakage to 22% of demand across the entire region. Therefore, the leakage targets outside of the GDA will equate to approximately 57MI/d by 2033. Our leakage targets will be reviewed annually and will be subject to further modification.

At project level, when we proceed to develop the preferred approach, we will review the supply demand balance and subtract the target leakage reductions from the deficit at this stage. This ensures that the preferred approaches are not oversized, or that the needs are over emphasized.

You state (in the draft RWRP - EM) that if you were to reduce leakage across just the larger non-GDA WRZs in the region to 22% then the long-term regional deficit would be reduced by 57Mld. What would be the additional impact (i.e., the further reduction in the deficit, in Mld, beyond 57Mld) if all non-GDA WRZs in the region were reduced to 22% (i.e., not just the larger ones)?

As set out in the draft RWRP–EM our current leakage targets for the Eastern and Midlands region, are to reduce leakage in supplies with demand greater than 1.5MI/day to 21% of total demand by 2033. This equates to a total leakage reduction of 141MI/day across the region, which will reduce leakage to 22% of demand across the region.

The volume of leakage across supplies with demand less than 1.5MI/day is less than 6% of leakage across the entire region therefore larger gains can be achieved by focusing our leakage reduction resources on larger supplies. As we approach 2033, we will again review the leakage targets and look to determine supplies that we should focus for further leakage reduction with the objective of achieving the best return for our investment.

Here is an example of a concern that was flagged in the last consultation process: concerns were raised in relation to your introduction of a 22-hour output concept. Your consultation report did not even attempt to justify/explain this concept (which is NOT international best practice) - yet you went ahead and used it in your final plan. Do you consider this to be transparent?

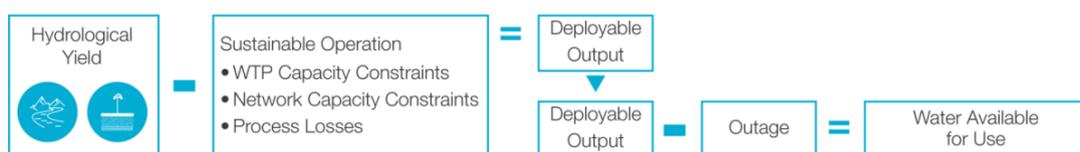
IW's treatment plants operate on a 24-hour basis. When we state 20-hour production in Normal Year Annual Average, we are referring to the rate of throughput of a water treatment plant, i.e., the flowrate through the plant is 20 hours/24 hours and this is what we refer to as the sustainable plant production level. The purpose of this is to optimise the sizing of the mechanical features of the water treatment plant, in much the same way as a car (with a car design, although the speedometer gives a range of speeds, the engine design is optimised for a given rev count. Although the car is perfectly capable of operating outside of the optimal rev count, there are impacts on fuel consumption and design life if this is continuously the case.). In our standard designs we optimise around a throughput of 20/24 hours in normal conditions, however in peak events we allow the water treatment plants to operate above this range. This ensures that we do not oversize the water treatment plants by giving consideration of the range of throughputs.

The purpose of allowing peaking to go above the sustainable plant production level is to ensure that deficits, during peak demand scenarios, are not exacerbated by water treatment plant capacity.

Is the demand Vs supply balance outlined based on actual gross system capacity, or net capacity (after system losses; leaks etc.)

In our calculations of the supply demand balance, we allowed for factors such as outage allowance, headroom, and peaking factors. The graphics below provide an overview of how we determined supply and demand.

How we calculate Water Available for Use



How we calculate Demand



More detailed information can be found in Chapters 3 and 4 of the Framework Plan.

What percentage of the water supply for Dublin currently is industry/data centre usage versus residential usage?

Of the total accounted for water in the Dublin area, 60% was estimated as domestic demand (207MI/d) versus 40% non-domestic Demand (139MI/d) in 2019. These figures were provided in Section 4 of the Framework Plan.

Will the announced embargo on new data centre planning applications, the energy strategy for data centres to be built near renewables sources (west coast) and the decentralisation of industrial load centres significantly reduce the forecast water usage for the greater Dublin area in coming years? This coupled with the pandemic led shift away from cities for people and recent work from home legislation is a significant shift. I.e. is 330million litres a day still relevant?

To put water use from data centres in context, water usage nationally for data centres is less than 0.2% of overall total demand and, due to the use of advanced technology in this area, we do not envisage this level of demand significantly increasing.

Also, we already have strategies in place to mitigate demand from data centres, such as limiting peak flows to the development and ensuring the developer provides adequate private storage to manage needs during periods of peak demand.

Irish Water will review trends in domestic and non-domestic demand over the coming years and assess the impacts of Covid-19 as per our monitoring and feedback process in section 8.3.8 of the Framework Plan. One of the benefits of a more interconnected water supply network will be the flexibility to adapt to changing growth patterns.

To follow up on data centres though - they add significant usage at peak times when supply is low. The data centre in Ennis as planned uses significant water and water storage is for a single day.

Methods we use to reduce demand from large individual water users such as data centres includes limiting peak flows to developments and ensuring the developer provides adequate storage to manage needs during periods of peak demand.

