

# **Water Supply Project Eastern & Midlands Region**

Project Summary Report 2025

January 2025

# 1. The Proposed Project

**Uisce Éireann is consulting on its proposals for the Water Supply Project Eastern and Midlands Region (the "Proposed Project"). This section provides an overview of the Proposed Project including the objectives to be achieved and a description of the main elements of the proposed infrastructure and their purpose.**

## 1.1. Introduction

**Safe, secure, resilient, and sustainable drinking water supplies are essential to public health, social and economic growth. With climate change and population growth there are increasing pressures on existing supplies. There is already a deficit in supplies in the Greater Dublin Area and the wider Eastern and Midlands Region and this will only increase in the future.**

The River Liffey currently provides approximately 85% of source water to the Greater Dublin Area Water Resource Zone (GDA WRZ) and there is almost no spare capacity in the current supply. Being heavily dependent on one source for the majority of water supply in the GDA WRZ means that there is very limited resilience

within the existing system. An emergency event on the River Liffey or an extended outage at Leixlip or Ballymore Eustace Water Treatment Plants, would result in a shortage of water supply to the GDA WRZ, resulting in social, economic and public health issues. Within 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). 90% of the Water Treatment Plants need some form of investment to reduce risk to water quality. 70% of the WRZs do not have an adequate Level of Service<sup>1</sup> and are at risk of interruptions to supply. Further, with the effects of climate change, some of the existing water abstractions in the region may, in the future, become unsustainable.

Uisce Éireann is proposing the Water Supply Project Eastern and Midlands Region to provide a new supply to address the projected need for drinking water and increase the reliability of supplies in the Eastern and Midlands Region. The Proposed Project consists of an abstraction from Parteen Basin on the Lower River Shannon in County Tipperary, a new 172km pipeline, five associated infrastructure sites, a Flow Control Valve and other ancillary infrastructure to treat the raw water to drinking water standard and transfer it to a new reservoir at Peamount in County Dublin. This is shown in Image 1.1.

<sup>1</sup>Level of Service refers to the reliability of the supply that Uisce Éireann customers can expect to receive

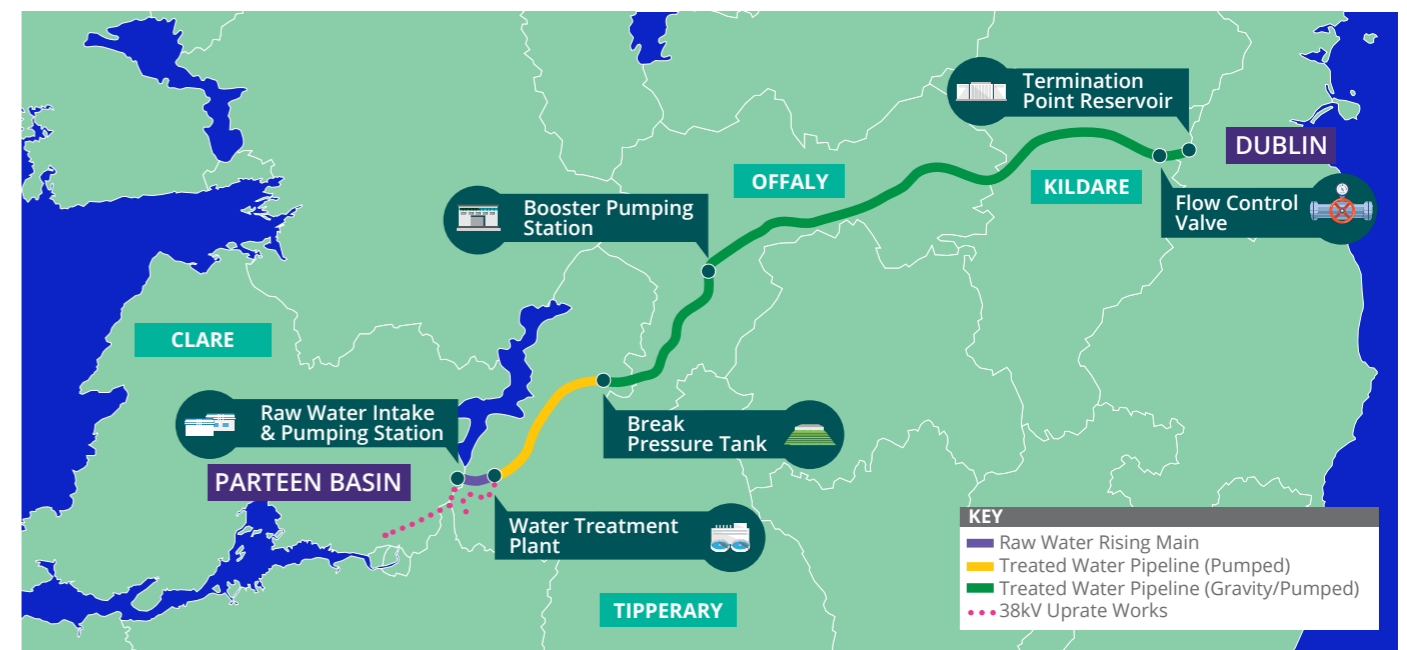


IMAGE 1.1: OVERVIEW OF THE PROPOSED PROJECT



The Proposed Project infrastructure will provide the capacity to meet the needs of a Water Supply Area consisting of 36 WRZs across the Eastern and Midlands Region in accordance with the Regional Water Resources Plan – Eastern and Midlands (the “Eastern and Midlands Plan”<sup>2</sup>). It will do this by providing the capacity to supply up to 300 megalitres of water per day (Mld) which will:

- Immediately meet the identified need for water within the GDA WRZ to 2050 and beyond.
- Enable the future supply to 17 other WRZs by re-directing supplies within the GDA WRZ and expanding the GDA WRZ by incorporating these WRZs into the GDA Regional WRZ, when future projects are brought forward by Uisce Éireann.
- Enable the future supply to a further 18 WRZs across the midlands from take-off points along the pipeline and facilitate the consolidation of those WRZs into four new WRZs, when future projects are brought forward by Uisce Éireann.
- Make provision for potential reductions in existing supply volumes due to sustainability requirements anticipated under the new abstraction licensing regime.

This is a generational project and is the first major ‘new source’ infrastructure in the Region in the last 60 years. It will deliver a safe, secure, sustainable source of water supply necessary to support the growing population and economy, including the demand for housing. It is a project that will enable Uisce Éireann to adapt to the effects of climate change by diversifying water supply sources. It will provide the Greater Dublin Area consisting of Dublin, and parts of Meath, Kildare and Wicklow with a new supply of water and will have the capacity to supply communities in Tipperary, Offaly and Westmeath along the route. It will support balanced regional development by facilitating the redirection of supplies currently serving Dublin to Louth, Meath, Wicklow, Carlow and Kildare, and provide infrastructure with capacity for future connections across the Midlands including for example, Mullingar, (once future projects are brought forward).

The Proposed Project infrastructure will have the capacity to meet the domestic, commercial and industrial water supply needs of up to 50% of Ireland’s population into the medium to long-term future and provide safe, secure, resilient and sustainable drinking water supplies across the region. This is essential to public health as well as social and economic growth, the need for housing and to adapt water supplies to the impacts of climate change. Therefore, the Proposed Project is critical for the future of the Eastern and Midlands Region.

Uisce Éireann is consulting on the Proposed Project in order to inform a Strategic Infrastructure Development planning application for the Proposed Project. This Project Summary Report and its appendices provide the information about the Proposed Project which is being consulted upon. The consultation is being undertaken between **January** and **March 2025**.

Uisce Éireann has consulted upon and adopted its National Water Resources Plan, comprising a Framework Plan (Phase 1) and four Regional Water Resources Plans (Phase 2) (including the Eastern and Midlands Plan). The purpose of the consultation now underway is to provide an opportunity for stakeholders and members of the public to provide feedback on the Proposed Project, following the adoption of the Framework Plan and the Eastern and Midlands Plan.

Comments are welcomed on any aspect of the Proposed Project. The feedback form includes five questions designed to assist those wishing to make a submission. They are as follows:

1. What are your thoughts on the potential benefits of the Proposed Project?
2. Do you have any feedback on the key infrastructure components of the Proposed Project, such as the water intake and pumping station, pipelines, water treatment plant, storage reservoir, booster pumping station and break pressure tank?
3. What are your views on the proposed construction approach, including the use of identified roads for construction traffic, and the locations of temporary storage and working areas?
4. Can you provide any comments on the potential environmental impacts of the Proposed Project and the measures proposed to mitigate these impacts?
5. Are there any additional comments you would like to share regarding the Proposed Project?

Image 1.2 provides a Project Roadmap which includes a summary of the main stages in the development of the Proposed Project and shows the link between this consultation and the Strategic Infrastructure Development planning application that will be submitted for the Proposed Project.

Uisce Éireann will consider the feedback received in response to consultation and use it to inform the finalisation of the design and accompanying environmental assessments in advance of submitting a Strategic Infrastructure Development planning application, Compulsory Purchase Order application and abstraction licence application which collectively are needed to secure consent to build and operate the Proposed Project.

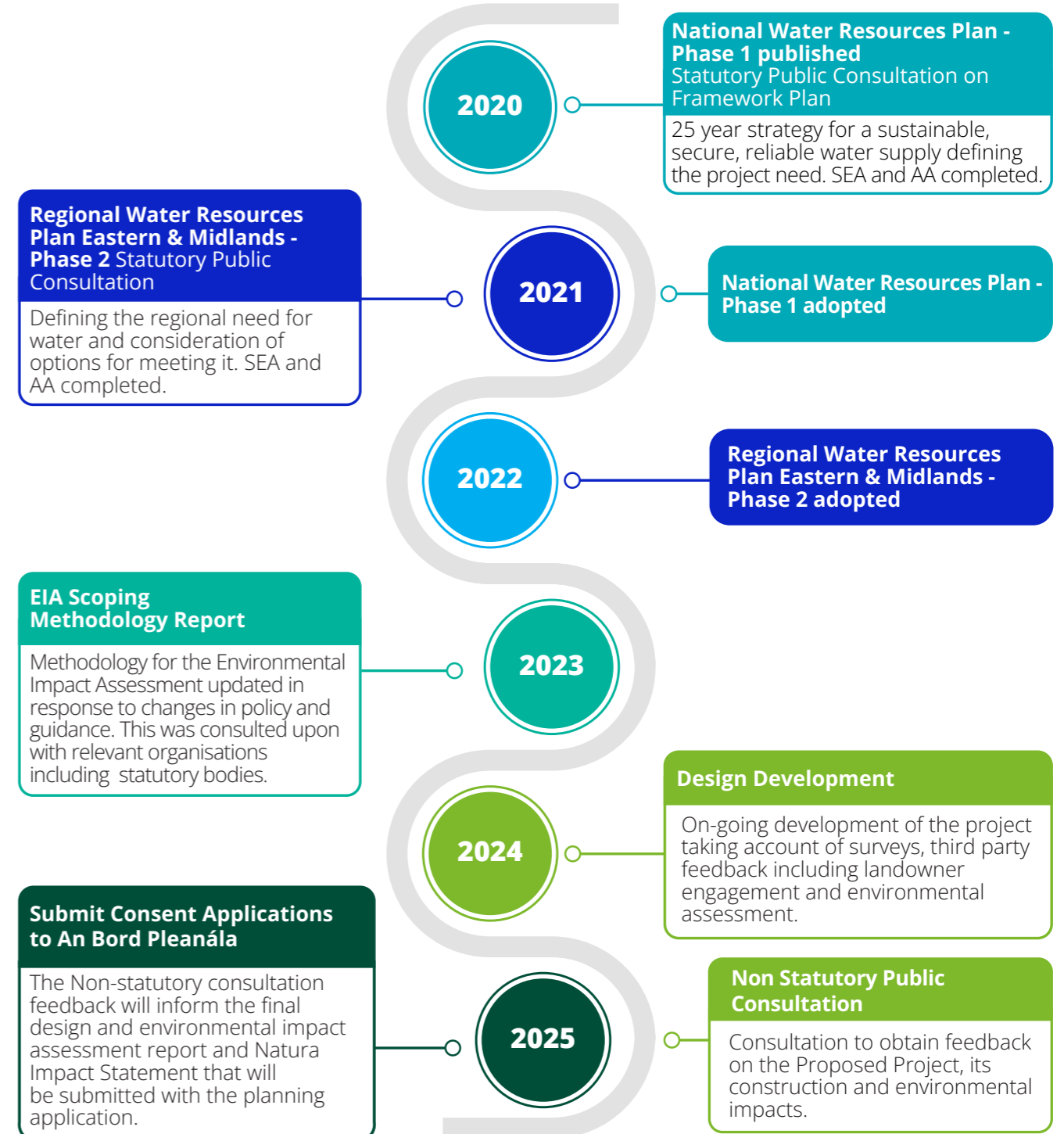
<sup>2</sup> 37 Water Resource Zones were identified in the Eastern and Midlands Plan consisting of the GDA WRZ and 36 other WRZs. Subsequently Barndarrig WRZ and Redcross WRZ have been rationalised and combined and so the total is now 36 Water Resource Zones consisting of the GDA WRZ and 35 other WRZs

## Water Supply Project Eastern & Midlands Region

### Consultation on previous iterations of the project

- The Project Need Report consultation March 2015
- The Options Working Paper consultation June 2015
- The Preliminary Options Appraisal Report consultation November 2015
- The Final Options Appraisal Report and the EIS Scoping Report consultation November 2016

### Project Consultation Roadmap



\*Future timelines are indicative

IMAGE 1.2: CONSULTATION ROADMAP

**The documents available as part of this consultation include:**

- This Project Summary Report.
- Project Summary Report: Appendix 1 – Details of the Proposed Project.
- Project Summary Report: Appendix 2 – Calculation of the Water Supply Requirement.
- Project Summary Report – Supporting Figures – Figures 1 – 85. These include an overview of the proposals for the pipeline in Figures 1 – 59, proposals for the infrastructures sites and the Flow Control Valve in Figures 60 – 75 and the proposed landscape reinstatement of those sites in Figures 76 – 85.
- Pipeline and Ancillary Pipeline Features factsheets describing the pipeline and providing information on permanent features along it including the Flow Control Valve.
- Infrastructure Site factsheets describing each site.

**1.2. Project Objectives**

**The aims of the Proposed Project are to:**

- Provide a sustainable water supply from a New Shannon Source.
- Address critical supply issues in the Greater Dublin Area with provision for future supplies to multiple Water Resource Zones in the Region.
- Increase resilience of supplies and Levels of Service.
- Deliver a flexible, future-proofed solution that is responsive to change.

To achieve these objectives, the Proposed Project must provide a new resilient and sustainable supply capable of providing sufficient water to meet the projected deficit in supplies in 2050 for the GDA WRZ and a further 35<sup>2</sup> WRZs across the Eastern and Midlands Region, in accordance with the Framework Plan and the Eastern and Midlands Plan.

The Eastern and Midlands Plan identified that a New Shannon Source was the Preferred Approach to address the need of the GDA WRZ. Having identified the New Shannon Source as the Preferred Approach to meet the deficit in the GDA WRZ, the Eastern and Midlands Plan identified additional WRZs along the length of the pipeline and also adjacent to the GDA WRZ which had a water supply need that could also be met by ‘transfers’ of water from the New Shannon Source.

**1.3. Overview**

**To provide a new source of drinking water for the Eastern and Midlands Region and meet the deficit in supply described in Section 3, the Proposed Project involves the abstraction and pumping of raw water from the Lower River Shannon at Parteen Basin, treatment of the water nearby at Birdhill, County Tipperary, and pumping of the treated water to a high point near Cloughjordan, County Tipperary.**

From this high point near Cloughjordan, the treated water will flow generally by gravity through the Midlands, to a termination point at Peamount, in County Dublin (within the administrative area of South Dublin County Council), where it will connect into the existing GDA WRZ network. Image 1.3 provides an overview of the principal infrastructure and pipeline elements of the Proposed Project.

The design is based on the following principles / requirements:

- Sizing of the Raw Water Intake and Pumping Station to facilitate a maximum abstraction of 300Mld during the short peak demand periods.
- The Raw Water Rising Mains must be capable of transferring raw water up to a maximum throughput of 300Mld.
- Sizing of the Water Treatment Plant to facilitate the supply of treated water to meet the full range of flows up to the peak production requirement of 300Mld.
- The inclusion of Take-Off Points at strategic locations along the Proposed Project to enable future connections to water resource zones in the Water Supply Area.
- A Break Pressure Tank at the point where the treated water pipeline transitions from a pumped rising main to a gravity main.

- A Booster Pumping Station on the treated water pipeline to facilitate transition from normal average flows to peak flows.
- The Treated Water Pipeline must be capable of transferring water up to the maximum throughput of 300Mld.
- The Termination Point Reservoir is to have a capacity of 75Ml.
- The infrastructure, as far as reasonably practicable, must be modular in nature and with the potential for phased mechanical and electrical fit-out.

The Proposed Project will be constructed and operated within predominantly open countryside, generally avoiding towns and villages. Farming is the primary land use within the Proposed Project Boundary (shown on Figures 1-59 - Supporting Figures), with the Proposed Project crossing approximately 500 agricultural landholdings.

The Proposed Project will traverse the administrative area of six Local Authorities: Tipperary County Council, Clare County Council, Limerick City & County Council, Offaly County Council, Kildare County Council and South Dublin County Council.

The following sections describe each of the main elements of the Proposed Project from west to east and then provide general information on matters such as construction. Further information on these is also provided in Appendix 1 – Details of the Proposed Project. All the design information and dimensions contained within this report are approximate and the design of the Proposed Project is not finalised. The feedback from the consultation being undertaken, where appropriate, will inform the design that is submitted as part of the Strategic Infrastructure Development planning application and therefore, it is expected that there will be refinement and alteration of the design prior to the submission of the planning application. All levels that are provided are to Malin Head datum unless stated otherwise.