What is the current supply capacity with leaks and what would it be with existing infrastructure if the leak rate were brought back to 5%?

Our estimation of water available for use does not include leakage. Leakage is considered in our estimation of demand. See response to Question 25 above. A summary of the water available for use across our supplies is set out in Section 3.2.2 of the draft RWRP-EM.

Whilst carrying out our sensitivity analysis for the draft RWRP-EM, we reviewed the potential of achieving further leakage targets across all of our supplies. For the Dublin area, we considered the impact of applying an additional 65ML/d of leakage savings (over and above the current target net reduction of 84ML/day). This combined reduction would result in a leakage level of less than 10%. Our sensitivity analysis, set out in Appendix 9 of the draft RWRP-EM, showed that the preferred approach identified in the RWRP-EM is adaptable to further leakage reductions, including a leakage level of 10%.

5% leakage would not be feasible across the 65,000 kms of distribution network in Ireland, crossing both urban and rural parts of the country. Ireland, unlike the remainder of Europe, operates in a low-pressure system, which means that leaks are hard to identify.

Irish Water changed the definition of “leakage” in 2019. This is very significant for this project: consistent data is vital in order to assess the validity (or invalidity) of earlier demand projections. For the GDA for 2019, how many Mld that were previously recorded as “leakage” were recorded instead as (a) “non-domestic demand”, (b) “domestic demand” and (c) in your new category of “unrecorded use”?

In 2019 Irish Water significantly narrowed its definition of "unaccounted for water", by excluding many hitherto *included* elements of water loss. It carved out: water taken illegally/used by the fire services (which used to be reported within UFW and is now reported as "unrecorded use" - this amounts to 1% of DI) meter under-recording (this used to fall within UFW but Irish Water has now increased the water categorised as "domestic demand" by 2% and increased the water categorised as "non-domestic demand" by 5% - and it has *deducted* the equivalent figure from 2019 UFW) water used by Irish Water itself at treatment plants (this used to fall within UFW but, since 2019, a figure representing this volume of water has been added to "non-domestic demand" and has been *deducted* from UFW).

Unaccounted for water (UFW) is the difference between the quantity of water supplied to a network and the metered or understood quantity of water used by customers. Leakage is the volume of water lost from our networks during transmission from our water treatment plants to our customers.

The overall Irish Water methodology for how leakage is calculated has not changed since 2018. We are moving from estimating UFW to estimating Leakage based on the International Water Association (IWA) Water Balance Approach. This best practice methodology uses data from over 1.1 million meters on the Irish Network to calculate each element of the water balance including leakage and water delivered to customers.

The primary difference in moving our water balance and leakage calculation to the Leakage Management System is the use of actual domestic meter data to provide more accurate consumption figures for the domestic section of the

water balance. Previously this element of the water balance would have been estimated using Per Capita Consumption (PCC) figures, thus the current leakage reporting is a more accurate number. We will have to do future work in improving our non-domestic metering and this is already underway.

You recently slashed the amount you spend on mains replacement to just EUR 34million a year (for 2020-2024). This is a tiny fraction of the expected cost of the Shannon pipeline project (EUR1.5billion and rising). You know that the pipes are the public's main concern and until you fix them, no matter how much water you pump from the River Shannon, you will not fix Dublin's problems. How can you justify spending such a tiny proportion of your budget on mains replacement?

You claim to have looked at all viable options – but a major mains replacement programme was NOT considered. This was raised as a concern during your last consultation (a year ago) – in response you claimed that your existing 0.3% per year mains replacement plan already constitutes a major mains replacement programme. This is not valid. 0.3% is not a “major” mains replacement programme - at that rate, some pipes will not be touched for another 330 years. Indeed, UKWIR research shows that 1.2% a year is needed just to offset the natural deterioration of the pipes. How can you justify your response in the last consultation process?

You have avoided answering our question: we are talking specifically about a major mains replacement programme as an option for the GDA water supply and your claim in the last consultation process that 0.3% per year constitutes a “major mains replacement programme.” How can you justify your response in the last consultation process? Do you genuinely believe that 0.3% is a major mains replacement programme?

In order to tackle leakage, the existing networks have to first be analysed using a combination of methods to understand the network and the causes of leakage. That is the first step in tackling leakage strategically.

In the initial years of our National Leakage Reduction Programme, we concentrated 60% of our expenditure on pressure management (to prevent future leaks), as well as active leakage control and ‘Find and Fix’ measures. These methods achieve the best outcome in terms of leakage reduction, which is then supplemented by mains replacement.

IW has a national programme of leakage reduction and is increasing the spend on leakage reduction measures over the coming years. Our investment in this area started at €100 million per year and is currently at €120 million per year. IW plans to increase this expenditure to €150 million per year in our next investment plan. We have also applied for further funding for leakage reduction

measures as part of the National Development Plan. Currently 40% of our leakage reduction investment is spent on mains replacement and this annual spend will increase as the budget increases. That rate will increase over time as our funding increases and our knowledge of the areas we need to target increases. Our expenditure in terms of leakage reduction is approved by the CRU.

More generally, wholesale mains replacement is not recommended as a stand-alone solution. As set out in the European Commission's EU Reference document 'Good Practices on Leakage Management (Water Framework Directive Common Implementation Strategy Working Group Programme of Measures Case Study),' there are no records of countries or jurisdictions that use largescale watermains replacement programmes as a stand-alone method to reduce leakage (even those with low leakage levels).

In our submission to your last "consultation" a year ago we flagged that "peaking" was being inappropriately applied to "total demand" which INCLUDED headroom. This inappropriately inflates the "headroom" provision. The CRU also raised a concern about this. Your response avoided addressing the concern head-on and simply stated: "Headroom is applied to total demand" – but this contradicts your own report which repeatedly made clear that "headroom" is PART OF "total demand." The (opaque) data in your SDB also supports the case that "peaking" was indeed applied to "total demand" which included "headroom." To clarify, please simply confirm: what was the 2044 "peaking" provision (in Mld) for the GDA for the DYCP?

Peaking is applied to the estimated Normal Year Annual Average Demand and the Normal Year Annual Average Demand includes a headroom allowance, which accounts for the uncertainty with data and the assumptions used in the supply and demand estimates and forecasts. The headroom allowance applied in the draft RWRP-EM for the GDA is 8%. Therefore, the estimated Normal Year Average Demand applied in the draft RWRP-EM for any given year is base demand plus 8%, and this represents the estimated normal year average demand that we could be expected to provide supply for. It is critical that peaking is applied to the estimated average demand that IW could be expected to provide supply for. It is industry practice across all engineering projects to allow for uncertainties.

I explicitly requested the 2044 "peaking" provision for the GDA DYCP in Mld (not as a %). Yet again you are avoiding answering the question. You have given a politician-style response that avoided answering our very specific question. I repeat our question: what was the 2044 "peaking" provision (in Mld) for the GDA for the DYCP? This is key data for the SDB that you should have available.

As set out in the Framework Plan the Normal Year Annual Average demand in the GDA for 2044 is estimated to be 683MI/d. The peaking factor for the GDA is estimated at 13.3% when the climate change factor has been applied, which equates to 91MI/d. Therefore, the Dry Year Critical Period demand is estimated to be 774MI/d.

What was 2020 average demand in the GDA?

What was 2020 non-domestic demand in the GDA?

What was 2020 domestic demand in the GDA?

What was (a) domestic demand and (b) non-domestic demand (each in MI/d) for Dublin (the GDA) for each of 2020 and 2021?

2020 GDA average demand is a very basic question that you clearly must know: please confirm it

Average demand in the GDA in 2020 was 571MI/d. In respect of accounted-for water, domestic demand was at 227 MI/d, with Non Domestic demand at 121 MI/d. The profile of the demand across the 2020 year was impacted by COVID restrictions, with an increase in domestic demand and drop in non-domestic demand.

In general terms, we saw a reduction in non-domestic use, but this was matched with a corresponding growth in domestic demand.

Due to the meter reading cycle the water balance for each year is determined after the first quarter of the following year. Therefore the 2021 figures are not available at this point in time.

What was 2020 “leakage” in the GDA (on a comparable basis to the 215MI/d that you reported for 2019 in the WRMP)?

What was (a) average demand, (b) network leakage (each in MI/d) for Dublin (the GDA) for each of 2020 and 2021?

Leakage in 2020 in the Dublin supply is estimated as 212MI/d. Due to the meter reading cycle the water balance for each year is determined after the first quarter of the following year. Therefore the 2021 figures are not available at this point in time.

Have you made a deduction for “deployment”/other infrastructure issues in calculating the WAFU for the GDA? If so, how much in total (in MI/d)?

Water supply to the Greater Dublin Area (which includes parts of Kildare, Meath, and Wicklow) is provided by a number of water sources and treatment plants that form part of an interconnected water resource zone. As this forms a complex network, the water available for use has been determined using a water resource planning tool known as

Aquator. The Aquator model enables us to assess the deployable output for the combined supplies for all weather conditions (normal, dry, drought and winter), for an appropriate level of service. The model demonstrates that the supply to the Dublin area in the dry year critical period providing a 1 in 50 level of service is limited by the raw water supplies. A 5% outage allowance has been applied to the yield estimated by the Aquator model to determine the water available for use. More details of the Aquator model and the outage allowance can be found in Section 3 of the Framework Plan.

You state that you provide for “climate change” on the supply side, but you do not confirm how big that provision is for the GDA. This is against the principle of transparency. What was the 2044 “climate change” provision (in Mld) for the GDA for the DYCP?

Climate Change factors were applied to the hydrological inflows to the Aquator model, which informs the volume of raw water available. As there are 3 impounding dams built into our model, we optimise the raw water storage (store water in winter for use in summer) to maximise the yield of water available.

Using the outputs from the Aquator model, it is estimated that the water available for use in the Dublin area will reduce by 16 Ml/d from 2019 to 2044 due to the impacts of climate change.

Please can you also confirm your target leakage level (in Mld) for the GDA for each 5-year interval from 2019 to 2044 (as factored in to your Supply Demand Balance for the GDA).

The leakage targets in the SDB provided in the Framework Plan and the draft RWRP-EM are set out in the table below.