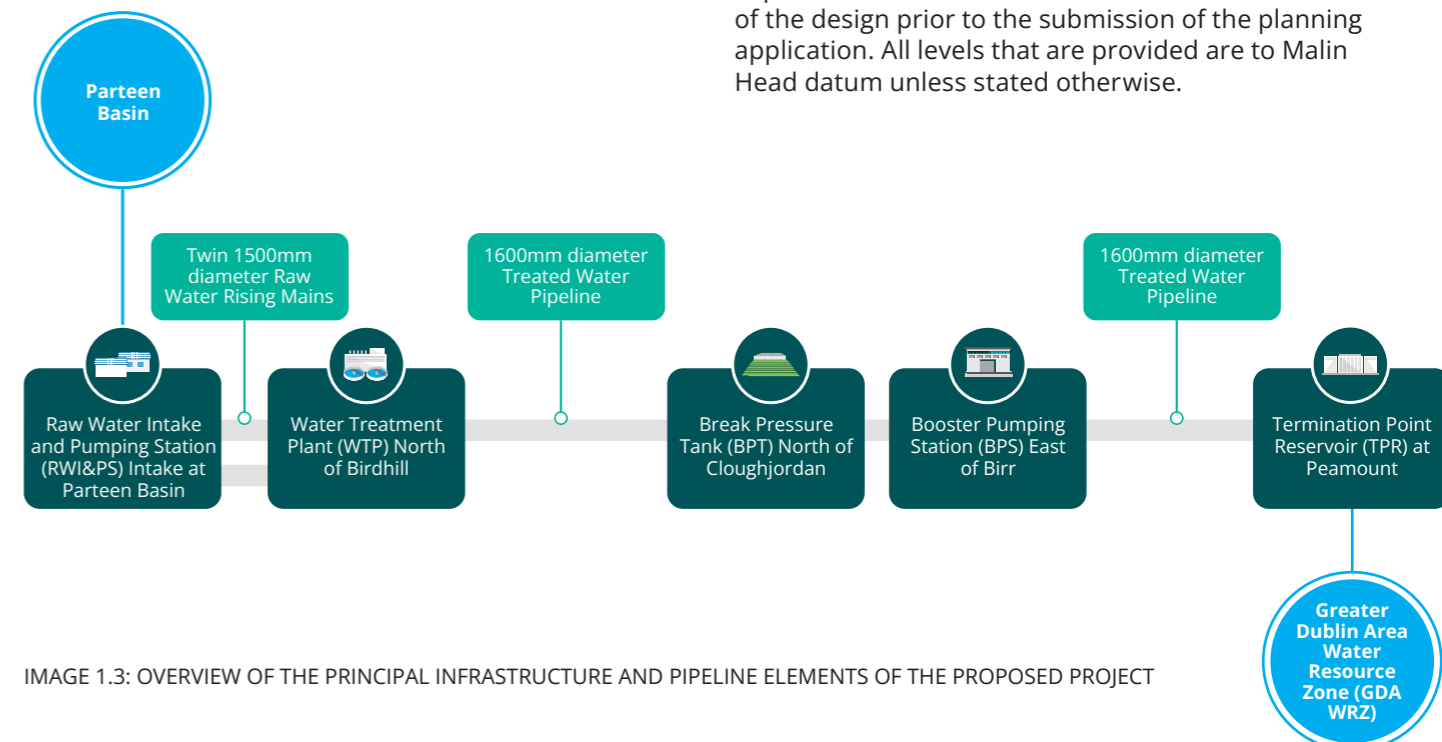


IMAGE 1.3: OVERVIEW OF THE PRINCIPAL INFRASTRUCTURE AND PIPELINE ELEMENTS OF THE PROPOSED PROJECT

<sup>2</sup> The plan identifies 36 WRZs however two have been combined since its adoption.

### 1.4. Raw Water Intake & Pumping Station

**The Raw Water Intake and Pumping Station is needed in order to abstract the raw water from Parteen Basin and pump raw water up to the Water Treatment Plant.**

It is designed to abstract a maximum of 300Mld of raw water from the River Shannon at Parteen Basin. The abstraction will take place from the eastern shore of Parteen Basin, downstream of Lough Derg on the Lower Shannon, in the townland of Garrynatineel. The abstraction point will be located to the north of the linear reservoir embankment (Fort Henry embankment). This is approximately 3.3km north-east of the Parteen Weir and approximately 14.3km upstream of the Electricity Supply Board (ESB) Ardnacrusha Generating Station. Its location is shown in Image 1.1 and Figure 6 - Supporting Figures.

*The permanent site for the Raw Water Intake and Pumping Station will occupy an area of approximately 4.2ha, (including the permanent access road) and is currently used mainly as non-commercial forestry.*

An additional area of 1.3ha of land will be required on a temporary basis during construction and so the total area of land needed for construction is approximately 5.5ha. This is shown in Figure 70 - Supporting Figures.

The site is within the Lower River Shannon Special Area of Conservation (SAC) (Site Code 002165), consequently the proposals for the design, construction, operation and maintenance of the proposed raw water intake have taken into account the habitats and species that are the qualifying interests of the SAC (i.e. those which the SAC was designated to protect).

The proposed Raw Water Intake and Pumping Station site will include a bankside Intake Chamber, Inlet

Chambers, the Raw Water Pumping Station Building, two Microfiltration Buildings, an Electricity Substation and Power Distribution Building, and ancillary works, such as surge vessels, metering and swabbing chambers, a wastewater holding tank, dewatering settlement lagoons and an attenuation tank to manage surface water runoff.

During operation, water will be abstracted from Parteen Basin at the Intake Chamber. The volume of water to be abstracted will be determined using a three-day predictive modelling process that calculates how much water would be needed. The raw water will enter the Intake Chamber and then pass through the passive wedge wire screens into the Inlet Chambers before entering the pumping hall. Water pumped from here can be passed through the microfiltration process as required before being delivered to the Water Treatment Plant via the Raw Water Rising Mains.

A layout of the proposed Raw Water Intake and Pumping Station site has been developed and this is contained in Figure 60 - Supporting Figures. This shows the buildings and other infrastructure needed at the site. The tallest buildings on the Raw Water Intake and Pumping Station site would be the Microfiltration Buildings which would be approximately 11m above finished ground level, the largest above ground building will be the Raw Water Pumping Station which will be approximately 31m long and 38m wide. An illustrative visualisation of the Raw Water Intake and Pumping Station is provided in Image 1.4.

A new permanent access road will be constructed from the R494 to the Raw Water Intake and Pumping Station site. The road will be 5m wide, will be approximately 680m in length. This access will also be used during construction to build the Raw Water Intake and Pumping Station.



IMAGE 1.4: RAW WATER INTAKE AND PUMPING STATION ILLUSTRATIVE VISUALISATION

### 1.5. Raw Water Rising Mains

**The purpose of the Raw Water Rising Mains is to transfer up to 300Mld of raw water from the Raw Water Intake and Pumping Station to the Water Treatment Plant.**

The Raw Water Rising Mains will consist of two steel pipelines, approximately 2km long, each with a nominal diameter of 1,500mm. They will extend in a generally east-south-easterly direction from the Raw Water Intake and Pumping Station for approximately 830m towards the R494. From the R494, the Raw Water Rising Mains will continue in an east-north-easterly direction to the Water Treatment Plant at Incha Beg.

Access to the Raw Water Rising Mains during construction will be along the route of the pipeline corridor. Once built and the land reinstated, access to the pipeline for inspection and maintenance will generally be via the permanent wayleave.

### 1.6. Water Treatment Plant

**The Water Treatment Plant is needed in order to treat the raw water to a sufficiently high standard to be fit for drinking. This is a complex process involving multiple stages.**

The proposed Water Treatment Plant site is located in the townland of Incha Beg in County Tipperary, approximately 2.6km north-east of the village of Birdhill. The site is located within a sparsely populated rural area which is broadly bounded within a triangle formed by the R496, R445 and R494 regional roads. Its location is shown in Image 1.1 and on Figure 6 - Supporting Figures.

*The permanent infrastructure will be located immediately north of dense woodland on open fields, covering an area of approximately 29.3ha (including the proposed permanent access).*

An additional area of 2.5ha will be required on a temporary basis during construction and so the total area of land needed for construction is approximately 31.8ha. This is shown in Figure 71 - Supporting Figures.

The design includes Raw Water Balancing Tanks, Chemical Dosing Manifold Building, Water Treatment Module Buildings, UV Dosing and Post Filtration Chemical Dosing Building, High Lift Pumping Station and Surge Vessels, Sludge Dewatering Buildings with adjacent holding tanks and sludge silos, Sludge Storage Buildings and Control Building, incorporating a Visitor Centre.

*At this stage of design development, a specimen design has been prepared based on a Drinking Water Safety Plan approach, to illustrate how the main elements of the plant will be configured and the way in which treatment plant residuals will be managed.*

Raw water will enter the Water Treatment Plant at the Raw Water Balancing Tanks. The purpose of the Raw Water Balancing Tanks is to control the flow of the water coming into the Water Treatment Plant so that it can operate at a steady continuous pace. Therefore, the Raw Water Balancing Tanks allow water to be stored temporarily to manage the rate of water flowing through the Water Treatment Plant.

The water will then pass through chemical dosing, the water treatment process and the UV treatment and post filtration building. The process wastewater from the treatment process will not be discharged, rather it will be pre-treated on site before it is re-circulated through the Water Treatment Plant.

The Clear Water Storage Tanks and High Lift Pumping Station are at the end of the treatment process. The tanks store clean water temporarily so that the onward flow of water through the pipeline can be controlled. The pumping station will pump the water through the pipeline from the Water Treatment Plant to the Break Pressure Tank.

The tallest structures on site will be the sludge storage silos, approximately 14m tall. The largest structures, by area, will be the three water treatment module buildings, each approximately 141m long and 59m wide. A layout of the proposed Water Treatment Plant site has been developed and this is contained in Figure 62 - Supporting Figures. An illustrative visualisation of the Control Building and Visitors Centre is provided in Image 1.5.

The land proposed for the Water Treatment Plant site is currently accessed by a privately owned unsurfaced track from the R496. A new permanent access road from the R445 will be constructed, which is 6m wide and 640m in length. This access will also be used during construction to build the Water Treatment Plant.

### 1.7. Treated Water Pipeline – Water Treatment Plant to Break Pressure Tank

**The Treated Water Pipeline will transfer clean, treated drinking water from the Water Treatment Plant to the Termination Point Reservoir**

The first section of the Treated Water Pipeline is located within County Tipperary. It is an underground pipeline approximately 37km in length connecting the Water Treatment Plant at Incha Beg, to the Break Pressure Tank, located at Knockanacree Hill, near Cloughjordan, County Tipperary.



IMAGE 1.5: WATER TREATMENT PLANT ILLUSTRATIVE VISUALISATION OF THE CONTROL BUILDING AND VISITORS CENTRE

*The water in this section of the pipeline will always be pumped through the pipe by the pumping equipment at the Water Treatment Plant.*

For the most part through this section the pipeline traverses open countryside, with high and low points along the profile, and incorporates a number of valves and associated ancillary structures. These valves are required for the operation and maintenance of the pipeline.

The pipeline will consist of a single 1,600mm nominal diameter steel pipeline that will be generally laid at a minimum depth of 1.2m (above the top of the pipe) and at maximum depth of excavation of 6m. Therefore, at its deepest, the top of the pipe will be approximately 4.4m below ground level.

Access to the pipeline during construction will be along the route of the pipeline corridor. Once built and the land reinstated access to the pipeline for inspection and maintenance will generally be via the permanent wayleave.

### 1.8. Break Pressure Tank

**The Break Pressure Tank provides a point where the pressure in the pipeline can be managed and will be used to transition to the use of gravity to maintain a flow of water in pipeline under normal conditions.**

The water will be pumped from the Water Treatment Plant to the Break Pressure Tank but from the Break Pressure Tank the water will usually be moved through the pipe by gravity pressure. This avoids the need for

the water to be pumped through the whole length of the pipeline all the time and consequently, will reduce the amount of energy needed during operation.

In order to do this the Break Pressure Tank is intentionally located at the highest point on the route of the Proposed Project.

The proposed Break Pressure Tank site is located in the townland of Knockanacree in County Tipperary, approximately 1.8km north of Cloughjordan, as shown in Figure 17 - Supporting Figures.

*The permanent extent of the site is approximately 6.8Ha (including the access road) and the land is mainly in agricultural use, as pastureland.*

An additional 0.4ha land will be required on a temporary basis during construction, bringing the total area of land needed for construction to approximately 7.2ha. This is shown in Figure 72 - Supporting Figures.

The Break Pressure Tank site includes the Break Pressure Tank and a Control Building. The Break Pressure Tank consists of three chambers with a total capacity of 13.8MI. It will be rectangular and made of reinforced concrete and partially buried within an earthwork bank.

The Control Building will be the tallest structure with an approximate height of 7m over finished ground level and will be approximately 40m long and 20m wide. The largest structures will be the break pressure tank itself,

approximately 80m long and 50m wide. An illustrative visualisation of the Break Pressure Tank Control Building is provided in Image 1.6 and the proposed layout is shown in Figure 64 - Supporting Figures.

A new access road will be constructed from the L1058, which will be 5m in width and approximately 740m in length. This access will also be used during construction to build the Break Pressure Tank.

### 1.9. Treated Water Pipeline – Break Pressure Tank to the Termination Point Reservoir

**The second section of the Treated Water Pipeline will transfer clean, treated drinking water from the Break Pressure Tank approximately 133km to the Termination Point Reservoir, which will be located adjacent to, and immediately west of, Peamount Hospital in County Dublin.**

From the Break Pressure Tank, the proposed pipeline will extend in an east to north-east direction through northern County Tipperary and Counties Offaly and Kildare before terminating in County Dublin. Through this section the pipeline will primarily be routed through agricultural land but there are extensive areas of peatland in County Offaly and eastern County Kildare through which the pipeline will be constructed.

The pipeline will run full at all times and kept pressurised by a combination of the water level in the Break Pressure Tank and the back pressure governed by the Flow Control Valve located at the low point prior to the Termination Point Reservoir.

*The pipeline will consist of a single 1,600mm nominal diameter steel pipe that will be generally laid at a minimum depth of 1.2m (above the top of the pipe) and at maximum depth of excavation of 6m. Therefore, at its deepest, the top of the pipe will be approximately 4.4m below ground level.*

Access to the pipeline during construction will be along the route of the pipeline corridor. Once built and the land reinstated access to the pipeline for inspection and maintenance will generally be via the permanent wayleave.

### 1.10. Booster Pumping Station

**The purpose of the Booster Pumping Station is to facilitate the movement of the water from the Break Pressure Tank to the Termination Point Reservoir through the Treated Water Pipeline when higher flow rates are required.**

Flows up to approximately 170Mld can move from the Break Pressure Tank to the Termination Point Reservoir under gravity pressure without further intervention. However, when the demand for water increases above approximately 170Mld, additional pumping will be needed to provide the additional pressure required to deliver flows up to the peak demand of 300Mld. The Booster Pumping Station will contain the pumps needed to do this.

The proposed Booster Pumping Station site is located to the east of Birr, in the townland of Coagh Upper, County Offaly, approximately 68km east of the proposed Water Treatment Plant. The Booster Pumping Station site is located within a rural area of agricultural land adjacent to the L3003 as shown in Figure 26 - Supporting Figures.



IMAGE 1.6: BREAK PRESSURE TANK ILLUSTRATIVE VISUALISATION OF THE CONTROL BUILDING



IMAGE 1.7: BOOSTER PUMPING STATION ILLUSTRATIVE VISUALISATION

*The permanent extent of the site is approximately 2.6ha including the access road.*

An additional 3.8ha land will be required on a temporary basis during construction, bringing the total area of land needed for construction to approximately 6.4ha. This is shown in Figure 73 - Supporting Figures.

The BPS site consists of a booster pumping station building, surge vessel, electricity substation building and two transformers. The Booster Pumping Station Building is designed as a single-storey building with a basement below. It will be approximately 60m long, 36m wide and 8m in height. An illustrative visualisation of the Booster Pumping Station is provided in Image 1.7 and the proposed site layout is shown in Figure 66 - Supporting Figures.

Permanent access to the site will be directly off the L3003 and this will also be used during construction to build the Booster Pumping Station.

A separate access will be provided to the electricity substation. The substation will be slightly set back from the L3003 and an access road approximately 5m wide and 22m long will be provided.

### 1.11. Flow Control Valve

**Approximately 5km west of the Termination Point Reservoir will be the Flow Control Valve. This is a specific valve that provides fine control of the flows in the Pipeline and will be used to manage the volume of water arriving at the Termination Point Reservoir.**

It will consist of three below ground valves and a small above ground facility and compound including parking. The proposed layout is shown in Figure 67 - Supporting Figures.

*The extent of the permanent Flow Control Valve site will be approximately 0.4ha.*

An additional area of 0.5ha of land will be required on a temporary basis during construction and so the total area of land needed for construction is approximately 0.9ha. This is shown in Figure 74 - Supporting Figures.

Permanent access to the site will be directly from the L1016 and this will also be used during the construction of the Flow Control Valve.

### 1.12. Termination Point Reservoir

**The purpose of the Termination Point Reservoir is to store water supplied through the Treated Water Pipeline to manage the distribution of water to consumers in the GDA WRZ.**

It will provide the link between the Treated Water Pipeline and the local distribution network in the GDA WRZ and will act as a balancing tank between the steady output of the Water Treatment Plant and the normal variation in demand of the local distribution network. It will have a capacity of 75ML.

As shown in Figure 59 - Supporting Figures, the proposed Termination Point Reservoir is located adjacent to the existing Uisce Éireann service reservoir site at Peamount in County Dublin.

*The proposed site for the permanent Termination Point Reservoir has an area of approximately 8.1ha (including the access road).*

An additional area of 3ha land will be required on a temporary basis during construction and so the total area of land needed for construction is approximately 11.1ha. This is shown in Figure 75 - Supporting Figures.

The Termination Point Reservoir site includes the above-ground Termination Point Reservoir structure, associated underground Scour Water and Emergency Overflow Water tanks and a Chlorine Control Building. The proposed layout of the Termination Point Reservoir site is contained in Figure 68 - Supporting Figures.



IMAGE 1.8: TERMINATION POINT RESERVOIR ILLUSTRATIVE VISUALISATION

The proposed Termination Point Reservoir will be a rectangular, reinforced concrete tank, similar to the existing 40ML reservoir structure on the adjacent site. This will be permanently covered over and surrounded by an earth embankment. Top water level in the Termination Point Reservoir will be the same as in the existing reservoir. The top of the Termination Point Reservoir will be approximately 11m above finished ground level and will be 90m long and 40m wide. An illustrative visualisation of the Termination Point Reservoir and Chlorine Control Building is provided in Image 1.8.

The Termination Point Reservoir will be integrated with the existing reservoir site layout so that it becomes one larger water storage facility, incorporating common means of access, site road layout and power supply. It will also utilise the common office and welfare facilities on the existing site.

The current access to the existing service reservoir is off the R120 via a cul-de-sac on the north-eastern perimeter of Peamount Hospital. A new access road, 5m in width and approximately 340m in length, will be constructed off the R120 regional road, and adjacent to the western and northern perimeter of Peamount Hospital.

### 1.13. Pipeline Features

**The Raw Water Rising Mains and Treated Water Pipeline will incorporate a number of key pipeline features. These include:**

- **Line Valves** - Line Valves will be installed along the length of the pipeline to enable sections of the pipe to be isolated, drained and recharged during the Commissioning Phase and for maintenance purposes during the Operational Phase.
- **Kiosks** - Each Line Valve location will incorporate an above-ground kiosk. The kiosk will contain the actuator for the Line Valve and will be located adjacent to the Line Valve. The kiosk will also contain the electricity connection, power, control, isolation and telemetry for the actuator.

- **Lay-Bys** - At Line Valve locations adjacent to roads, Lay-Bys will be constructed to facilitate safe parking during planned periodic inspection and maintenance of the Line Valves and associated electricity supply.
- **Washout Valves** - Washout Valves will be located at every low point along the pipeline. These valves will be utilised to empty sections of the pipeline of test water which cannot be pumped to adjoining test sections. During pipeline operation, it will be very rare that these valves are used as they will generally only be required for emptying sections of the pipeline where necessary for emergency repairs or possibly for cleaning programmes, perhaps, every 20 to 30 years.
- **Air Valves** - The control of air in the pipeline is critical for initial filling and priming, efficient operation and for draindown and recharge of the pipeline. Air Valves will be used to manage air within the pipeline and will be located at high points along the pipeline to allow air to be released.
- **System Control** - the overall pipeline system control will be from a central Supervisory Control and Data Acquisition system that will be located at the Control Building at the Water Treatment Plant and monitored remotely by the Uisce Éireann National Operations Management Centre.
- **Cathodic Protection** - As well as the internal and external protective coatings, the steel pipeline will be protected against corrosion by placing a very low continuous voltage (1 or 2 volts) on to the pipeline which can be continuously monitored. This alerts the operators should changes in system current occur, which may indicate possible damage to the pipe coatings and that may, in the long run, cause localised corrosion. The system will work silently and continuously.