	2019	2025	2030	2033	2035	2040	2044
Leakage (Ml/d)	214,829	178,829	148,829	130,829	130,829	130,829	130,829

What was your assumption level (in Mld) of baseline (2018) “customer side leakage” for your SDB for the GDA (note, we are talking about the GDA, not the “GDA Regional”)?

We do not make assumptions on baseline leakage we have included private side leakage in the overall Per Capita Consumption (PCC) estimation.

Why have you spent taxpayers’ money on a THIRD report on non-domestic demand? You commissioned two equivalent reports in 2015 (one from Jacobs Tobin and one from Indecon). Now you have commissioned one from Ernst & Young. What was wrong with the two non-domestic demand reports you already had?

Why was it necessary to do a 3rd non-domestic demand report? You commissioned 2 equivalent reports in 2015 from Jacobs Tobin and one from

Indecon. Now you have commissioned another from Ernst & Young. What was wrong with the two non-domestic demand reports you already had?

A key aspect of the NWRP is the monitoring and feedback process set out in section 8.3.8 of the Framework Plan. This process involves continual review of assumptions and data as new information becomes available, to ensure the NWRP is up to date. As it had been a number of years since the Indecon report was completed, a refresh was carried out using more up to date data. The outcome did not show any significant change in forecast non-domestic demand.

What PCC do you use for the GDA (your report is not clear on this)

The Per Capita Consumption (PCC) for the Dublin area and other areas is provided in Section 4.2.2.2 of the Framework Plan. The following sentence is an extract from the Framework Plan:

“In our supply demand balance calculations, we use PCC calculated for the specific water resource zone based on the data we have. So, for example in the GDA we use 122 l/p/d, while in Cork City we use 143 l/p/d.”

RWRP:EM - Options Assessment

What will happen the people working in these 88 [SIC] (within the plan we note 66 plants will be decommissioned) plants when they are replaced?

The 66 plants that are being decommissioned. Where are all those people employed in those plants going to end up?

IW is presenting the draft RWRP-EM for consultation now; no final decisions have been taken in relation to any specific treatment plants. No plant will be decommissioned until there is an alternative supply available and operational. When finalised, the RWRP-EM will identify possible solutions, all of which will be subject to Irish Water's capital investment process, along with the appropriate regulatory and statutory consents. In addition, the RWRP-EM is a 25-year plan and it will take time and money to roll out all of the solutions identified within it. Not all plants will be decommissioned at the same time and it will be done on a phased basis.

Why isn't the Nenagh WTP connected to Limerick?

The Nenagh WTP abstracts water from Lough Derg. The WTP for Limerick abstracts water from the headrace to Ardnacrusha in the River Shannon. Both the Limerick and Nenagh WTPs are supplied by an extremely reliable raw water source, with appropriate water treatment and storage in place.

As the proposed New Shannon Source is in the immediate vicinity of Nenagh, there are options to connect up any large non-domestic users in the periphery of

Nenagh from either the treatment plant at Coolbawn in Nenagh, or the proposed Birdhill WTP. This gives enormous flexibility in terms of growth and economic development to that area.

How does the 'virtual' connection secure supply to Limerick and Ennis?

The Limerick supply source is from the River Shannon, which is an extremely reliable water source. At present, there is existing connectivity between the Limerick and Clare supplies to the north of the River Shannon. The current preferred approach for Ennis in the draft RWRP-EM is abstraction from a highly productive aquifer at Drumcliffe. IW proposes to carry out further capacity checks on this groundwater body over the coming year. Further to the results of these capacity checks, there is an option within the plan to augment the Ennis supply from the Limerick regional supply if necessary.

Have you looked at abstractions from river sources that are also used for abstractions for canals? UK Tag on Flows. Obviously, we have WFD.

Some of our existing sites already abstract water from sources that are also used for abstractions for canals. These locations include Lough Owel in Mullingar, the River Barrow in Kildare, and the River Liffey in Dublin.

All of our abstractions and the abstractions for the canals will be subject to new legislation on water abstraction, which is currently under development.

Is reverse osmosis of seawater, or large-scale rainwater harvesting an option for industry to reduce its demand?

Desalination is included as a feasible option within the draft RWRP-EM plan. As part of our ongoing water stewardship programme, we work with large non-domestic users in order to promote water efficiency, based on the best possible technologies that are suitable for use by their business.

Provision of independent supplies for non-domestic customers would require significant network development, for example, if we wanted to provide desalinated water, rainwater or treated effluent to non-domestic customers we would need to create an independent water network and ensure no cross contamination with the drinking water network. This would require a significant level of investment and disturbance to the general public.

We do work with large water users to reduce demand through our water stewardship programme and through our new connection programme we request non-domestic water users look to maximise the potential of rainwater harvesting and water recycling within their operations to reduce demand.

Considering our rainfall, why is water harvesting not a planning requirement for new houses for non-drinking water requirements in domestic settings?

Due to the seasonality of rainfall in Ireland, a significant amount of storage is required to ensure that rainwater harvesting is a viable option to address demand, particularly during dry periods. IW will progress pilot projects to assess the potential outcomes and benefits of rainwater harvesting over the coming years. Consideration must also be given to the operational and maintenance costs of such measures.