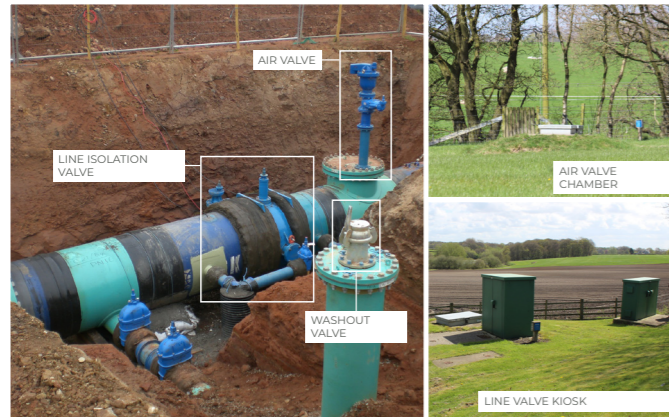


IMAGE 1.9 ANCILLARY PIPELINE FEATURES

The proposed locations of the Pipeline Features are included in overview maps of the pipeline route, contained in Figures 1-59 - Supporting Figures.

### 1.14. Power Supply

Various elements of the Proposed Project require permanent power connections.

Following consultation with ESB Networks, the following power supplies are included as part of the proposals:

- **Raw Water Intake and Pumping Station** – the power supply will be provided by ESB Networks from the Birdhill 38 kV Substation, through two underground cable ducts laid in the R494 from Birdhill to the entrance of the RWI&PS access road. From there, the ducts will be routed along the access road into the ESB Substation on the RWI&PS site.
- **Water Treatment Plant** - The power supply will be provided by ESB Networks from the Birdhill 38 kV Substation, through two underground cable ducts laid in the R445 from Birdhill to the entrance of the Water Treatment Plant Access Road, and from there the ducts will be routed along the access road into the ESB Substation on the Water Treatment Plant site.

- **Break Pressure Tank** – The power supply will be provided by ESB Networks from the existing medium voltage overhead power line which crosses the proposed Break Pressure Tank access road.
- **Booster Pumping Station** - The power supply will be provided by ESB Networks from the sub-station at Birr through buried cables terminating at a 38 kV Substation located on the Booster Pumping Station site.
- **Termination Point Reservoir** – The power supply for the Termination Point Reservoir will be provided from the existing Uisce Éireann 40MI service reservoir facility, adjacent to the proposed site; and
- **Line Valves & Flow Control Valve** - A power supply will be required for the Line Valves and Flow Control Valve, and a mains power supply connection will be made to the ESB network for each of these.

A temporary ESB connection will be required for each of the Construction Compounds and Pipe Storage Depots for the duration of the Construction Phase. This will be provided from the nearest, appropriate existing supply. Where an existing overhead power line traverses a Construction Compound or Pipe Storage Depot, it will be diverted or placed underground prior to commencement of the main construction works.

Power connections, and any diversions of overhead power lines, to the Construction Compounds and Pipe Storage Depots are under discussion with ESNB.

### 1.15. Future Connections

In accordance with the Eastern and Midlands Plan provision has been made for take-off points at strategic locations between the Water Treatment Plant and Termination Point Reservoir.

These facilitate future connections to supply communities in the Midlands without disruption to the operation of the pipeline. The connecting pipelines and associated infrastructure will be delivered by Uisce Éireann through separate projects that will be subject to their own separate consenting processes.

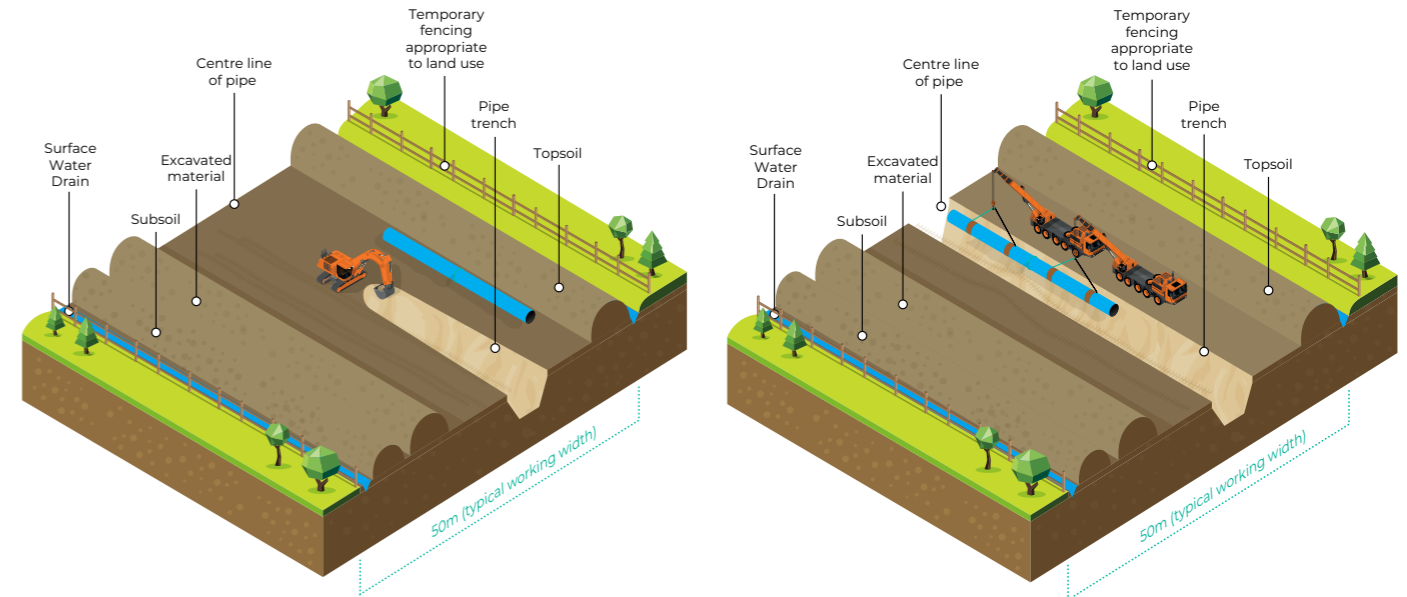


IMAGE 1.11 THE CONSTRUCTION PROCESS TRENCH EXCAVATION AND PIPE INSTALLATION



IMAGE 1.12 IMAGES SHOWING TYPICAL PIPELINE INSTALLATION AND CONSTRUCTION WORKING WIDTH AND ITS REINSTATEMENT

### 1.16. Construction Overview

#### 1.16.1. Construction Working Area

A Construction Working Width will be temporarily required for the period of construction of the Raw Water Rising Mains and Treated Water Pipeline. It will typically be 50m in width but will be locally wider near features such as crossings, access and egress points from the public road network and Pipe Storage Depots.

Image 1.10 provides an indicative cross section of the temporary Construction Working Width.

Images 1.11 and 1.12 shows a typical pipeline installation, demonstrating the works during construction and the reinstatement of the land once the pipeline is installed.

#### 1.16.2. Construction Activities

The construction activities for the principal elements of the Proposed Project will encompass the following broad areas of work:

- Establishment of Construction Compounds including parking areas, material storage areas, power supply and welfare facilities.
- Establishment of Pipe Storage Depots (for storing sections of pipe at intervals along the route of the Proposed Project).
- Erection of temporary fencing for construction working width.
- Site clearance, including removal of topsoil, trees and hedgerows as required.
- Construction of site roads and temporary access roads.

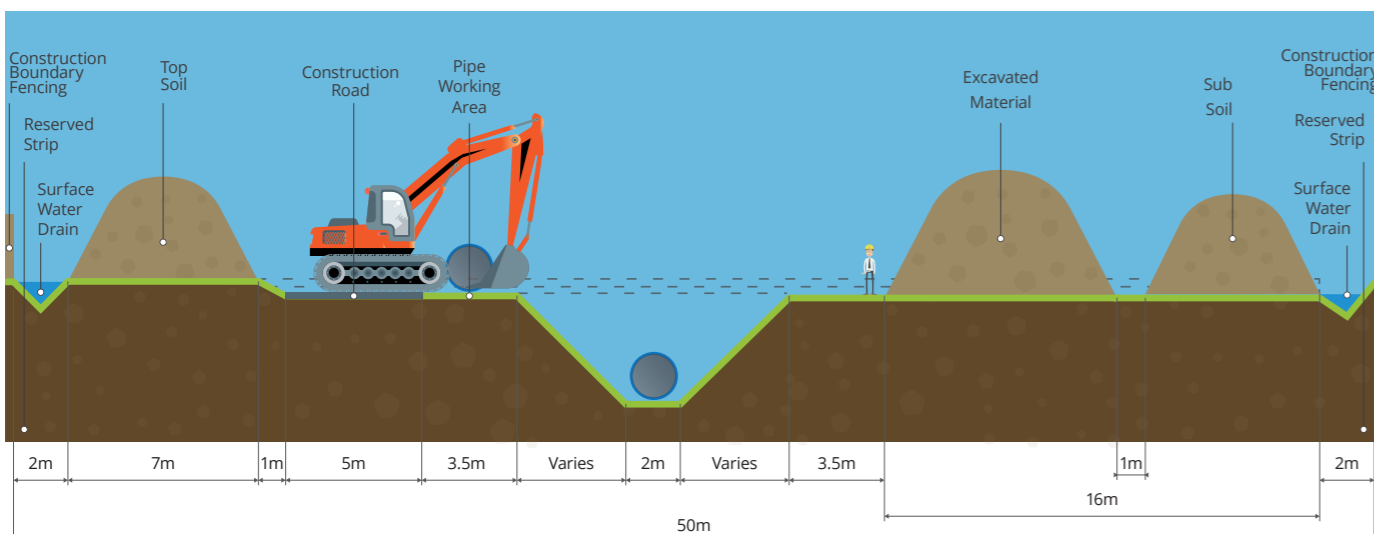


IMAGE 1.10: INDICATIVE TYPICAL CONSTRUCTION WORKING WIDTH CROSS SECTION



- Construction of the infrastructure sites.
- Construction of pipelines – Raw Water Rising Mains and the Treated Water Pipeline.
- Construction of pipeline features including Line Valves, Washout Valves, Air Valves, Flow Control Valve and Take-Off Points.
- Ancillary works including system control infrastructure, lighting, fencing, kiosks, power supplies and Cathodic Protection.
- Construction of lay-bys off the existing road network in conjunction with Line Valves.
- Site landscaping and planting.
- Testing and commissioning.
- Site demobilisation.

In developing an indicative Construction Programme for the Proposed Project environmental seasonal restrictions, which limit the type of construction activities that can take place at certain times of the year, have been considered. Specifically the pipeline construction and associated earthworks, such as soil stripping, and reinstatement will only take place during suitable weather conditions.

### 1.16.3. Construction Compounds and Pipe Storage Depots

Construction Compounds and Pipe Storage Depots are temporary facilities needed to support the construction of the Proposed Project.

There are four Principal Construction Compounds proposed, which will act as central strategic (operational) hubs for plant/material/labour movement, general storage, vehicle parking, welfare facilities and office spaces for administration, logistical support and technical (design) staff. Each Principal Construction Compound will be approximately 12ha in size.

The four Principal Construction Compounds are proposed at the following locations:

- In the townland of Incha Beg, County Tipperary within the Water Treatment Plant Site. This is the proposed Principal Construction Compound (CC1) for the Raw Water Intake and Pumping Station, Raw Water Rising Mains and Water Treatment Plant.
- In the townland of Lisgarriff, County Tipperary. This is the proposed Principal Construction Compound (CC2) for the section of the Treated Water Pipeline between the Water Treatment Plant and the Break Pressure Tank and the Break Pressure Tank itself.

- In the townland of Killananny, County Offaly. This is the proposed Principal Construction Compound (CC5) for the section of Treated Water Pipeline between the Break Pressure Tank and the Booster Pumping Station, and the Booster Pumping Station itself.
- In the townland of Drummond, County Kildare. This is the proposed Principal Construction Compound (CC6) for the Treated Water Pipeline from the Booster Pumping Station to the Termination Point Reservoir, and the Termination Point Reservoir itself.

In addition to these four Principal Construction Compounds, there will be four secondary Satellite Construction Compounds, located at specific centres of works, namely the Raw Water Intake and Pumping Station, Break Pressure Tank, Booster Pumping Station and Termination Point Reservoir. These Satellite Construction Compounds will be required due to the sustained period of working at these particular locations. They will also improve efficiency in the movement of plant, labour and materials, minimising traffic to and from Principal Construction Compounds.

Nine Pipe Storage Depots are also proposed, each requiring a land take requirement of approximately 2ha. These will take direct delivery of the pipe for storage before onward journey to the required location along the pipeline. Given the volume of pipe material to be delivered and the logistical scale of the Proposed Project, it is not considered feasible to deliver pipe material directly to the point of installation. The pipe will be transported from the Pipe Storage Depot to its point of installation via either the Haul Road network or directly along the Construction Working Width.

The locations of the Construction Compounds and Pipe Storage Depots are included in overview maps of the pipeline route, contained in Figures 1 - 59 - Supporting Figures.

### 1.16.4. Haul Roads

Haul Roads are part of the public road network which have been identified for the movement of construction materials, plant and labour to, from and between the five infrastructure sites, the pipeline and temporary works areas such as the Construction Compounds and Pipe Storage Depots for the Proposed Project. They include National, Regional and Local Roads and are identified in overview maps of the pipeline route, contained in Figures 1 - 59 - Supporting Figures.

The Haul Roads have been determined based on:

- A review of all potential road crossings/access points for traffic to and from the infrastructure sites, Construction Working Width, and temporary works areas.
- The identification of those road crossings/access points with the potential capacity to accept a large number of vehicle movements; and
- Consultation with Local Authorities and Transport Infrastructure Ireland (TII).

### 1.16.5. Access

During the Construction Phase access to the infrastructure sites will be via the proposed permanent access road of each site. Where each Haul Road intersects with the Construction Working Width for the pipeline, an access/egress point to and from the Construction Working Width is provided. The access/egress points facilitate the movement of construction traffic (plant, labour and materials) to and from the Haul Roads to the works areas and incorporate visibility splays based on sight lines appropriate to the speed limit of the road. The access/egress points will be secured at all times and manned during working hours.

### 1.16.6. Fencing

The type of fencing provided along the Construction Working Width will be site specific and dependent on the particular land use employed at a given location and will be agreed with landowners in advance of the works commencing.

Where access across the Construction Working Width is required by landowners to facilitate activities on the lands, access gates will be provided.

### 1.16.7. Working Hours

The proposed typical working hours during the Construction Phase will be as outlined in Table 1.1.

TABLE 1.1 TYPICAL CONSTRUCTION WORKING HOURS

Start	Finish	Day
07:00	19:00	Monday - Friday
08:00	16:30	Saturday

There will be a need to undertake certain construction activities outside of normal working hours, this includes works associated with each trenchless crossing which may take place 24 hours a day, and works to complete open cut crossings of roads to reduce the length of time for road closures.

It will also be necessary to move occasional exceptional loads involving prefabricated tanks, any large, non-standard equipment (specials), or precast concrete out of normal hours, or at night, and this will be done in conjunction with Gardaí, TII, and Local Authorities.

### 1.16.8. Construction Programme

Construction works are currently planned to commence at the beginning of 2028, subject to receipt of planning permission and other statutory consents, and the discharge of pre-commencement planning conditions. The construction works are expected to last for an estimated duration of 5 years. The indicative duration and phasing of the principal elements of the Proposed Project are shown in Image 1.13.

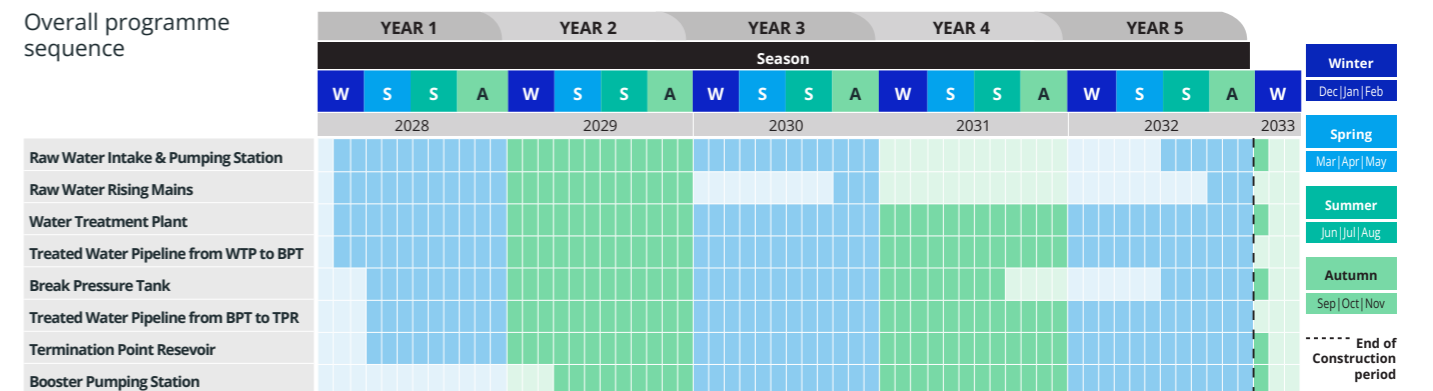


IMAGE 1.13 INDICATIVE CONSTRUCTION DURATION AND PHASING OF THE PRINCIPAL ELEMENTS OF THE PROPOSED PROJECT



### 1.17. Permanent Land Use

Acquisition of land on a permanent basis will be required for the Raw Water Intake and Pumping Station, Water Treatment Plant, Break Pressure Tank, Booster Pumping Station, Flow Control Valve and Termination Point Reservoir, and where permanent access roads to these locations are required. In addition, the acquisition of land will also be required for lay-bys adjacent to Line Valve locations and for a small number of line valves where the ground needs to be raised.

Along the pipeline the Project will have a permanent wayleave, which gives Uisce Éireann the right to construct, inspect, operate and maintain the Raw Water Rising Mains, Treated Water Pipeline and associated infrastructure. In addition, certain restrictions would apply within this wayleave in order to protect the pipeline including limiting future development and restricting planting of certain species of trees. Line Valves, Washout Valves and Air Valves locations will be situated within the permanent wayleave. The permanent wayleave associated with the Raw Water Rising Mains and Treated Water Pipeline will be approximately 20 metres (m) in width, normally centred on the pipeline, as shown in Image 1.14. However, at Line Valves the permanent wayleave will be widened to take account of additional permanent features including the kiosks and to provide access.

There will also be permanent wayleaves associated with connections from the washout valves to permanent outfall locations. These will be approximately 10m in width, normally centred above the connection pipe. In addition, the permanent power connections to the Line Valves will have a separate wayleave for ESB.

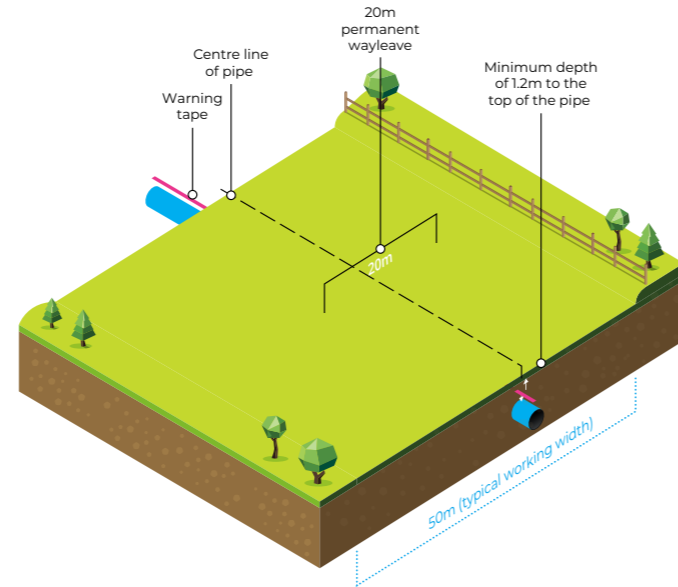
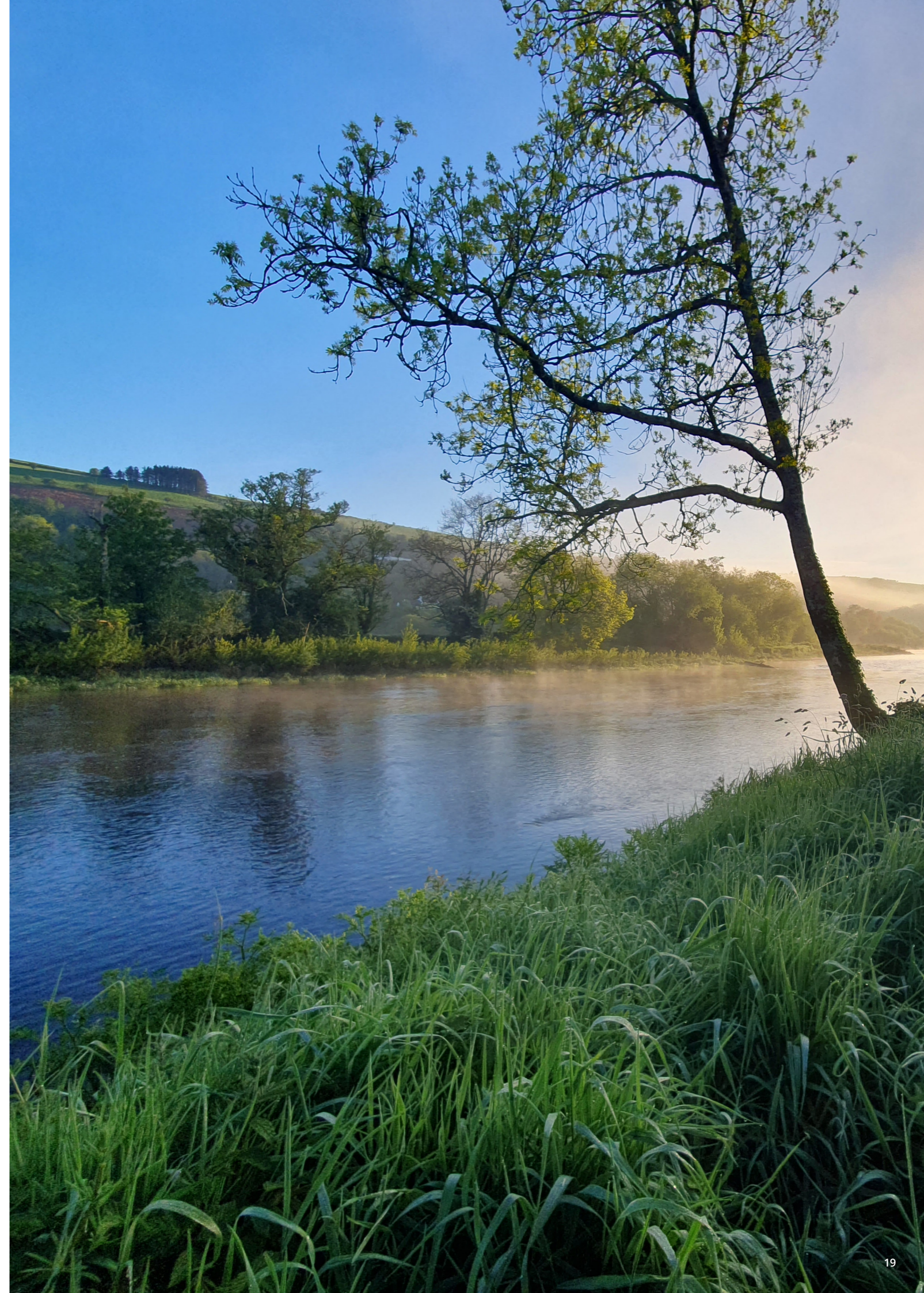


IMAGE 1.14 PROPOSED PERMANENT WAYLEAVE



# 2. The alignment of the Proposed Project with the National Water Resources Plan

## 2.1. National Water Resources Plan

Uisce Éireann has adopted the Republic of Ireland's first National Water Resources Plan (the "NWRP") for public water supply.

The NWRP, composed of the Framework Plan and the four Regional Water Resource Plans (RWRPs), is one of Uisce Éireann's Tier 2 Implementation Plans and its formulation and adoption is an objective outlined within the Uisce Éireann's Tier 1 Water Services Strategic Plan (WSSP). The NWRP focusses on water supply, particularly in relation to five of the six objectives (the sixth objective relates to the provision of wastewater services) set out in the WSSP.

These four objectives are:

1. Meet Customer Expectations.
2. Ensure a Safe and Reliable Water Supply.
3. Protect and Enhance the Environment.
4. Invest in Our Future.

The NWRP, being Uisce Éireann's strategic framework for the delivery of water services will guide the company in the planning of projects and programmes to address water supply issues nationally in a manner consistent with relevant national policies. These projects and programmes will then be prioritised and brought forward through regulated 5-year investment cycles. Image 2.1 illustrates that the NWRP is one means by which Uisce Éireann aligns its strategic plans for water services with government policy.

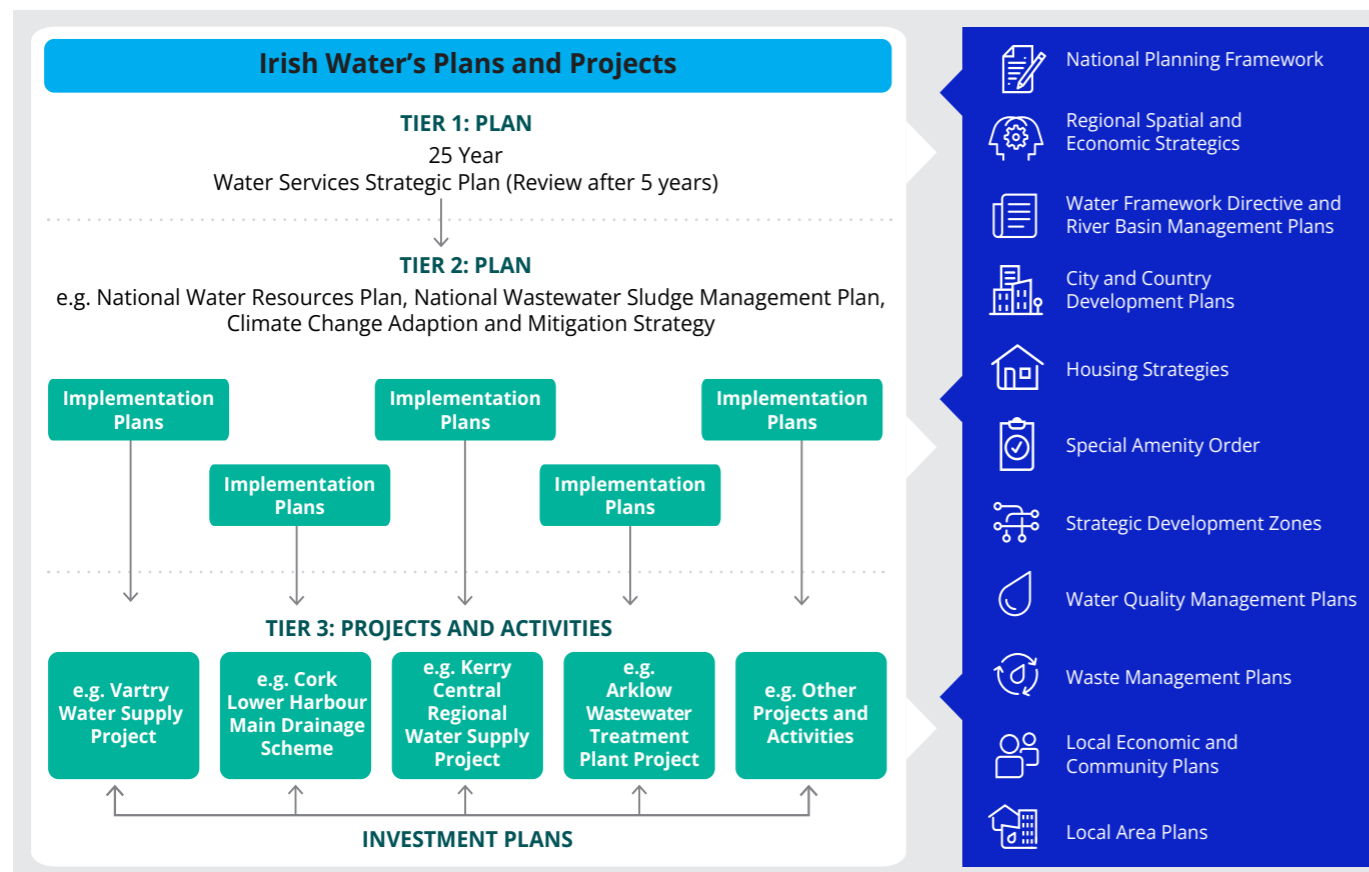


IMAGE 2.1 UISCE ÉIREANN'S PLANS AND PROJECTS

The objective of the NWRP is to implement a strategic plan to meet Ireland's water requirements over the short, medium and long term by ensuring a safe, secure, sustainable and reliable water supply for all consumers.

The NWRP was delivered in two phases.

- **Phase 1**, the NWRP Framework Plan (the "Framework Plan") set out the approach to identifying water supply needs and quantifying those needs up to year 2044. It also described the approach to identifying solutions to address the water supply needs across all of Uisce Éireann's water supplies. The Framework Plan, following public consultation, was finalised and adopted in Spring 2021.
- **Phase 2** comprised the development of four Regional Water Resource Plans to identify the optimal technical solutions (the "Preferred Approaches") required to address the needs outlined in the Framework Plan. The Eastern and Midlands Region is shown in Image 2.2. The Regional Water Resource Plan – Eastern and Midlands Region (the "Eastern and Midlands Plan") following public consultation was adopted in Autumn 2022.

Where Preferred Approaches have been identified, the environmental impacts and costings of the projects needed to implement the Preferred Approach will be further reviewed at a project level when more specific / detailed information is gathered.

The Framework Plan and the Eastern and Midlands Plan note that understandably planning for many projects was underway and projects were initiated prior to the development of the Framework Plan. These projects are called "in-flight" projects and the Water Supply Project was one such in flight project, (this is referred to as the "In-flight Water Supply Project").

The Framework Plan's Supply Demand Balance and Preferred Approach Methodology were applied to projects identified in Uisce Éireann's RC3 Capital Investment Plan 2020 to 2024 including the In-Flight Water Supply Project.

Following the adoption of the Framework Plan and the Eastern and Midlands Plan, all in flight projects were to be compared against the relevant Preferred Approaches identified. Uisce Éireann would then consider to what extent the in-flight project can or should be adapted in light of the Preferred Approaches, on a "case by case" basis.

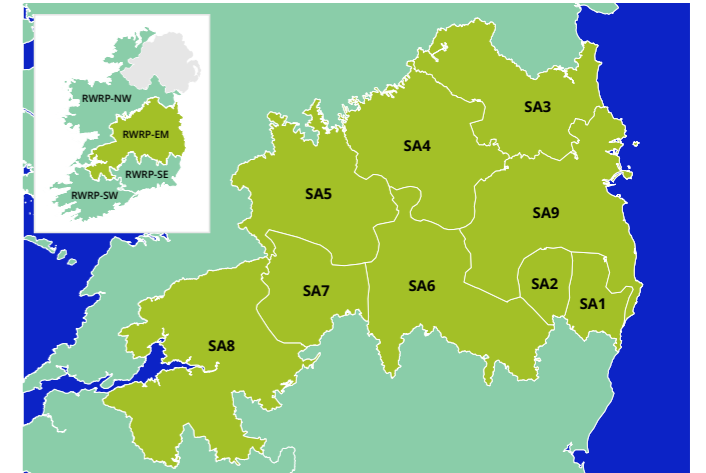


IMAGE 2.2: STUDY AREAS WITHIN THE EASTERN AND MIDLANDS RWRP

This section of the report outlines the examination of the In-flight Water Supply Project in light of the Preferred Approaches contained within the Eastern and Midlands Plan. It also identifies and documents any aspect of the In-Flight Water Supply Project that needs to be modified based on the Preferred Approaches in the Eastern and Midlands Plan.

## 2.2. Framework Plan and Eastern and Midlands Plan outcomes

The key outcome from the Framework Plan and the Eastern and Midlands Plan, relevant for consideration of the In-flight Water Supply Project was that a New Shannon Source with transfers, comprising an abstraction from Parteen Basin and a transfer of treated water to a termination point reservoir in Dublin, is the Preferred Approach to address Supply Demand Balance deficits in 37<sup>2</sup> Water Resource Zones in the Eastern and Midlands Region.

The 37 Water Resource Zones are proposed to be supplied by the following means:

- a) Direct supply from the New Shannon Source transfer pipeline connecting to the GDA WRZ at Peamount,
- b) Offtakes from the New Shannon Source transfer pipeline to WRZs in the Midlands.
- c) Supply from the GDA WRZ to other WRZs in the East facilitated by the additional supply available from the New Shannon Source to the GDA.

<sup>3</sup>37 Water Resource Zones were identified in the Eastern and Midlands Plan consisting of the GDA WRZ and 36 other WRZs. Subsequently Barndarrig WRZ and Redcross WRZ have been rationalised and combined and so the total is now 36 Water Resource Zones consisting of the GDA WRZ and 35 other WRZs..

### 2.3. Examination of the In-Flight Water Supply Project in light of the Eastern and Midlands Preferred Approach

#### 2.3.1. Summary of the In-flight Water Supply Project

The In-flight Water Supply Project, as set out in the Final Options Appraisal Report (FOAR), published in 2016, was an abstraction of water from the Lower River Shannon at Parteen Basin in County Tipperary with water treatment nearby at Birdhill. Treated water would then be piped 170km to a termination point reservoir at Peamount in south County Dublin, with provision being made for supplies to communities along the route of the pipeline, and ultimately connecting into the Greater Dublin network at Peamount.

#### 2.3.2. Summary of the Framework Plan and Eastern and Midlands Plan outcomes

In the Eastern and Midlands Plan the options appraisal process was initially applied locally to each WRZ within an individual Study Area in the region. After that a wider assessment area was considered to determine whether there were larger scale options that might resolve deficits across multiple WRZs within the same Study Area. Consequently, the assessment area size was further increased, and the methodologies were applied at a regional level.

In the NWRP, the Greater Dublin Area was defined as a single Water Resource Zone and a single Study Area (Study Area 9, "SA9"). For the GDA WRZ the Preferred Approach identified in the Eastern and Midlands Plan was a new supply from the Lower Shannon. The plan stated that for Study Area 9 (the Greater Dublin Area):

"As a single WRZ, the Preferred Approach for SA9 is both the WRZ Level Approach and the SA Preferred Approach."

*In addition, the Preferred Approach identified for the Greater Dublin Area (SA9) in the Eastern and Midlands Plan was a New Shannon Source which had the potential to supply multiple WRZs within the Region and was the only Regional Option outlined.*

Therefore, the Eastern and Midlands Plan identified that a new source from the River Shannon is the Preferred Approach at Regional Level for supplying the GDA WRZ and a further 36<sup>3</sup> WRZs in the Midlands and East, with those 36 WRZs supplied through the Greater Dublin Area water network and through offtakes from the transfer pipeline from the River Shannon en route to the Greater Dublin Area.

#### Conclusion

Having examined the outcomes of the Framework Plan and Eastern and Midlands Plan, it was concluded that the In-flight Water Supply Project consisting of a new water supply abstraction at Parteen Basin on the Lower River Shannon and a treated water pipeline to Dublin, with potential to supply a number of locations across the Midlands and East, is substantially consistent with the Preferred Approach identified in the Eastern and Midlands Plan consisting of the New Shannon Source with transfers.

### 2.4. Examination of Water Supply Area for the In-Flight Water Supply Project in light of the Eastern and Midlands Preferred Approach

#### 2.4.1. Summary of the Water Supply Area for the in flight Preferred Scheme

The FOAR identified a number of locations in the Eastern and Midlands region that, in addition to the Greater Dublin Area, would benefit from a new supply from a treated water pipeline from the River Shannon. These areas, where water supply deficits exist, were collectively referred to in the FOAR as the "Benefiting Corridor". The FOAR recognised that potential future connections from a transfer pipeline from the Shannon to these areas supported Uisce Éireann's objective of reducing the overall number of individual supplies in the State to a smaller number of interconnected supplies that would be more reliable and environmentally and economically sustainable.

#### 2.4.2. Summary of the Framework Plan and Eastern and Midlands Plan outcomes

The Framework Plan provides a consistent methodology for establishing Supply Demand Balance deficits in every WRZ in the State and for identifying Preferred Approaches to address those deficits. This methodology has been applied in the Eastern and Midlands Plan and formed part of the assessment process for identifying appropriate solutions to address deficits where they arise in each Water Resource Zone in the Region. There were 134 Water Resource Zones in the 9 Study Areas in the Eastern and Midlands Region.

One of the key benefits of preparing the NWRP was the ability to look holistically at existing and potential new supplies and within that context to consider the best options for particular areas. The Eastern and Midlands Plan was progressed first (out of four Regional Plans) given the Region's ageing infrastructure, dense population and criticality of need. The Greater Dublin Area was the first Water Resource Zone (and study area) in the Eastern and Midlands Plan to have its Preferred Approach identified because it had the highest population and the greatest Supply Demand Balance Deficit.

The Preferred Approach identified for the Greater Dublin Area in the Eastern and Midlands Plan is a New Shannon Source and the Eastern and Midlands Plan identifies that the sustainable yield available from the Lower River Shannon at Parteen Basin has the potential to supply more water than is required to address the supply demand balance deficit in the Greater Dublin Area. Consequently, when developing the Preferred Approach for other WRZs and Study Areas for the Eastern and Midlands Region, cross study area transfers were considered both from the GDA in the context of a New Shannon Source having been delivered, and also from any pipeline transferring the water from the Shannon as part of the proposed New Shannon Source.

Through the options development process in the Eastern and Midlands Plan, transfers from the New Shannon Source were identified in 7 Study Areas. In many of these study areas it was apparent that there is an opportunity to decommission certain WTPs and discontinue certain unsustainable abstractions if the New Shannon Source and connections were delivered. Again, this was assessed through the options development process where the option to upgrade an existing plant was compared against the option to tap into an alternative supply, such as the pipeline for the New Shannon Source.