Ireland gets less water from wells (groundwater) than any other EU country. Over reliance on rivers makes us a complete outlier. Why is this not considered in the analysis?

Within each of the RWRPs, IW will consider potential groundwater sources for every water supply. All options considered were compared against each other using the options assessment methodology set out in Section 8 of the Framework Plan. As part of this assessment, the resilience of all options were considered and each option was given a score, which considers the potential impact of climate change. The storage capacity, sustainability and size and scale of the abstraction relative to the size and scale of the waterbody influenced this score.

Due to the natural geology of Ireland, largescale ground water storage is not available in all areas and in general groundwater is more applicable to smaller supplies in Ireland (80% of our small supplies are from GW (Ground Water) sources). There are areas of gravel and karst aquifers with good productivity, and we are utilising these in Co. Laois, Roscommon, and Ennis within the RWRP-EM.

However, we must also consider the environmental impact of groundwater abstractions. Some of the most productive aquifers in the EM region, such as the Curragh gravels, support sensitive groundwater dependent habitats, or others support baseflow into the rivers Barrow and Boyne. As a result, we give consideration the status of the water body, or neighbouring water bodies during our options assessment.

River water is generally dirtier, of poorer quality and more likely to be polluted than groundwater. It needs multiple levels of treatment to make it safe.

The purpose of the draft RWRP-EM is to look at all potential solutions across the region. It reviews every feasible option according to the methodology established in the Framework Plan. If there is good groundwater availability in an area, and it is environmentally sustainable, it will be reflected in the preferred approach.

As outlined above, the geology of Ireland means there is typically poor aquifer storage for large scale abstraction for public water supply, or there are environmental factors that preclude large scale groundwater abstraction.

How can you ensure that the rich biodiversity of the wetlands will not be impacted on negatively, given that everything in nature is interconnected and so finely tuned?

As part of our unconstrained options assessment, when we are reviewing options for ground water and surface water sources, we carry out desk-based assessments on the potential impacts on protected wetlands. This analysis is part of the Strategic Environmental Assessment (SEA) and Appropriate Assessment process applicable to the draft RWRP-EM. Environmental considerations including biodiversity are also reflected in the options assessment methodology set out in the Framework Plan. Where we consider there is the potential for an impact and if no mitigation measures can be found, we screen these types of options out.

For the options that remain, we must have a clear understanding of mitigation measures. As plan level approaches progress to project level, we carry out the required environmental assessments at a site level, including surveys and investigations, as part of the statutory consenting process.

In relation to the proposed changes to storage/abstraction inlet level at Poulaphouca, you state variously in your consultation document that this would result in 62Mld/70Mld/100Mld of additional water.

Why are three separate figures cited?

The potential interim solutions for the SA9 include increasing output at Leixlip WTP and Ballymore Eustace WTP. These works would be facilitated by optimisation of Storage at Poulaphouca by works to reduce the level of the abstraction inlet and/or by modifications to the storage curve. More details on these proposed interim solutions can be found in Section 6 of the Study Area 9 Appendix.

The figure in Table 7.20 of Section 7 of the draft RWRP-EM of 62 MI/d is a typographical error and will be corrected to be consistent with the Study Area Report which notes 70MI/d. We are proposing as an interim measure for the Dublin area to increase output at Ballymore Eustace WTP from 310MI/d to 380MI/d.

This temporary measure, along with a proposed increase in output from Leixlip WTP, by 50 MI/d will allow us to increase the volume of water we can provide to

our customers. It is estimated that these works combined will provide us a total increase in the order of 100 Ml/d, however the full yield we can obtain from the River Liffey will be determined in consultation with ESB (Electric Supply Board), the EPA, IFI (Inland Fisheries Ireland), Waterways Ireland and other impacted stakeholders.

Environmental assessments will be required before proceeding with any increase in abstraction and these assessments will determine the combined yield. The ability to increase output at Ballymore Eustace WTP and Leixlip WTP beyond the existing output is currently proposed to limit the risk of outages to our customers in the scenario where we have to reduce output at either plant due to an unplanned outage. Again, this proposal is a temporary or interim measure until we can develop and deliver the preferred approach, which will allow us to provide the 1 in 50 level of service to our customers.

Does the volume of water available vary from the WCP to the DYCP?
How much additional water do you anticipate (in Mld) would be available during the DYCP?

Yes, the water available for use from the Liffey system varies from the WCP to the DYCP. The full yield we can obtain from the River Liffey will be determined in consultation with ESB, the EPA, IFI, Waterways Ireland and other impacted stakeholders.

Environmental assessments will be required before proceeding with any increase in abstraction and these assessments will determine the combined yield available. These works will not increase the DYCP yield for the 1 in 50 level of service, however, these works combined with leakage savings, will allow us to maintain the existing level of service in the normal year scenario while facilitating growth over the next ten years.

With Bord na Móna currently decommissioning many bogs, was the option of creating a vast midland reservoir to capture the winter excess of water which is currently flushed down the Shannon?

Such options were considered in the draft RWRP-EM; however, these options were considered unfeasible due to the fact that raw water transfers from sub-catchments significantly increase the risk of transfer of invasive species.