In total the Eastern and Midlands Plan identifies the New Shannon Source being the Preferred Approach to supply water to 37<sup>4</sup> WRZs as follows:

- The GDA and 18<sup>5</sup> additional WRZs, which collectively would become the GDA Regional WRZ
- 18 WRZs via 4 transfers from the pipeline connecting the New Shannon Source to the GDA.

The intention is that the 37 WRZs will ultimately form 5 new/consolidated WRZs: Newport, North Tipperary, Tullamore, Mullingar Regional and GDA Regional WRZ.

*The proposed solution would enable Uisce Éireann to decommission 33 groundwater abstractions and 14 surface water abstractions resulting in a more efficient, interconnected and resilient supply system.*

The 36 WRZs that were identified in the plan, in addition to the GDA, as benefiting from a New Shannon Source Regional transfer are listed in Table 2.1. Barndarrig WRZ and Redcross WRZ have subsequently been rationalised and combined. Therefore, there are 35 WRZs and the Greater Dublin Area that the Proposed Project is to meet the water supply requirement, a combined total of 36 WRZs. This does not affect the volume of water to be supplied.

TABLE 2.1 WRZS, OUTSIDE THE GDA WRZ, POTENTIALLY BENEFITING FROM A SUPPLY FROM THE NEW SHANNON SOURCE

Study Area	Water Resource Zone Code	Water Resource Zone Name	WRZ Name post-rationalisation
SA1	3400SC0007	Avoca Ballinaclesh Public Supply	GDA Regional
SA1	3400SC0012	Redcross Conary Public Supply (subsequently combined with the Barndarrig)	GDA Regional
SA1	3400SC0017	Barndarrig (subsequently combined with the Redcross)	GDA Regional
SA1	3400SC0025	Ballinteston Public Supply	GDA Regional
SA1	3400SC0027	Ballinapark Public Supply	GDA Regional
SA1	3400SC0046	Rathdrum Public Supply	GDA Regional
SA1	3400SC0047	Laragh Annamoe Public Supply	GDA Regional
SA2	0100SC0005	Hacketstown	GDA Regional
SA2	3400SC0004	Dunlavin Public Supply	GDA Regional
SA2	3400SC0005	Hollywood Donard Public Supply	GDA Regional
SA3	2300SC0055	Navan-Mid Meath	GDA Regional
SA3	2100SC0001	South Louth East Meath	GDA Regional
SA3	2300SC0005	Kells Oldcastle	GDA Regional
SA3	2300SC0014	Trim	GDA Regional
SA3	2300SC0006	Athboy	GDA Regional
SA3	2300SC0007	Ballivor	GDA Regional
SA3	2300SC0011	Kilmessan	GDA Regional
SA6	0100SC0001	Carlow North	GDA Regional
SA6	2500SC0002	Tullamore	Tullamore/ Mountbolus
SA6	2500SC0013	Mountbolus PWS	Tullamore/ Mountbolus
SA4	3200SC0003	Ballany	Mullingar Regional
SA4	3200SC0001	Mullingar Regional	Mullingar Regional
SA4	2300SC0012	Clonard/Abbeysfields Housing Estate	Mullingar Regional

<sup>3</sup> 37 Water Resource Zones were identified in the Eastern and Midlands Plan consisting of the GDA WRZ and 36 other WRZs. Subsequently Barndarrig WRZ and Redcross WRZ have been rationalized and combined and so the total is now 36 Water Resource Zones consisting of the GDA WRZ and 35 other WRZs.

<sup>4</sup> 18 WRZ were to be incorporated into the GDA Regional WRZ. Subsequently Barndarrig WRZ and Redcross WRZ were combined and so for the proposed Project there are 17 WRZ to be incorporated into the Regional GDA WRZ. This does not affect the volume of water to be supplied.

Study Area	Water Resource Zone Code	Water Resource Zone Name	WRZ Name post-rationalisation
SA4	2300SC0016	Longwood WS	Mullingar Regional
SA4	1400SC0004	Ardcarraig Clogherinkoe	Mullingar Regional
SA4	2500SC0005	Edenderry & Rhode	Mullingar Regional
SA4	2500SC0014	Daingean	Mullingar Regional
SA4	2500SC0006	Walsh Island	Mullingar Regional
SA4	2000SC0003	Ballymahon	Mullingar Regional
SA4	2300SC0018	Enfield	Mullingar Regional
SA4	2500SC0004	Geashill	Mullingar Regional
SA7	2500SC0010	Dunkerrin /Moneygall	Dunkerrin/Moneygall/ Borrisokane
SA7	2900SC0045	Borrisokane (Greyford source to Crotta)	Dunkerrin/Moneygall/ Borrisokane
SA7	2900SC0046	Cloughjordan	Dunkerrin/Moneygall/ Borrisokane
SA8	2900SC0066	Newport	Newport RWSS / Killaloe
SA8	0300SC0024	Killaloe	Newport RWSS / Killaloe

**Conclusion**

For the In Flight Water Supply Project, areas in the Eastern and Midlands Region outside of the GDA, where water supply needs exist, and that have the potential to have their needs addressed through future connections from a transfer pipeline from the Lower Shannon, were collectively referred to in the FOAR as the Benefiting Corridor. The FOAR recognised the potential future connections from a transfer pipeline from the Shannon to these areas. The Eastern and Midlands Plan provides a Preferred Approach to address each identified water supply need in the region. The Eastern and Midlands Plan provides the most up to date position

on WRZs that could potentially be supplied from a New Shannon Source. All locations that were included in the Benefiting Corridor in the FOAR have been considered within the Eastern and Midlands Plan or within one of the other three Regional Water Resources Plans and solutions have been identified for these locations. It is therefore considered appropriate to amend the In-flight Water Supply Project by substituting the Benefiting Corridor previously identified in the FOAR with the Water Resource Zones identified in the Eastern and Midlands Plan which is referred to hereafter as the "Water Supply Area".

TABLE 2.2: COMPARISON OF THE EASTERN AND MIDLANDS PLAN AND THE IN-FLIGHT WATER SUPPLY PROJECT

Category	In flight Water Supply Project	Framework Plan and Eastern and Midlands Plan outcomes	Comparison of the In flight Water Supply Project with the Framework Plan and Eastern and Midlands Plan outcomes	Conclusion
Preferred Scheme	A new abstraction from Parteen Basin and treated water transfer pipeline to the GDA, with offtake locations for potential future connecting pipelines	A New Shannon Source consisting of an abstraction from Parteen Basin and treated water transfer pipeline to the GDA and with offtakes to other water resource zones in the Region is identified as the Preferred Approach to address supply deficits in the GDA and 36 other Water Resource Zones in the Region	The In-Flight Water Supply Project is substantially aligned with the relevant outcomes of the Framework Plan and Eastern and Midlands Plan in its recommended solution to address Need in the GDA and other locations in the Eastern and Midlands Region	The In-flight Water Supply Project does not need to be modified.
Water Supply Area	The In flight Water Supply Project includes the GDA and a Benefiting Corridor based on an interim assessment of potential benefiting communities from a new supply from the River Shannon	The Framework Plan and the Eastern and Midlands Plan, when looking at the region holistically, identify the potential for a New Shannon Source to address supply deficits in 36 WRZs in the Region, in addition to supplying the GDA WRZ.	The In-flight Water Supply Project and the Plans both identify water supplies outside of the current GDA WRZ that have water supply needs that could be addressed by a new supply from the Lower River Shannon.  There are some differences in the composition of the Benefiting Corridor of the In-flight Water Supply Project compared to the list of benefiting Water Resource Zones identified in the Eastern and Midlands Plan.	Recommend updating the Benefiting Corridor to align with the Water Resource Zones identified in the Eastern and Midlands Plan and as listed in Table 2.1 above and to review offtake locations on the transfer pipeline in light of those updates.

<sup>37</sup> 37 Water Resource Zones were identified in the Eastern and Midlands Plan consisting of the GDA WRZ and 36 other WRZs. Subsequently Barndarrig WRZ and Redcross WRZ have been rationalised and combined and so the total is now 36 Water Resource Zones consisting of the GDA WRZ and 35 other WRZs.

**2.5. Recommended updates**

**The In-flight Water Supply Project has been compared against the relevant outcomes of the Framework Plan and Eastern and Midlands Plan to see if any changes should be made to the In-flight Water Supply Project in response to the recommendations set out in those Plan. This summarised in Table 2.2.**

The In-flight Water Supply Project was identified as an abstraction from Parteen Basin on the Lower River Shannon and a treated water distribution pipeline to the GDA with capability to supply communities in the Midlands. The Framework Plan and Eastern and Midlands Plan have been adopted and they identify an abstraction from Parteen Basin (the New Shannon Source), treated water pipeline to the GDA and transfers to other WRZs in the region as the Preferred Approach. The In flight Water Supply Project is therefore substantially consistent with the relevant outcomes of the Framework Plan and Eastern and Midlands Plan other than in respect of the list of WRZs to be served by the pipeline from the Shannon.

On this basis it has been concluded that the Benefiting Corridor proposed for the In-flight Water Supply Project should be replaced with a Water Supply Area for the Proposed Project which aligns with the 36 WRZs that are identified in the Eastern and Midlands Plan to be supplied from a New Shannon Source with transfers<sup>7</sup>.

The Proposed Project infrastructure will therefore:

- Have the capacity to deliver the volume of water needed to meet the peak demand in the Water Supply Area.
- Include take-off points to allow for future connections into the Water Supply Area.

*The supply demand balance calculations, described in Section 3 have been updated to take account of this and the preliminary design of infrastructure for the Proposed Project is based on implementing these changes.*



<sup>37</sup> 37 Water Resource Zones were identified in the Eastern and Midlands Plan consisting of the GDA WRZ and 36 other WRZs. Subsequently Barndarrig WRZ and Redcross WRZ have been rationalised and combined and so the total is now 36 Water Resource Zones consisting of the GDA WRZ and 35 other WRZs. This does not result in a change to the water supply requirement.

# 3. Water Supply Requirement

This section presents the water supply requirement (“volume”) which the Proposed Project infrastructure will be required to have the capacity to abstract and deliver.

## 3.1. Supply Demand Balance

The Proposed Project is intended to address a ‘deficit’ in water supply and provide resilience in supply. This is the ‘need’ for water. The deficit is the ‘gap’ or difference between the water available for supply compared with the demand for water.

Level of Service refers to the reliability of the supply that Uisce Éireann customers can expect to receive and is expressed as a frequency or return period of supply failure based on statistics. For example, if the Level of Service is stated as 1 in 50, a consumer would only ever expect to experience a water outage or severe limitations to supply, on average, once every 50 years. This would be a 2% chance that in any given year that there would be a supply failure.

The current Level of Service in Ireland varies according to location, ranging from lower than 1 in 10 to better than 1 in 50.

In the Framework Plan, Supply Demand Balance (SDB) assessments have been developed for each WRZ based on a 1 in 50 Year Level of Service. This means Uisce Éireann will aim to provide a uniform minimum of a 1 in 50-year Level of Service across the entire public water supply over time.

The difference between the water available for supply compared with the demand for water is referred to as the Supply Demand Balance (SDB). Therefore, the SDB defines the volume of water that needs to be provided to meet a 1 in 50 year Level of Service.

In Uisce Éireann’s assessment of Project Need for the In-Flight Water Supply Project, it previously projected supply and demand to year 2050. Given the strategic nature of the Proposed Project, it is considered prudent that the project would continue to adopt 2050 as the forecast year for the purposes of identifying how much water it needs to supply. Therefore, the SDB, to calculate the deficit to be addressed by the Proposed Project is based on applying the Framework Plan SDB methodology for year 2050.

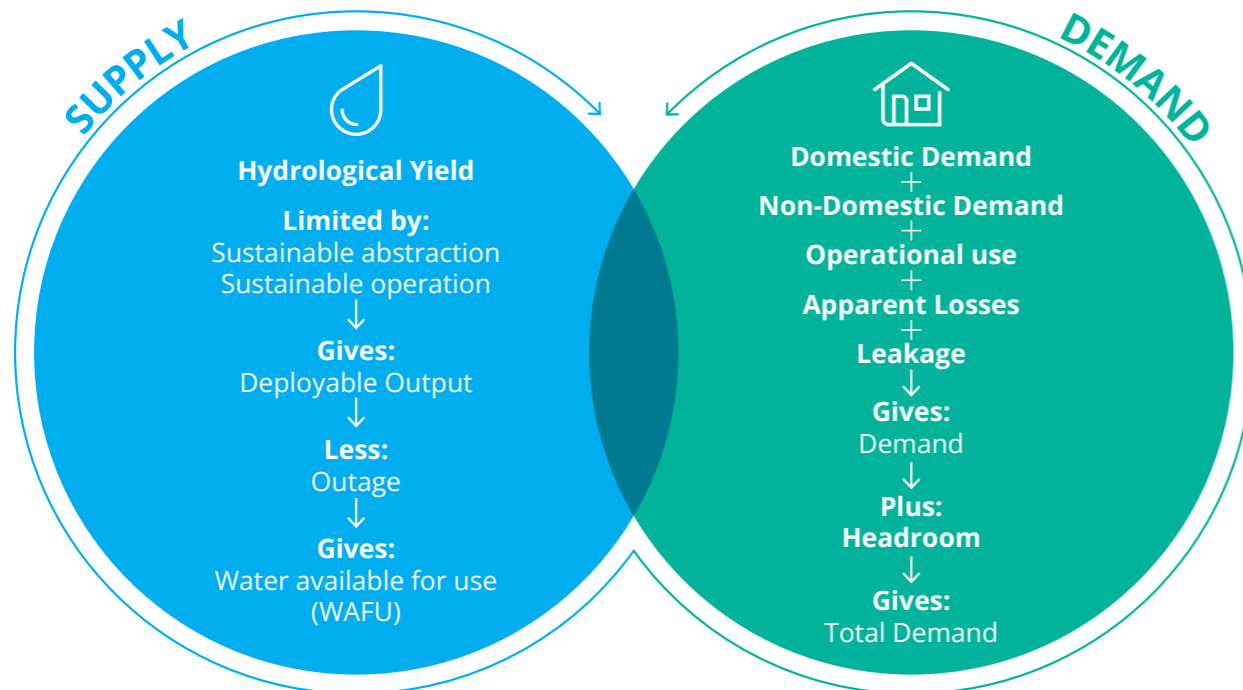


IMAGE 3.1: SDB PROCESS INCLUDING WAFU CALCULATION

In terms of supply availability, the SDB considers water availability in the natural environment, current abstractions, water treatment capacity, process losses, trunk main constraints, and required allowances to ensure continuity of supply during planned and unplanned events. When all of these factors have been considered, the Water Available for Use (WAFU) for each water resource zone can be developed. The SDB calculation process including the WAFU calculation is illustrated in Image 3.1.

The supply forecasts must also consider that the availability of supplies could reduce due to climate change and that allowable abstraction from certain waterbodies may be reduced in order to ensure that they are sustainable into the future. This may result in an increase in the need for water from other sustainable supplies to address these reductions.

In terms of demand for water, the SDB considers domestic demand, non-domestic demand, operational usage (such as flushing water mains and fire hydrants), apparent losses and leakage. In addition, demand forecasting, must consider, leakage reduction, growth in demand, and allow for uncertainties (provision of headroom). Further information is provided on these in Appendix 2 – Calculation of Water Supply Requirement.

## 3.2. Water Supply Area

As set out in Section 2, the Proposed Project must be able to supply sufficient water to meet a deficit in supply for 36 WRZs, which once connected to the new supply from the River Shannon, will be rationalised into five WRZs as follows:

- GDA Regional WRZ (from 2041).
- Tullamore/ Mountbolus WRZ (from 2041).
- Mullingar Regional WRZ (from 2032).
- Dunkerrin/Moneygall/ Borriskane WRZ (from 2041).
- Newport RWSS / Killaloe WRZ (from 2041).

Image 3.2 provides an overview of the pipeline and the proposed take-off points needed to facilitate transfers via future connections and future projects to deliver water within the Water Supply Area.

## 3.3. Water Supply Requirement

### 3.3.1. Supply Demand Balance Deficit

Appendix 2 – Calculation of Water Supply Requirement, provides further information on the calculation of the Supply Demand Balance Deficit in the Water Supply Area. The calculation is based on the methodology set out in the adopted NWRP and extends the project to year 2050, the planning horizon for the Proposed Project.

The forecast deficit for the Water Supply Area at 2050 is 280Mld based on the critical supply demand balance deficit as summarised in Table 3.1.

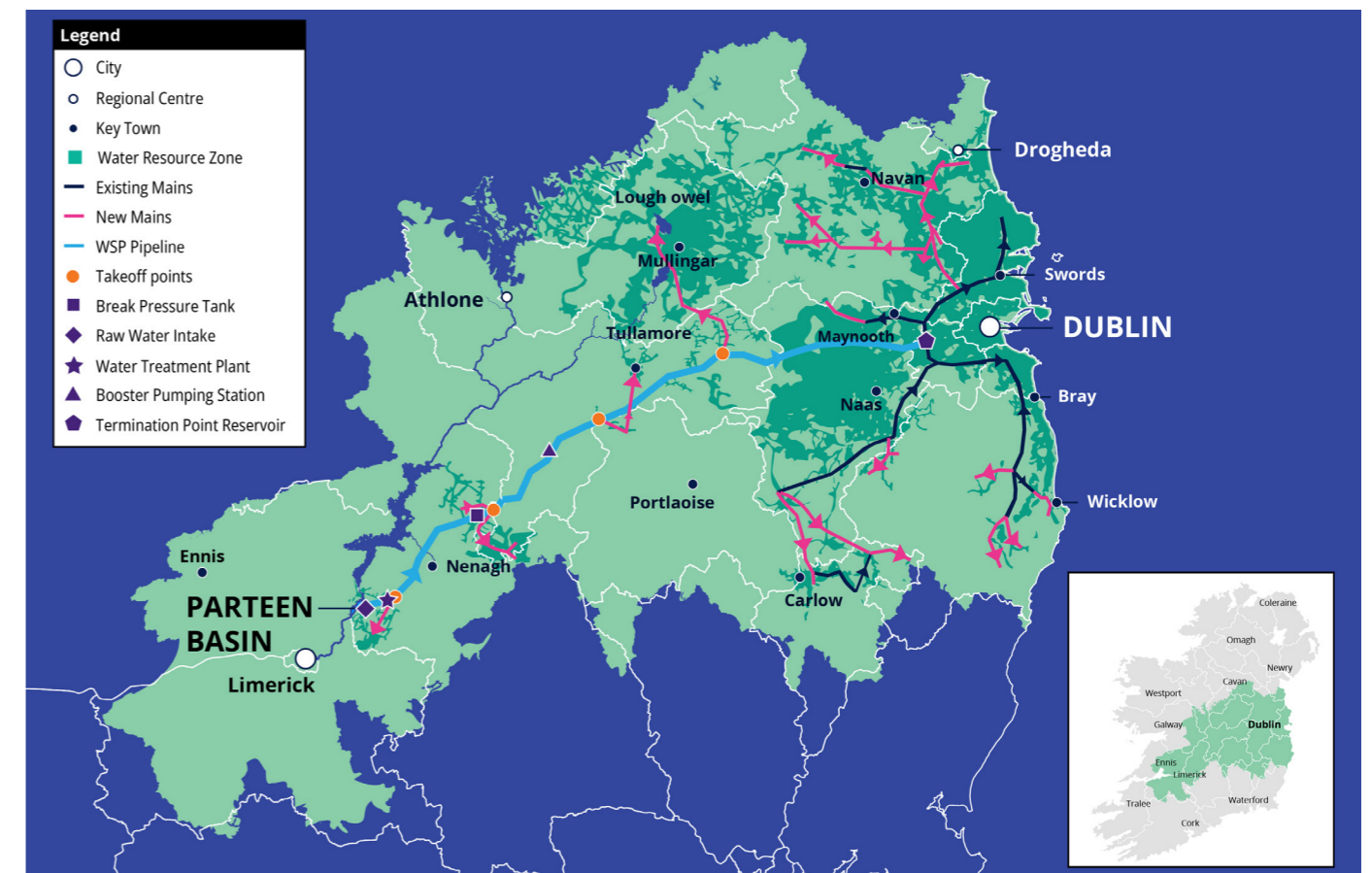


IMAGE 3.2: OVERVIEW OF THE WATER SUPPLY AREA

TABLE 3.1: TREATED WATER REQUIREMENT IN THE GDA & 35 OTHER WRZs BY 2050

Component - GDA	2020 Mld*		Component - GDA	2050 Mld*
Domestic Usage	209	→	Domestic Usage	257
Non-domestic Usage	142		Non-domestic Usage	241
Operational	6		Operational	6
Illegal Connections	6		Illegal Connections	6
Leakage	207		Leakage	122
Total Distribution Input	569		Total NYAA Demand	633
Headroom 8%				51
Peaking (DYCP)				91
Water Requirement for GDA (DYCP)				774
Water available for GDA (DYCP)				578
GDA Deficit (DYCP)				-197
Deficit in 35 <sup>9</sup> other WRZs (DYCP)				-83
<b>Total Deficit (DYCP)</b>				<b>-280</b>

(\*NOTE: ROUNDING MAY APPLY)

### Provision for reductions in existing supplies

The NWRP baseline Supply Demand Balance projections could not take account of some anticipated reductions in the amount of water that the Environmental Protection Agency (EPA) will permit to be abstracted from some existing sources for sustainability reasons under the incoming abstraction licensing regime.