You have NOT published your overall groundwater assessment e.g. how you calculated yield etc. Are you still relying on the 2008 Eugene Daly report?

Our groundwater assessment methodology is set out in Chapter 3 of the Framework Plan and is also described in Appendix C. The assessments are

carried out for every unconstrained groundwater option based on the best available data from the Geological Society of Ireland (GSI) and the EPA. The assessments are carried out by a team of expert hydrogeologists who are certified members of the International Association of Hydrogeology (IAH).

We are not relying exclusively on the 2008 Eugene Daly report as that was a high-level report completed for a specific reason and did not include for assessment of impact in terms of the Water Framework Directive, or the feasibility of abstraction from certain aquifer types.

Has IW looked to neighbouring large metropolitan cities? London requires 2.6 billion litres per day and Thames water supplies this with 70% reservoirs fed by the Thames and Lea rivers and the outstanding 30% from boreholes.

Currently water supply to the Dublin area is provided from a number of supplies including impounding reservoirs on the River Liffey, River Vartry, and the River Dodder along with a run of river abstractions from the River Barrow, River Vartry, and groundwater supplies from Kildare and North Dublin. IW's draft RWRP-EM considers similar approaches to other utility providers and looks to balance supply from different resilient sources.

Surely a similar approach using the local water sources (Liffey, Dodder etc.) would be more than sufficient? London has far hotter summer and less rainfall per year.

Within our draft RWRP-EM, we have considered additional abstractions from the River Liffey, the River Dodder, and the River Barrow, as well as new abstractions from more local sources, from water bodies in the Wicklow area, however, while these sources may be suitable to supplement increased supply in the short term, the required yield is not available from these sources to provide the target level of service that we have set within the NWRP – Framework Plan. The target level of service is required to ensure continuity of supply to our customers in the area during drought periods.

RWRP:EM –Specific/Detailed Questions

Has an environmental impact study been carried out on the extraction of water from the Shannon and the construction of a pipeline to the east from the Shannon.

IW intend to abstract 3.5 cumecs from the Ardnacrusha headrace. Is there a statutory limit to the amount IW can abstract from there? Will it be monitored with respect to low water level in the lake - and the abstraction rate adjusted accordingly? How will this real-time monitoring of water level and associated abstractions be made available for the public?

How will IW ensure the 45 cumecs of flow will be supplied to fish passes to ensure fish migration around Ardnacrusha?

Lough Derg has fish species of conservation interest (Pollan and Lampreys) as defined in the SAC (Special Areas of Conservation) Site code 002241. Will the abstraction of water from the Parteen hatchery have mitigating measures (at the intake pipe end) to ensure that these internationally protected species populations will not be impacted by this massive abstraction project? Just to remind that Lough Derg has a uniquely land-locked lamprey species and a declining population of pollan.

The draft RWRP-EM assesses the abstraction of water from the Shannon and the construction of a pipeline to the east at a Plan level only. The draft RWRP-EM has been subject to Strategic Environmental Assessment and Appropriate Assessment. The draft RWRP-EM has applied the methodology, as adopted in the Framework Plan, and through that process has identified preferred approaches at water resource zone, study area and regional level.

As one of Irish Water's in-flight projects, environmental surveys have been undertaken in relation to the impacts of this abstraction. These environmental surveys include ecological, water quality, noise monitoring, traffic, agricultural and archaeological surveys. As with all projects identified in the draft RWRP EM, project specific, detailed environmental assessments will take place prior to any planning permission application being made and these questions will be addressed at this stage.

In your previous report in 2015 you published (in full) the reports that fed into your industrial demand projections, your desalination consideration, your per capita consumption assumptions, your groundwater analysis etc. This allowed genuine public scrutiny. Many errors were identified within your report. This time you have failed to publish most of the reports at all (and, in the case of non-domestic demand, published just a summary). This is against the public interest and the principal of transparency. How can you justify this?

The RWRP-EM is a regional water resources plan, where we are looking at needs and associated options to address all 134 water supplies within the region. To inform the development of the RWRP-RM, we produced a supply demand balance for each of those 134 water supplies within our Framework Plan.

During the consultation stage for the Framework Plan, it was noted that we had not published any updates to the non-domestic profile for the GDA region. On this basis and to ensure transparency, we included the updated report within Appendix 9 of the draft RWRP-EM. This report is a summary review and update of the original non-domestic projections for the region and it includes all variables for non-domestic demand, forecast and volumetric increases. However, it should be noted that there is no significant difference in relation to the outcome using the updated data.

As part of the development of the RWRPs, we have two hydrogeologists working in-house in the development of the feasible options and preferred approaches. These hydrogeologists use best available data and information from the GSI and the EPA in completing these assessments. As part of the options assessment process, groundwater use has been considered for every single supply.

Have you conducted a survey on the impact of abstracting 2% of water from the lower Shannon during periods of drought? I am involved with a rowing Club and we are very concerned.

The draft RWRP-EM has determined that the volume of water required is available from the new Shannon Source, as assessments have been undertaken to establish the allowable abstraction. This is an estimate of the water that can be taken from the source whilst maintaining the required environmental flow and it has followed the methodology set out in [Appendix C](#) of the NWRP Framework Plan. At project level, additional more detailed assessments will be carried out.