It has been acknowledged in the NWRP, that there is a risk of reductions in volumes of water available from the current levels of abstraction from a number of existing sources when they are licensed. It is known that this will occur but it is uncertain as to the extent of these reductions and therefore, the reduction is currently unquantifiable. Nevertheless, it is considered prudent that Uisce Éireann should make an allowance for sustainability reductions to existing sources when determining its maximum abstraction required from the Lower Shannon for the purposes of progressing the design and statutory consents for the Proposed Project.

It is not possible to determine a precise figure, (because the extent of any reductions in abstraction volumes as a result of the EPA licensing regime is not information that is currently known), and it is impossible to predict. Given that, provision must be made for this eventuality, Uisce Éireann considers that an allowance of an additional 20Mld to the forecast deficit of 280Mld at 2050 is appropriate on a prudent provision basis. This allowance of 20Mld is Uisce Éireann's best current estimate of what will be required to address these potential reductions to existing supplies.

### 3.4. Total Volume of Water Required

On the basis of a current forecast supply demand balance deficit of 280Mld and an additional prudent provision of 20Mld the Proposed Project infrastructure shall be designed and developed on the basis of having the capacity to abstract and deliver 300Mld as set out in Table 3.2.

TABLE 3.2: TOTAL VOLUME OF WATER TO BE SUPPLIED BY THE PROPOSED PROJECT

Demand	2050 Mld*
GDA	197
35 WRZs <sup>9</sup>	83
Provision for potential sustainability reductions from existing supply volumes due to future abstraction licensing	20
<b>Total Peak Volume of Water</b>	<b>300</b>



\*Supply Demand Balance based on adopted Regional Water Resources Plan – Eastern and Midlands Region projected to 2050.

<sup>9</sup> 37 Water Resource Zones were identified in the Eastern and Midlands Plan consisting of the GDA WRZ and 36 other WRZs. Subsequently Barndarrig WRZ and Redcross WRZ have been rationalised and combined and so the total is now 36 Water Resource Zones consisting of the GDA WRZ and 35 other WRZs.

## 4. Abstraction Regime

This section provides a description of the abstraction of water from Parteen Basin to provide the new supply of water once the Proposed Project is operational.

### 4.1. Parteen Basin

Parteen Basin, also known locally as the “Lower Lake”, was formed as part of the Shannon Hydro-Electric Scheme in the late 1920’s. Much of the perimeter of Parteen Basin is formed by high linear engineered embankment dams, visible left and right in Image 4.1.

These are category A earthen embankment dams constructed as part of the Shannon Hydro-Electric Scheme to form Parteen Basin. It floods an area through which the Shannon once flowed as a river, and the old channel is still recognisable in depth surveys of the bed of the flooded basin. Parteen Basin is regulated both by the discharge through Parteen Weir, and by the flow through Ardnacrusha Generating Station. It is linked to Lough Derg by the Killaloe channel.

Image 4.2 provides a schematic of the hydrological components of the combined Lough Derg and Parteen Basin system. The inflow from the catchment is dominated by the Shannon flow, though smaller rivers and areas of land downstream of where the Shannon joins Lough Derg also provide water. Rainfall into Lough Derg and Parteen Basin and evaporation from them result in fluctuations in levels within the lakes. Outflows from the system are those that flow into the old Shannon channel and the water that travels down the Ardnacrusha headrace to be used for electricity power generation and a small allowance for the Ardnacrusha fish pass.

### 4.2. ESB Operations

ESB manages water levels on Lough Derg and controls the water levels on Parteen Basin by diverting water to Ardnacrusha powerstation for the production of zero carbon electricity, and by opening gates at Parteen Weir to release water down the old course of the river Shannon.

Parteen Basin is a small reservoir, built with earthen Embankment Dams along the southwestern and southeastern perimeter. It is fed from Lough Derg



IMAGE 4.1: PARTEEN BASIN





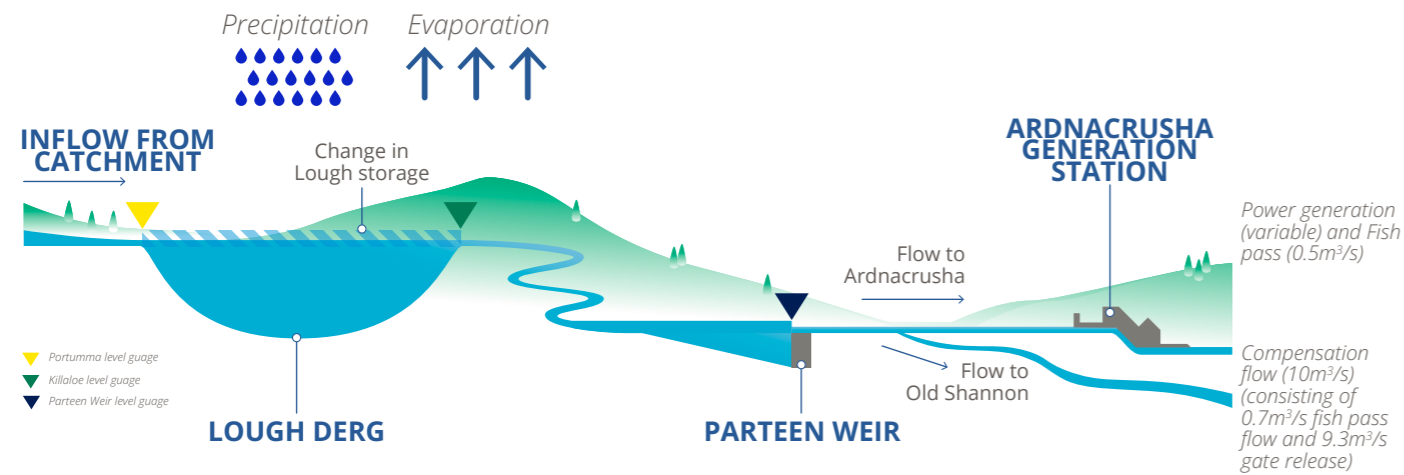


IMAGE 4.2: WATER BALANCE SCHEMATIC OF THE LOUGH DERG AND PARTEEN BASIN SYSTEM

through the narrow river channel at Killaloe. ESB must ensure that the water levels at Parteen Basin do not exceed the maximum or minimum safety levels of those earthen Embankment Dams to avoid the risk of damage to the Dams. ESB controls the water levels in Parteen Basin by closely matching the amount of water taken by Ardnacrusha and the old river Shannon with the amount of water flowing into Parteen Basin each day.

The water levels are managed within a Normal Operating Band<sup>12</sup>, 460mm (18 inches approximately) in depth, across a wide range of flows. It should be noted that 100mm of this operating band is usually reserved for emergency electricity generation and therefore, ESB seek to keep the water level within a 360mm range, above 30.50m OD Malin Head (33.20m OD Poolbeg). Due to the narrow constriction of the river at Killaloe, water levels in Lough Derg rise above the Normal Operating Band during flood periods. For Dam Safety, water levels remain within the Normal Operating Band at all times in Parteen Basin.

**Normal Operating Water Levels**

At present, the normal water level on Lough Derg and on Parteen Basin is managed to be between the limits set out in Table 4.1.

To generate its full electrical output, each hydro turbine at Ardnacrusha takes approximately 100m<sup>3</sup>/s (100 cubic metres per second or tonnes of water per second). ESB also continually discharges a statutory flow of 10m<sup>3</sup>/s down the old river Shannon. By selecting how

many turbines are in operation each day, ESB can set how much water is diverted from Parteen Basin to the station daily. With its four turbines at full output, Ardnacrusha can take a flow of up to 400 m<sup>3</sup>/s.

When the inflow from Lough Derg into Parteen Basin is higher than 400m<sup>3</sup>/s, ESB must ensure that the extra water is discharged down the old river Shannon to prevent the water level exceeding 30.86m OD Malin Head (33.56 OD Poolbeg), which is the upper end of the Normal Operating Band. Gates are opened gradually to release the excess water to the old course of the river Shannon, to safely pass the flood and return water levels to within the Normal Operating Band. When the inflow from Lough Derg into Parteen Basin is less than 400m<sup>3</sup>/s, ESB turns off its turbines for more hours each day to prevent the water level falling below the target range within its Normal Operating Band for that time of year.

ESB’s general practice is to maintain levels at the lower end of the Normal Operating Band in late Autumn, in anticipation of higher inflow conditions across Autumn and Winter.

As Winter comes to an end, ESB monitors the falling inflows along the length of the river Shannon before cutting back electricity generation in late Spring with the general aim to retain water towards the upper end of the Normal Operating Band and to keep it in the upper end of the band through the Summer. This is to enable sufficient water for the continual release, if there is a dry summer, of the statutory flow of 10m<sup>3</sup>/s down the old river Shannon alongside further electricity

TABLE 4.1: NORMAL OPERATING WATER LEVELS LOUGH DERG AND PARTEEN BASIN (METRES OVER ORDNANCE DATUM)

Normal Operating Band	Lough Derg		Parteen Basin	
	OD Malin Head (m)	OD Poolbeg (m)	OD Malin Head (m)	OD Poolbeg (m)
Upper level	30.86	33.56	30.86	33.56
Lower level	30.40	33.10*	30.00	32.70

\*ESB seek to keep the water level in Lough Derg above 30.50m OD Malin Head (33.20 mOD Poolbeg) in order to reserve a band of 100mm of water for emergency power generation.

<sup>12</sup>The ‘band’ being the normal operating levels between the upper and lower limits.

generation if the inflows rise due to summer rainfall. There are often periods of wet weather in the Summer when inflows into Lough Derg will rise and increase the level at Lough Derg. As the inflows from Lough Derg increase into Parteen Basin, ESB takes that additional water to increase generation at Ardnacrusha. Once the flood flows in the river have passed and the more typical summer flows resume, ESB will normally return to managing water levels in Lough Derg towards the upper end of its normal operating band.

The overall runoff from the catchment, and the volumes of water passing each way, depend on ‘wet’ and ‘dry’ years, and on the profiles of floods and dry weather across any given year. Over 25 years from 1990 to 2015, between 68% and 94% of flow at Parteen Basin, passed through Ardnacrusha Generating Station. The lower percentage reflects either a dry year overall, or a wet year with substantive flood peaks. In broad scale terms, approximately 90%-95% of the long-term average annual flow in the Shannon at Parteen Weir (which is approximately 180 m<sup>3</sup>/s), is directed through Ardnacrusha, with a minimum statutory compensation water flow of 10m<sup>3</sup>/s directed to the lower Shannon at Parteen Weir.

**4.3. Abstraction for the Proposed Project**  
**The proposed abstraction from the River Shannon will be located on the eastern shore of Parteen Basin, in the townland of Garrynatineel, approximately 3.3km north-east of the Parteen Weir.**

It is proposed to abstract up to a maximum of 3.47m<sup>3</sup>/s from Parteen Basin. This represents the projected Dry Year Critical Period deficit at 2050. Abstraction rates will vary during normal operation up to this maximum however more typical abstraction rates would be represented by the projected Normal Year Annual Average deficit (equivalent to 1.78m<sup>3</sup>/s at 2050).

At the maximum rate of abstraction the proposed abstraction of water will equate to a small fraction (approximately 2%) of the long term annual average flow through Parteen Basin.

Abstraction of water from hydro-electric power schemes is commonly employed worldwide to enable environmentally sustainable availability of water for public supply. The proposed abstraction of water is in essence, an abstraction from water normally used in the hydro-power plant, using the same existing water level controls, and therefore avoiding having to construct a new impoundment.

Water levels on Lough Derg and Parteen Basin will be managed within the same water level ‘Normal Operating Band’ as currently applies. ESB, as part of an overall agreement with Uisce Éireann will agree to the diversion to the Proposed Project abstraction, water that would otherwise have been used for electricity generation, on a continuous year round basis.

The statutory compensation water of 10 m<sup>3</sup>/s passed through Parteen Weir into the ‘Old Shannon River’ will remain unchanged and undiminished under this proposal. Navigation and beneficial uses focused on tourism will experience the same operating water level range as normal.

**4.4. Hydrological Modelling**  
**A hydrological model has been developed to assess the impact of the proposed abstraction on the water levels of Lough Derg and Parteen Basin and the pass forward flows released to the old River Shannon.**

Two constant rates of abstraction were investigated, based on the volume of water to be supplied as set out in Section 3 of this report. These were

- 154Mld – taken to be representative of normal operation demand deficit at 2050; and
- 300Mld – projected peak demand deficit to be met during Dry Year Critical Periods at 2050.

Constant abstraction rates were used in the modelling since future abstraction and transfer rates on a day-by-day basis will vary according to supply requirements based on short-term forecasts. By applying an abstraction rate of 154Mld across the entire period of simulation it allowed the impact of that typical daily abstraction to be assessed. The projected peak abstraction of 300Mld is only envisaged to be approached infrequently during periods of very high demand. Therefore, applying this peak abstraction rate across all days in the simulation represents a very precautionary assessment of the impact that the abstraction could have.

The model was run using data from the period 1 January 1972 to 31 October 2023, allowing the simulation of daily levels and daily flows across this 50-year period with and without the Proposed Project abstraction in place. This time period includes the drought years of 1995 and 2018. Runs of the model on earlier periods have not been undertaken as the more recent data is the most representative of the current water resources management practices.

A version of the model has also been run to investigate the likely impacts in the future when the hydrology is subject to climate change. Two sources of climate change information regarding how Irish fluvial flows are projected to change were used and the results compared.

- Maynooth, 2008. Climate Change – Refining the Impacts for Ireland (2001-CD-C3-M1) STRIVE Report, and
- ICARUS, 2020. Identification of climate sensitive catchments: Water Resources and Climate Change Adaptation. CRU Report.

*The simulations provide impact understanding on levels and forward flows required to inform the Environmental Impact Assessment Report, the Natura Impact Statement and the Water Framework Directive assessment report. The simulations also provide the information required to apply the UK Water Framework Directive (WFD) Lake level test, which has been discussed with the EPA as being a useful test pending the development of an Irish WFD lake level test.*

Initial modelling of the level of Lough Derg was based upon reproducing the baseline historical observed level and then simulating the effect of introducing the abstraction for the Proposed Project. This simulation was achieved by reducing the flow going to Ardnacrusha by the amount of water abstracted by the Proposed Project. During drought periods, when power generation at Ardnacrusha has been temporarily ceased the change in the level of Lough Derg is dictated by the balance between the small amount of inflow minus the outflow (comprising compensation flow to the old Shannon, fish pass flows at Parteen Weir and Ardnacrusha and the proposed abstraction);. This model is referred to as the "Historical Model".

The Historical Model uses recorded Ardnacrusha flows to calculate the inflow that is entering the system. In order to model the impact of the Proposed Project abstraction in future climate change scenarios it is necessary to include operational principles within the model that determine how much water will flow to Ardnacrusha based upon the changed inflow hydrology in a climate change scenario whilst still meeting the required statutory compensation and fish pass flows and keeping the lake levels within the normal operating band. This model is referred to as the "Operational Principles Model".

#### 4.4.1. Summary of Findings

##### General

Based on adjustment of the power generation by ESB in response to the Uisce Éireann abstraction the impacts to lake levels and forward flows to the old Shannon due to the modelled inclusion of the WSP abstraction (as a constant flow of either 154Mld or 300Mld) are barely distinguishable from the baseline case when viewed on level\flow duration curves (a standard hydrological method for comparing long-term data series).

When the water level is within the Normal Operating Band (and outside of drought periods) there will be a need for the ESB to reduce the flow through Ardnacrusha to take account of water abstracted by WSP. This reduction in flow will not necessarily need to be made on exactly the same day rather the ESB will continue to take account of a number of factors including, for example, predicted rainfall, demand for power and the Proposed Project abstraction in order to keep the water level within the normal operating band.

The water levels of both Lough Derg and Parteen Basin are only predicted to differ from the baseline case (i.e that without the Proposed Project) due to the modelled inclusion of the WSP abstraction during the following conditions:

- Drought periods and in the days immediately after the drought when inflow is needed to replenish any deficit in storage caused by the WSP abstraction.
- Flood periods.

This variation in levels will be within the typical range of overall variation in levels that already occurs on the Parteen Basin.



At all other times the levels are not predicted to differ from the baseline case and the minimum compensation and fish pass flows are always met with or without the Proposed Project abstraction in place, within the modelling undertaken.

The forward flows to the old River Shannon remain unchanged and the proportion of days (to the nearest whole percent) when the old Shannon is receiving just the minimum compensation and fish pass flows is predicted to be unchanged by the inclusion of the Proposed Project abstraction, as does the timing of the spills.

##### Flood Flows

During flood flows, with Ardnacrusha operating at full capacity, the flood level within Lough Derg and Parteen Basin will be reduced by a negligible amount equivalent to the Proposed Project abstraction.

##### Drought Impacts

The drought that had most impact upon the Lough Derg\ Parteen Basin system within the 50-year period of record considered (1972 - 2023) is the drought of 2018. Modelled simulations of this drought for two constant WSP abstraction rates (154Mld and 300Mld) predicts that the water level of Lough Derg would remain within the Normal Operating Band. The size and rate of change in water level as a result of drought with the Proposed Project fits within the commonly observed water level changes seen within the 50-year period of observed levels.

##### Climate Change Impacts

Climate change simulations for a "reasonable worst case" scenario for the 2080s epoch indicate that water levels would remain within the normal operating band, only dipping close to the lower level of the normal operating band once within the 50-year simulation period in the case of a constant Proposed Project abstraction of 300Mld. This event was the simulation of the 2018 drought levels.

#### 4.5. Conclusions

**The proposed abstraction of water is in essence, an abstraction from water normally used in the hydro-power plant, using the same existing water level controls (therefore avoiding the construction of a new impoundment). Water levels on Lough Derg and the Parteen Basin will be managed within the same water level 'Normal Operating Band' as currently applies.**

ESB, as part of an overall agreement with Uisce Éireann, will agree to the diversion to the Proposed Project abstraction, water that would otherwise have been used for electricity generation, on a continuous year round basis.

Modelling of abstraction under these conditions shows that the abstraction is sustainable within the existing normal operating water level range. Operation of Lough Derg, post works, will feel and look very similar to the way it currently operates, and there will not be a visible day to day difference.



## 5. Community Outcomes

### 5.1. Community Gain at a national level

**The main community outcome from the Proposed Project will be the provision of new source of water providing a high quality, sustainable and resilient water supply for the Eastern and Midlands Region.**

This is a generational project and is the first major 'new source' infrastructure in the Region in the last 60 years. It will deliver a safe secure sustainable source of water supply necessary to support our growing population and economy, including the demand for housing.

It is a project that will enable Uisce Éireann to adapt to the effects of climate change by diversifying our water supply sources. It will provide the Greater Dublin Area, consisting of Dublin, and parts of Meath, Kildare and Wicklow with a resilient safe secure water and Proposed Project infrastructure will have capacity to serve communities in Tipperary, Offaly and Westmeath along the route. It will support balanced regional development by redirecting supplies currently serving Dublin to Louth, Meath, Wicklow, Carlow and Kildare, and provide for future connections across the Midlands including for example, Mullingar, (once future projects are brought forward).

The Proposed Project infrastructure will deliver the capacity to meet the domestic, commercial and industrial water supply needs of up to 50% of Ireland's population into the medium to long-term future and provide safe, secure, resilient and sustainable drinking water supplies across the region. This, in turn, will facilitate economic development in suitable locations throughout the region as the Proposed Project will demonstrate to potential investors that Ireland offers modern, efficient and sustainable water supply infrastructure to support the needs of their businesses well into the future.

As part of the delivery of this overall objective, opportunities have been sought, where practicable within the design of the Proposed Project to deliver wider public benefit. For example, Uisce Éireann will provide a Visitors' Centre at the Water Treatment Plant site for educational purposes

such as school visits.

### 5.2. Community Gain across the Pipeline Route

**In addition to improved and sustainable domestic and commercial water supplies, there are some specific additional benefits to communities along the route of the pipeline.**

During the construction of the Proposed Project, and to a lesser degree during its operation, there will be direct and indirect investment in the local economy along the length of the pipeline. This will include creating local employment, purchasing of materials and use of service industries by construction workers. This investment will provide a boost to the local economy and is an ancillary outcome of the Proposed Project.

A "Community Gain Investment Fund" will also be established by Uisce Éireann to support community-based initiatives. The purpose of community gain fund is a goodwill contribution for the benefit of the communities affected by the Proposed Project in order to help alleviate the effects from the construction and siting of a major piece of infrastructure.

Community gain can take many forms including financial assistance for projects or initiatives, new or improved community amenities, education, volunteering and benefit-in-kind donations and social causes.

Uisce Éireann proposes to use the Community Gain Fund to support community-based initiatives, primarily in the Environmental / Sport & Leisure / Training & Education areas, which meet specific criteria and which contribute towards the objectives of

- Water Action Plan (3rd Cycle River Basin Management Plan).
- The United Nations Sustainable Development Goals.

In doing so Uisce Éireann aims to provide An Bord Pleanála with a realistic, specific, measurable community gain proposal(s), with an associated administrative structure, which the Board can adequately assess, and consider as part of an overall planning application.

*The Community Gain proposals are under development and will be finalised in consultation with the relevant Local Authorities. The final proposal will form part of the planning application to An Bord Pleanála for the Proposed Project.*

## 6. Environmental & Sustainability Outcomes

### 6.1. Sustainability Strategy and Objectives

**The development of the Proposed Project has balanced the long term benefits to be achieved, technical practicality, sustainability outcomes, cost and the potential environmental effects. This section of the report sets out some of the environmental and sustainability ambitions that have been considered within the design process.**

The Proposed Project is being progressed to deliver the infrastructure required to abstract, treat and transfer water, and the proposed infrastructure will have the capacity to meet the water supply needs of up to 50% of Ireland's population now and for the long-term future. The Proposed Project is of national strategic importance. It will provide a new water supply to the Greater Dublin Area and facilitate the re-distribution of water to other communities in the east as a result of the augmented supply to the Greater Dublin Area. Further, the infrastructure proposed will have the capacity to provide water to communities along the pipeline route between the Lower River Shannon and Peamount, County Dublin.

The objectives of the Proposed Project include the need to improve the sustainability and resilience of the drinking water supply in the Eastern and Midlands Region and specifically, it will allow Uisce Éireann to adapt to climate change and provide a supply which is resilient to those changes. This has been achieved through the careful selection of the source of the new water supply. The proposed abstraction is in essence an abstraction from water normally used in the hydropower plant and, furthermore, it can be sustained into the future even accounting for likely future trends in climate change.

In delivering the Proposed Project, Uisce Éireann wants to deliver a sustainable solution which avoids or reduces negative environmental impacts and identifies opportunities where wider positive impact and value can be achieved over the whole project life cycle. Therefore, sustainability ambitions have been developed which set out the sustainability vision for the Proposed Project and supports the overall project objectives.

The sustainability ambitions consider each of the project development and delivery stages including the long-term operation of the proposed infrastructure. Consideration has been given to how the Proposed Project will align to the UN Sustainable Development Goals, the Irish sustainability policy landscape and Uisce Éireann's sustainability commitments. The ambitions have informed a framework of targets and commitments which will underpin decisions made in relation to detailed design, build and operation.

The sustainability ambitions that are being pursued as part of the delivery of the Proposed Project include:

- Implementing a whole-life Carbon Management approach to support the detailed design, build and operation of the Proposed Project.
- Demonstrating a Carbon 'net zero ready' pathway for operation.
- Undertaking lifecycle assessment for major asset components and implement recommendations to influence the procurement of low carbon/ sustainable materials to achieve 20% reduction by volume of virgin materials.
- Developing a By Product and Waste Management plan which will facilitate 70% of excavation arisings being used as a by-product rather than becoming a waste and 100% of recoverable waste being diverted from landfill, in both construction and operation.
- Developing a circular economy strategy as part of detailed design to maximise the opportunity for resource reduction/reuse/refurbish/recycling and for optimised use of operational bioresources.
- Working towards Net Gain in Biodiversity.
- Protecting areas of sensitive habitats, trees or species and encourage recolonisation by implementing biodiversity-sensitive design and including landscape management in the operational management plan and operations contracts.
- Designing nature-based solutions for surface water management where feasible at infrastructure sites.
- Working with partners to develop and engage in environmental restoration specifically in relation to peatland crossed by the Proposed Project.

It will be necessary to review and update the sustainability ambitions periodically as the project progresses to reflect emerging or changing priorities, incorporate any additional targets or commitments as they are developed and agreed, and to enable continued consideration of emerging best practice.

As part of the continued integration of sustainability within the Proposed Project, Uisce Éireann’s Energy Efficient Design process has been employed. This is a framework to embed energy efficient practices and ensure that plant, equipment, buildings, systems and directly associated activities are planned, designed, equipped, maintained and operated to deliver a high level of energy performance.

The process will also ensure that energy is used efficiently, with consideration given to alternative design options to achieve this. Examples of how this will be delivered on the Proposed Project include:

- Energy from renewable sources will be used where practicable, including use of solar panels at the Water Treatment Plant, Break Pressure Tank, Booster Pumping Station, Termination Point Reservoir and at the Flow Control Valve.
- Use of gravity for transporting treated water will be optimised.
- Passive methods for lighting and ventilation will be used.

Other sustainability aspects, such as rainwater harvesting systems and green roofs, have been considered and incorporated, where appropriate, into the design of the infrastructure sites. The incorporation of rainwater harvesting will reduce stormwater runoff that would otherwise have to be managed, as rainwater will be fed into the treated water process as opposed to the drainage system. The green roofs will allow the infrastructure to blend with the natural landscape in addition to meeting biodiversity objectives.

The design and delivery process will seek to contribute environmental and social benefits which align with Ireland’s ambition to transition to a climate resilient, biodiversity-rich, environmentally sustainable and net zero economy.

### 6.2. Environmental Design Considerations

**The development of the design has been undertaken in accordance with the environmental mitigation hierarchy illustrated in Image 6.1. The hierarchy prioritises design measures which avoid adverse environmental effects altogether, and then provides a descending scale of increasingly less favourable measures to address environmental effects.**

The active use of the mitigation hierarchy resulted in a number of specific design proposals being adopted within the design of the Proposed Project to avoid or reduce the likely significant effects on the environment, including:

- Selection of a solution which delivers a sustainable supply of water. The proposed drinking water abstraction is water that would otherwise be used in hydropower generation. A maximum of 2% of the long term annual average flow at Parteen Basin will be diverted for drinking water supply instead of being used for hydropower generation. This means that potential changes to the natural environment that could otherwise have occurred if overall abstraction rates were increased at Parteen Basin, or elsewhere, can be avoided through a small diversion of water from an existing lake.
- Choosing a route for the pipeline that avoids environmentally sensitive areas, as far as reasonably practicable.
- Selecting infrastructure site locations that, as far as reasonably practicable, minimise environmental impacts, for example, visual effects, whilst considering technical and cost factors.
- Optimising the operation of the pipeline taking into account the size of the steel pipe and the frequency with which pumping will be needed to supplement gravity fed supplies. This had to balance material use, embodied carbon and operational energy use.
- Designing the intake at the Parteen Basin to protect biodiversity, such as preventing fish from being trapped.
- Using trenchless pipeline construction techniques to protect sensitive sites, including major river, road, and railway crossings.
- Preventing the spread of invasive species during construction activities and water transfer.
- Incorporating solar panels at infrastructure sites, including at the Water Treatment Plant, Break Pressure Tank, Booster Pumping Station, Termination Point Reservoir and at the Flow Control Valve to provide renewable energy where practicable.
- Preserving hedgerows along the Proposed Project Boundary where feasible, except at defined access points.
- Committing to soil stripping and reinstatement only taking place during suitable weather conditions.
- Selecting routes for construction vehicles (referred to as “Haul Roads”) based on their size and capacity and to avoid sensitive receptors where reasonably practicable. This was done in consultation with the relevant Local Authorities.

### 6.3. Environmental Assessments

**Before granting consent for a strategic infrastructure development, An Bord Pleanála must carry out environmental assessments including an Environmental Impact Assessment, Appropriate Assessment and Water Framework Directive assessment. To enable this to be carried out, environmental reports, including an Environmental Impact Assessment Report (EIAR), and Natura Impact Statement (NIS) and a Water Framework Directive Compliance assessment report will be submitted with the planning application for the Proposed Project.**

The EIAR will include:

- The identification of key environmental resources, assets and characteristics along the route of the Proposed Project. In the context of the environmental assessments the term ‘environment’ encompasses not only natural features such as water resources and habitats, but also the built environment, people and communities.
- The assessment of likely significant effects on those features that could arise from building, operating, maintaining, or decommissioning the Proposed Project.
- The description of measures to avoid or reduce likely adverse significant effects (referred to as ‘mitigation measures’).
- Reporting on the significant residual environmental effects (both beneficial and adverse) which remain after the application of the mitigation measures.

The EIAR is being prepared in accordance with the Environmental Protection Agency Guidelines on the Information to be Contained in Environmental Impact Assessment Reports (2022), as well as applicable European, national, and topic specific legislation, guidance and policy.

The NIS is being prepared to assess the likely significant effects of the Proposed Project on European designated sites, either individually or in combination with other plans or projects.

The NIS will provide information to enable the competent authority to perform its statutory function to undertake an Appropriate Assessment in respect of the Proposed Project, and will include the following information:

- An examination and analysis of the best available scientific knowledge and data to identify and assess the implications of the Proposed Project for any

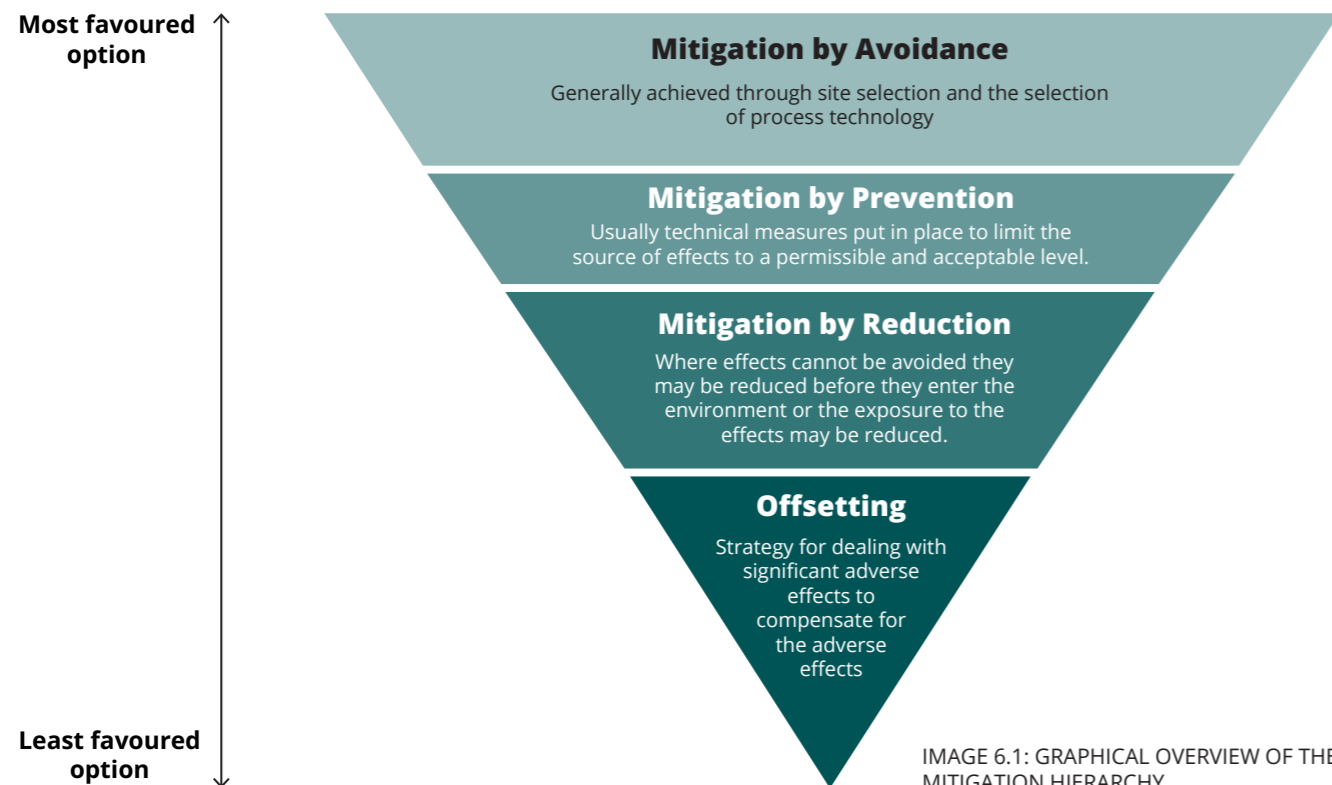


IMAGE 6.1: GRAPHICAL OVERVIEW OF THE MITIGATION HIERARCHY



European sites in view of the conservation objectives of those sites.

- Consideration of indirect impacts for any European site, for example from impacts which occur via upstream pathways at a remote but connected location, or from impacts on populations of species or habitats located outside of European sites, but with functional links to the sites.
- Consideration of whether the Proposed Project, by itself and in combination with other plans or projects, would adversely affect the integrity of any European site.
- The mitigation measures necessary to avoid or reduce any potential adverse effects.

A Water Framework Directive compliance assessment report will also be submitted with the application. This considers the changes to waterbodies such as lakes and rivers potentially affected by the Proposed Project.

Following the consultation on the Proposed Project, the proposed environmental mitigation measures will be finalised taking account of any design changes arising from consultation feedback, the outcomes of the environmental assessments and any feedback received on proposed mitigation.

### 6.4. EIAR Scoping Methodology Report

**The EIAR will include the matters set out in the ‘scope’ of the assessment and the methodology will be based on a ‘proposed assessment approach’. Both of these were recently updated and included in an EIAR Scoping Methodology Report, which is available on the Uisce Éireann website.**

The Scoping Methodology Report was issued to stakeholders in November 2023 in order to consult and seek agreement from them on the proposed scope and methodology of the environmental assessment in advance of the EIAR being produced. A total of 34 prescribed and other organisations were contacted. Table 6.1 summarises the consultation responses received.

The EIAR will be undertaken in accordance with the EIAR Scoping Methodology Report taking account of the responses received on that Report and any responses to this consultation on the Proposed Project.

TABLE 6.1: SUMMARY OF RESPONSES TO THE SCOPING METHODOLOGY REPORT

Consultee	Feedback / Comment on the Scoping Methodology Report	Uisce Éireann response
Clare County Council	Clare County Council requested a meeting with Uisce Éireann to enable an understanding of the main implications of the Proposed Project for County Clare and the main environmental considerations.	Uisce Éireann will hold a meeting with Clare County Council on the Proposed Project and the EIAR.
Department for Agriculture, Food and the Marine	The Department for Agriculture, Food and the Marine advised that the Proposed Project does not fall under the remit of the EIA Regulations as they relate to the Department. The Department noted reference to hedgerows and drainage features on agricultural land and made reference to the Environmental Impact Assessment (Agriculture) Regulations.	Noted. This does not affect the proposed EIAR methodology.
Irish Aviation Authority	No comments on the EIAR Scoping Methodology Report as the Proposed Project would not interact with aviation interests.	Noted. No proposed amendments to the EIAR methodology.
Transport Infrastructure Ireland	Transport Infrastructure Ireland requested a meeting with Uisce Éireann to examine locations and areas within which the Proposed Project may interact with the national road network.	Uisce Éireann held a meeting with Transport Infrastructure Ireland on the Proposed Project and engagement will continue.
Commission for the Regulation of Utilities	The Commission for the Regulation of Utilities requested a briefing on four aspects of the EIAR: Water Environment, Climate, Soils, Geology and Hydrogeology, and Population. There were no comments on the Scoping Methodology Report. They requested that any updates to the data that underpin the need for the project and any material design changes should be reported to the Commission to determine whether these data improvements or changes impact the preliminary business case of the Proposed Project.	Uisce Éireann held a meeting with the Commission for the Regulation of Utilities to discuss the aspects raised and will also update the Commission if data underpinning the project changes.
Department for Housing, Local Government and Heritage	The Department for Housing, Local Government and Heritage provided a response which covered the EIAR topic areas of cultural heritage, biodiversity and cumulative effects. In relation to cultural heritage, it requested field surveys to complement desk-based activities and confirmed the need for a well-defined and well-characterised baseline. The Department comments on biodiversity were primarily related to the European-designated Lower River Shannon SAC and the potential environmental effects of the proposed abstraction regime upon the hydrological and water quality status of the SAC upstream and downstream of Parteen Basin. The response raised five biodiversity and water resource questions to be considered in the EIAR, and also noted that the status of European protected species should be addressed. The potential implications of any cumulative and in-combination effects were also noted.	Comments raised by the Department for Housing, Local Government and Heritage will be considered in the EIAR. Uisce Éireann have met the National Monuments Service of the Department to discuss the comments made concerning pre-application surveys. The National Parks and Wildlife Service have also been consulted.