It should be noted that the River Shannon is the largest river in Ireland and its catchment covers 20% of the island of Ireland. It is a slow-moving water body with significant volumes of storage throughout the catchment due to the presence of lakes. This means that flood events last for long periods, however it also means the water body is less vulnerable to droughts as there is significant storage during dry weather events. It means it is a good source for water supply. The proposed abstraction is from an impounding reservoir / dam, which means you can store water when there is plenty of rain and during a drought period, the abstraction will be taken from this storage, without impacting on flows downstream of the dam.

Is there ecological analysis done with regard to impact of new pipeline in Study area 7, as it is an area of intensive animal-based agriculture

All options identified in the draft RWRP EM, including the construction elements, are subject to Strategic Environmental Assessment and Appropriate Assessment. As part of our options assessment process, environmental considerations represent 19 of the 33 total assessment criteria that are taken into account. The impacts of pipeline construction are factored into the environmental and social cost aspect of our feasible option's whole life costing. Further details on our assessment criteria can be found in Chapter 8 of the NWRP Framework Plan.

The draft RWRP sets out proposed preferred approaches, which will have to go through their own consenting process and for projects that included significant length of trunk main, this will include a route selection process.

Due to the erratic nature of climate change, how is it possible to predict or in any way determine accuracy in relation to abstraction from Shannon or even use the idea of sustainability as I understand it.

IW has carried out a lot of research with the Irish Climate Analysis and Research Units (ICARUS) Department in NUI, Maynooth, under the Climate sensitive catchments project. This project has used the latest climate change projections and a best practice risk-based approach to assess the impacts of climate change on flows in 206 catchments in Ireland. Full details of how climate change factors were considered are outlined in [Appendix F](#) of the Framework Plan.

Each Preferred Approach was assessed against adaptability under the following headings - Sustainability, Climate Change, Demand Growth and Leakage Targets. The details of this sensitivity analysis will be in each of the Study Area reports and the SEA. Further assessment of the impacts of climate change will be carried out at project level through hydrological modelling work. Refer to the details provided above regarding the River Shannon.

If you complete this project, 100% of Dublin's raw water will be surface water (the lowest quality river water of all). This is a huge risk for Dublin. How can you justify this?

99% of Dublin water is category s3 river water. Dublin is a major outlier among other European capitals (many of which now get most/all of their water from wells which is much safer) this is a serious risk for Dublin (as the Leixlip debacle showed in 2019). Why did you not mention this in your document and what did you not prioritise it as a risk to address?

Other capital cities look for multiple sustainable water sources. Those sources can be either surface water, or ground water sources, once they are sustainable and resilient. The purpose of the draft RWRP-EM is to find options that are sustainable and resilient. IW's plan considers similar approaches and looks to balance supply from different resilient sources.

Currently water supply to the Dublin area is provided from a number of supplies, including impounding reservoir sources, groundwater sources and run of river sources. Raw water quality varies across all water supplies. While run of river sources are more vulnerable to pollution, we can also have issues with unacceptable levels of naturally occurring Iron and Manganese at our ground water sources.

All water supplied by the public water supply must comply with the Drinking Water Directive. IW takes a risk-based approach to our water supplies using the World Health Organisation's drinking water safety plan methodology. This ensures that our water treatment plants are designed based on the type of water abstracted from any given source and the treatment processes put in place are designed to remove all contaminants. All public water sources, including groundwater and surface water, involve water treatment.

Parteen basin is near the end of the river before it becomes tidal hence this will be the source for the abstraction for Dublin.

The Shannon water would be S3 water (i.e. the riskiest type of water) - do you agree?

Safe for human use. If you complete this project 100% of Dublin's raw water will be s3 water (the lowest quality river water of all) this is a huge risk for Dublin How can you justify this?

The Parteen Basin is near the end of the Shannon catchment and this provides many benefits as the source is from an existing impounded reservoir which allows water from the catchment to be stored during the Winter for abstraction during the Summer. By virtue of the fact that this impounding reservoir is at the bottom of the catchment, a larger volume of water is available for abstraction from this location, and this source will be less vulnerable to drought.

Currently water supply to the Dublin area is provided from a number of supplies, including impounding reservoir sources, groundwater sources and run of river sources. Raw water quality varies across all water supplies. While run of river sources are more vulnerable to pollution, we can also have issues with unacceptable levels of naturally occurring Iron and Manganese at our ground water sources.

All water supplied by the public water supply must comply with the Drinking Water Directive. IW takes a risk-based approach to our water supplies using the World Health Organisation's drinking water safety plan methodology. This ensures that our water treatment plants are designed based on the type of water abstracted from any given source and the treatment processes put in place are designed to remove all contaminants. All public water sources, including groundwater and surface water, involve water treatment.

The Shannon pipeline project has been going on for 25 years yet Irish water/Dublin corporation have still not drilled a single borehole (test or otherwise) to investigate wells/groundwater for this project. You now say you will "work with" the GSI to better understand groundwater . Why has this not been done before? Groundwater is the most obvious solution yet you still say you do not know enough about it.

Dublin is the largest area of need you did not answer my question as to why there has been no test boring Irish water is proceed as if the Shannon abstraction is a done deal which it is not at present

The draft RWRP-EM considered all feasible options to provide supply to the Dublin area, including the provision of groundwater supply. Unfortunately, due to the natural geology of Ireland, largescale ground water storage is not available in

all areas and in general groundwater is more applicable to smaller supplies in Ireland (80% of our small supplies are from ground water sources).

While groundwater supplies were considered for the Dublin area, due to the limited yield available compared to the magnitude of need in the area, such solutions will need to be considered in combination with other solutions (i.e. desalination), to provide the required need within the area. When solutions for the area were considered using the methodology set out in the Framework Plan the provision of new groundwater supplies, were not determined as the proposed preferred approach for the area.

Hundreds of concerns that were raised in the public consultation on your previous document (a year ago) were entirely ignored and not addressed at all in your "consultation report"/reflected in the final (published) document. How can you claim that this is a transparent process? Is it not the case that you will justify the Shannon pipeline at all costs and regardless of any legitimate concerns and challenges? What is the point in a "consultation" that is simply window-dressing?

All submissions were analysed and assessed. The outcome of this assessment process fed into the development of our final plans. A detailed Consultation Report which ran to 476 pages (214 pages plus Appendices) was published along with the updated plan, SEA Statement and AA Determination. Irish Water carried out a very thorough and comprehensive consultation process and responded substantively to submissions. The NWRP is not a vehicle for any individual project. It is a plan for every public water supply in Ireland.

You are adding in new regions. This pipeline project must not be pushed through on the basis of red herring "needs" if local solutions for those "needs" would obviate for this €1.5 billion project which will probably exceed budget

The draft RWRP-EM reviews options for supplies across different spatial scales, first locally at Water Resource Zone (WRZ) level, then at Study Area Level and finally at Regional Level (see Section 6 of the draft RWRP-EM). The preferred approach for the Greater Dublin Area at WRZ level is the development of a New Shannon Source, see Appendix 9 of the draft RWRP-EM and this is the case without it serving additional regions.

One of the benefits of the NWRP is that we can consider our supplies holistically and consider solutions that may benefit more than one supply. This aligns with other jurisdictions, for instance, Northern Ireland has only 7 Water Resource Zones in comparison to our 539.

In total, a connection to the new Shannon source was considered for 50 supplies but was only determined the preferred approach for 34 supplies. For

each of these supplies, we considered all feasible options and compared these against each other across a range of criteria including Resilience; Deliverability and Flexibility; Progressibility; Sustainability (Environmental and Social Impacts); and Cost. Through this process, the Preferred Approach for 34 supplies (including Dublin) was determined to obtain additional supply from the new Shannon source.

Irish Water is now talking about Dublin being a "parent supply" (i.e. Taking water from the Shannon and passing it on to other regions) indeed you state that the preferred approach for Dublin (which it is now clear will have a much smaller projected deficit than you previously thought) "will need to be modified for this additional required demand". This sounds like the tail wagging the dog: the Shannon pipeline can no longer be justified on the basis of demand projections for Dublin alone – so

Within our plan, the preferred approach is an integrated supply across multiple water resource zones. Even at present, many of the supplies that serve Dublin are located outside of Dublin. With a more integrated supply network, our plan allows for more regional development and better regional access to resilient water supplies.

Considering the emphasis on renewable energy should not the ESB keep its water supply to increase out from Ardnacrusha rather than facilitate a 172 km pipeline through 500 farms of the best farmland of Ireland.

Are the ESB being compensated for the loss of head of water from the pipeline abstraction at Parteen? Ireland is experiencing power shortages (Data Centres, Hospitals, Industry etc.) from time to time. Will this loss of water head compromise the ESB generating capacity in times of peak demand for electricity?

Energy demand in Ireland has completely transformed since the development of the hydroelectric schemes in Ireland. For example, Ardnacrusha when developed provided nearly 100% of Ireland's energy needs, while it currently provides around 2% of total energy needs.

IW will enter into negotiations with ESB with regard to compensation for energy loss due to the proposed abstraction. The maximum volume of water required for supply is approximately 2% of the maximum flow that can be processed for energy supply at Ardnacrusha. Therefore, any potential reduction in energy supply will be negligible.

Appendix L Public Webinar Dates

Public Webinar	Date	Attendees
1	2 February 2022	20
2	2 February 2022	14
3	3 February 2022	3
4	7 February 2022	6
5	8 February 2022	4
6	8 February 2022	4
7 (evening)	16 February 2022	7
8 (evening)	23 February 2022	4

Appendix M Key Stakeholders and Environmental Authorities Briefings

Key Stakeholders & Environmental Authorities Briefings	Date
Dept Environment Climate Action and Communications	11 January 2022
Environmental Protection Agency	12 January 2022
Dept Housing Local Government and Heritage	13 January 2022
Environmental Protection Agency	13 January 2022
Commission Regulation of Utilities Water and Energy	4 February 2022
An Forum Uisce (AFU)	20 January 2022

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