Consultee	Feedback / Comment on the Scoping Methodology Report	Uisce Éireann response
National Transport Authority	The National Transport Authority had no substantive issues to raise but did request that the definitions/areas to be considered under the material assets chapter should be expanded to include all transport infrastructure including roads, public transport and active travel infrastructure.	The Material Assets chapter includes the impact on rail infrastructure. Highway infrastructure is included in the Traffic and Transport chapter. Active travel is assessed in the Population chapter with respect to access and severance.
Fáilte Ireland	Fáilte Ireland noted that from a tourism perspective, population (including tourism), landscape and visual, and cultural heritage considerations are of the most relevance and importance. The proposed inclusion of tourism considerations within the Population chapter of the EIAR was welcomed. Fáilte Ireland provided background data indicating the importance of tourism to the Irish economy and also directed Uisce Éireann to EIAR Guidelines for the consideration of tourism and tourism-related projects.	The EIAR will consider tourism within the Population chapter of the EIAR. Uisce Éireann will review the data and guidance proposed by Fáilte Ireland. The comments will not affect the proposed methodology.
Inland Fisheries Ireland	Inland Fisheries Ireland noted its statutory responsibilities for inland fisheries in Ireland and made reference to the need for the Proposed Project to avoid adverse impacts on surface and groundwater resources. It was recommended that a Construction Surface Water Management Plan is developed and submitted as part of the Strategic Infrastructure Development Application. They requested that method statements to enable implementation of the Construction Surface Water Management Plan should be developed in consultation with Inland Fisheries Ireland. They also referenced guidance documents which should be referred to in production of the EIAR, and noted seasonal constraints that may arise in relation to in-channel construction activities.	Uisce Éireann will be producing construction management plans to include details of the methods for surface water management. The guidance documents recommended by Inland Fisheries Ireland will be considered as part of the EIAR, along with consideration of seasonal constraints in relation to construction activities.
National Environmental Health Service	The National Environmental Health Service commented on a range of topics, including: <ul style="list-style-type: none"> <li>• Public agencies and the public should be involved in the consultation. A report should be submitted on the consultation process and how outcomes were considered in the EIAR.</li> <li>• Need for clear links between the Strategic Environmental Assessment for the National Water Resource Plan and the Proposed Project.</li> <li>• There are clear established health protection standards and evaluation criteria for all emissions into the environment and these should be used.</li> <li>• Specific consideration should be given to any restriction or change of access to any health care facilities during the construction phase.</li> <li>• There are opportunities to enhance access to green space and development of recreational and community facilities. Consideration should be given to impacts on informal recreational areas impacted by the development (e.g. woodland areas).</li> <li>• When assessing community severance and construction impacts (including dust), any likely effect on food premises should be assessed.</li> <li>• The National Environmental Health Service has considered the proposed noise assessment methodology and is satisfied that it will assess the likely significant effects of noise.</li> <li>• If averaging dust deposition standards are used to evaluate the significance of dust, then a maximum daily limit should be included.</li> <li>• The impact on public transport should be assessed during the construction phase, particularly the access to community facilities and healthcare premises and services.</li> </ul>	Uisce Éireann is undertaking a non-statutory consultation, which this Project Summary Report is supporting. Comments raised by the National Environmental Health Service will be considered in the EIAR.



### 6.5. Summary of potential environmental impacts

The preparation of the environmental assessments is an on-going process and so Uisce Éireann already has a deep understanding of the potential environmental effects that may arise from the Proposed Project and is working to develop mitigation to avoid or reduce these effects where reasonably practicable to do so.

This section sets out the key environmental risks identified at this stage of the EIAR preparation and the measures proposed to address them.

#### 6.5.1. Human Environment (People, Communities and Human Health)

The operational impacts associated with the provision of a reliable and resilient clean drinking water supply are overwhelmingly positive, resulting from improved water supplies to meet sustainable development objectives, the effects of which are significant and long-term to people, communities and human health.

The Proposed Project passes through a largely rural environment, with the routing having avoided local housing and settlements where feasible. Residential properties are often dispersed and isolated, while the route also passes through the rural catchment of villages and several larger towns. Agriculture and agri-businesses form one of the main economic activities, while the larger settlements provide employment in retail, the service and hospitality sectors, and some manufacturing businesses.

The options appraisal, siting studies and routing of the Proposed Project has sought to avoid communities where feasible. There are also on-going discussions with the Local Authorities about the proposed 'Haul Roads', which have, as far as reasonably practicable, avoided sensitive receptors such as schools, hospitals, nursing homes and settlements, known areas of existing congestion, and where the roads may not be suitable for heavy goods vehicles.

Table 6.2 outlines the potential impact of the Proposed Project and mitigation that is being considered to avoid or reduce the environmental effects.

TABLE 6.2: POTENTIAL IMPACTS ON HUMAN ENVIRONMENT

Potential Impact	Potential Mitigation
Potential employment opportunities during construction and operation.	None proposed. This is a beneficial effect of the Proposed Project.
Economic benefits at both a local and regional level due to investment in materials and jobs from construction and operation of the Proposed Project.	None proposed. This is a beneficial effect of the Proposed Project.
Increased levels of traffic, noise, air pollution and visual intrusion which may cause nuisance and disruption to landowners, local residents, communities and businesses during construction. These factors could also affect human health from people living or working near to the construction areas and could cause psychological impacts from stress and anxiety.	Restricting the activities that can occur outside of normal working hours and choosing plant with lower noise emissions. Erection of temporary noise barriers around equipment or activities where noise sensitive receptors lie close to the construction working area. Measures to manage dust, such as dampening down of surfaces, and erecting screens or barriers around the dust-causing activities. Providing information to landowners, local residents and businesses about the project and details about construction activities and timings, particularly any night working.
Increased noise at the infrastructure sites associated with the plant and machinery required to treat and pump the water.	The majority of plant will be located either underground or within buildings.
Risk of severance to communities and businesses from increased construction traffic and disruption to local roads and rights of way due to closures and diversions during construction.	Trenchless crossings are proposed at major road crossings. Providing alternative access and/or diversion routes for traffic and non-motorised users to reduce the risk of severance to community services and businesses. Providing sufficient space in the designs for construction and operation vehicles parking, road safety measures and pedestrian access to facilities, and prohibiting construction vehicles parking on the side of roads. Timing deliveries to avoid peak traffic periods and considering the use of minibuses to transport workers around the construction sites to reduce the number of vehicles on the Haul Roads. Monitoring of heavy goods vehicles to make sure they are using the approved Haul Roads.

Potential Impact	Potential Mitigation
Permanent acquisition of landholdings at the infrastructure sites and burdens on land parcels within the permanent Wayleave which will place restrictions on how that land can be used once the Proposed Project is operational. Temporary loss of land use or access to land within or adjacent to the working area during construction. This could cause fragmentation or severance of land parcels making them less viable to farm during construction.	The pipeline will be constructed in a number of manageable lengths to reduce disruption to individual landowners. Temporary acquired land e.g. the working areas during construction will be re-instated post construction to at least the pre-construction conditions. Accesses will be retained where practicable during construction or alternative access provided.
Potential disruption to services (water or power) or land drainage systems during construction e.g. water provision to animals and crops or power to electric fences. Also, the removal of mature trees and hedgerows which provide livestock with shelter and shade.	Temporary measures for any disrupted services such as water and power will be provided during construction along with any temporary fencing, e.g. to keep livestock outside of the working areas. Reinstatement of fencing, drainage systems and vegetation, other than where planting restrictions apply, e.g. planting of large trees over the pipeline.
Potential for spread of noxious weeds, invasive species or animal diseases from soil movement or exposure.	Appointed Contractor will comply with the Department of Agriculture, Food, and the Marine's regulations in relation to crop and livestock diseases. Biosecurity measures will be implemented to protect livestock and crops, and to prevent the spread of harmful weeds and invasive non-native species.

#### 6.5.2. Biodiversity and Landscape

There are many European designated sites located within the potential zone of influence of the Proposed Project, 18 of which are considered to have a source-pathway-receptor link to the Proposed Project. These include the Lower River Shannon SAC, the River Barrow and River Nore SAC, Lisduff Fen SAC, Lough Derg Special Protection Area (SPA) and the River Shannon and River Fergus Estuaries SPA which are situated within the Proposed Project, 2.5km south, 4km upstream and 11.4km downstream of the Proposed Project respectively.

Extensive ecological surveys have been undertaken between 2016 and 2024 to inform the assessment. The majority of the habitats within the Proposed Project boundary consist of improved agricultural grassland and arable crops, bisecting linear hedgerows and treelines, with areas of cutover bog, pockets of forestry and smaller pockets of more natural habitats of higher ecological value. Protected species identified include bats, otter, badger, and breeding and wintering birds.

The freshwater ecological value of the watercourses crossed by the Proposed Project is higher for the larger rivers and streams which support a number of important aquatic species such as Atlantic salmon, lamprey, and white-clawed crayfish.

Uisce Éireann has sought to avoid sensitive landscape features identified during the site selection process and as the pipeline will be below ground it will have limited effect on the landscape and views once vegetation re-establishes. The above ground impacts will be restricted to the infrastructure sites, Flow Control Valve and ancillary pipeline features (such as valves). The majority of the Proposed Project runs through typical lowland farmland, peat bogs and the transitional scrubby landscape that lies between them. Representative viewpoints for the assessment of each of the infrastructure sites have been identified in consultation with the respective Local Authorities.

Table 6.3 outlines the potential impacts of the Proposed Project and mitigation that is being considered to avoid or reduce the environmental effects.



TABLE 6.3: POTENTIAL IMPACTS FOR BIODIVERSITY AND LANDSCAPE

Potential Impact	Potential Mitigation
Temporary and permanent habitat loss (and associated impacts on the species that use the habitats) from clearance of the site working area for construction and the permanent footprint associated with above ground infrastructure such as the five infrastructure sites, the Flow Control Valve, valves, wash-outs and lay-bys.	Avoidance of designated sites and key habitats through the options appraisal and site selection. Use of trenchless crossings to go underneath main watercourses to avoid impacts on aquatic habitats and species. Protecting existing habitats where these are to be retained. Reinstatement of habitats and new planting following construction subject to planting restrictions within the permanent Wayleave.
Temporary habitat loss/physical disturbance to the aquatic environment in Parteen Basin due to dredging and temporary works.	Working within a double silt curtain to avoid the risk of pollution to the basin. Protecting existing habitats where these are to be retained and reinstatement of habitats following construction. Use of a flexible mat of meshed thin concrete segments at the Raw Water Intake to reduce erosion effects on Parteen Basin bed. Excavated native lakebed material will be used to cover the mat to provide a surface which can be recolonised by native flora and fauna.
Temporary noise, vibration and physical presence disturbance impacts to fauna from construction activities.	Using appropriate seasons to undertake vegetation clearance e.g. avoiding bird breeding season (March to August) and felling trees which have moderate to high potential for bat roosts from late August to early November. Where disturbance on protected species is expected, all works will be carried out under licence by a suitably qualified professional i.e. otter holt closure.
Temporary risks to aquatic species and habitats due from sediment runoff, leaks and spills from construction and operational activities that affect watercourses or groundwater.	Using buffer strips around watercourses to protect marginal vegetation and reduce the risk of sediment or pollution entering the watercourse. Refuelling machinery away from watercourses.
Risk of introduction/spread of non-native invasive species during construction and operation phases.	Implementing biosecurity protocols and removing or treating known invasive non-native species and damaging pathogens, such as ash dieback prior to construction. Cleaning all plant and machinery before moving to other parts of the site. Incorporating intake screens at the Intake Chamber and microfilters on the rising main at the Raw Water Intake to prevent infestation of the infrastructure and prevent transfer of zebra mussels via the infrastructure.
Temporary impacts on landscape and views during construction from vegetation loss and the presence of a working construction site within the landscape. This could include night-time impacts such as light and noise at the trenchless crossings, where 24-hour working may occur.	Reinstating the pre-construction land use and replacing vegetation lost during construction subject to planting restrictions within the permanent Wayleave. Use of hoarding around site compounds and construction lighting designed to illuminate the working area only with minimum impact on surrounding receptors.
Operational impacts on the landscape character and views from the permanent above ground infrastructure sites such as the Water Treatment Plant and at the Parteen Basin.	Avoiding sensitive landscape and visual receptors through the site selection process. Using high-quality architectural treatments and finishes and applying recessive colour schemes as part of the design for the permanent buildings to minimise the risk of creating a discordant feature within the landscape. Undertaking additional planting, such as hedgerows and trees, around the permanent above ground infrastructure to help screen these structures.

**6.5.3. Surface Water, Groundwater, Geology and Soils**

The Proposed Project passes through seven river catchments including four Lower Shannon catchments; the northern-most part of the Barrow catchment; the southeast tip of the Boyne catchment and the western edge of the Liffey and Dublin Bay catchments. Eleven of the main watercourses will be crossed using trenchless pipeline construction methods. The remaining watercourse crossings are likely to be constructed using open cut methods.

Operational effects associated with abstractions from surface water receptors, including Lough Derg and Parteen Basin, have been modelled to assess the impact of the proposed abstraction on the water levels and pass forward flows to the old Shannon and for water quality. A maximum of 2% of the long term annual average flow at Parteen Basin will be diverted for drinking water supply instead of being used for hydropower generation. The modelling results currently show that the abstraction is not considered to result in a likely significant effect on any of the surface

waters, including during a drought and/or future climate change scenarios.

A desk-top review and comprehensive range of field surveys has commenced and will continue to inform the environmental assessments. These include ground investigations, water level monitoring and well surveys. The results of the surveys have informed the design of the Proposed Project, for example additional design

requirements where it passes through areas with an increased geohazard risk such as peat or areas of potential instability.

Table 6.4 outlines the potential impact of the Proposed Project and mitigation that is being considered to avoid or reduce the environmental effects

TABLE 6.4: POTENTIAL IMPACTS FOR SURFACE WATER, GROUNDWATER, GEOLOGY AND SOILS

Potential Impact	Potential Mitigation
Disruption of surface water flows, across land and in watercourses during construction. Impacts to water quality due to construction activities including excavations in peat, in channel working, construction of washout valves or accidental spillage of oil, fuels or concrete.	Applying buffer strips around watercourses and avoiding in-channel working where practicable. Using good practice measures during construction to control, treat and attenuate silt-laden runoff and water from dewatering activities and temporary site drainage. Adherence to agreed Environmental Protection Agency discharge standards from silt ponds through peat working areas. Use of drip trays under plant and equipment. Programming in-channel working during times of low flow where practicable. Monitoring of water quality during construction and having a management plan that sets out appropriate mitigation measures should any deterioration in water quality be detected.
Increased flood risk during construction due to changes to flow paths, increased impermeable areas and works within floodplain areas.	Avoiding areas of floodplain through the Proposed Project design. Where this has not been feasible, design measures have been included so as to not increase flood risk from watercourses. Water levels in Parteen Basin are controlled for the operation of the Ardnacrusha Generating Station, so there will be no change to flood risk as a result of the Raw Water Intake and Pumping Station. Surface water drainage systems designed with appropriate attenuation to allow for future climate change. Having a management plan that sets out appropriate mitigation measures should a flood event occur during construction.
Potential operational impacts to hydrology (water quantity) and fluvial geomorphology (scour) from the commissioning of the pipeline and associated infrastructure, including from discharges from/at temporary washout locations.	Design of the structures will include measures to reduce scour. Agreeing methodology for discharges with the relevant authorities and by following their issued guidelines, where available.
Loss of soil cover, soil erosion and soil compaction from construction activities such as earthmoving and the tracking of construction vehicles, which could cause a deterioration in soil structure or quality.	Good practice measures for soil stripping, handling, storage and reinstatement, including separating topsoil and subsoil, avoiding double handling of soil, appropriate design and protection of soil stockpiles to reduce surface water build up / run off and compaction. Uisce Éireann is proposing that soil stripping and reinstatement will only take place during suitable weather conditions.
Risk of contamination to soil, groundwater, surface water features and other receptors either through construction and operational activities, such as leakages or spills, or through the mobilisation of potential contaminants within the soil caused by former land use activities.	Undertaking a Conceptual Site Model to check for potential areas at risk of contaminants being present and identifying appropriate mitigation with a management plan. Using good practice measures during construction to reduce the risk of leakage and spills e.g. suitable containment of fuels and drip trays under plant.
Potential sterilisation of mineral reserves during operation, where components of the Proposed Project reduce access to minerals that could be commercially exploitable at a later date.	Avoiding known mineral reserves where practicable and minimising the footprint of the Proposed Project within these areas.
Potential changes to groundwater levels and flows as a result of the pipeline trench, foundations of buildings or changes to the land drainage regime. This could have effects on groundwater dependent terrestrial ecosystems, existing groundwater abstractions or private water supplies.	Monitoring of groundwater levels and avoiding excavation and construction activities within geological heritage sites and within or adjacent to groundwater dependent terrestrial ecosystems and private groundwater wells.



Potential Impact	Potential Mitigation
Loss of peat due to installation of the pipeline. Areas of peat along the pipeline route have undergone degradation by historical drainage and no high value active raised bog is present. The majority of the areas are cutover peat, however there are three small areas of degraded raised bog at Clonad Bog, Mount Lucas Bog and Timahoe North Bog.	Preparation of a Working in Peat method statement to deliver a sustainable solution to building and operating the pipeline in peat resources. Reinstating peat layers following installation including cutover bog and reinstating drainage in accordance with Bord na Mona's peat restoration objectives and existing rehabilitation plans. Further opportunities for use of surplus excavated material is being explored with Bord na Mona.

### 6.5.4. Cultural Heritage

Desk studies and archaeological field inspections have been undertaken to identify sites of archaeological, architectural and cultural heritage significance along the route of the Proposed Project. Extensive work has been completed to identify potential constraints at the location of the proposed infrastructure sites and preferred pipeline corridor. As a result of the options assessment, direct impacts have been avoided for the overwhelming majority of sites or structures subject to statutory protection located within the proposed infrastructure site boundaries, however there will be direct impacts on a small number of sites.

Uisce Éireann has sought to avoid sites and structures subject to statutory protection during the site selection process and as the pipeline will be below ground this reduces the effect on the setting of cultural heritage sites during operation. No direct or indirect impacts on archaeological, architectural or cultural heritage resources are expected as a result of the Operational Phase of the Proposed Project.

Table 6.5 outlines the potential impacts of the Proposed Project and mitigation that is being considered to avoid or reduce the environmental effects.

TABLE 6.5: POTENTIAL IMPACTS FOR CULTURAL HERITAGE

Potential Impact	Potential Mitigation
Potential for direct and indirect impacts to known and unknown archaeology which could be directly affected by excavation and ground disturbance or indirectly through changes to groundwater levels or vibration. Potential for significant negative effects at; four Record of Monuments and Places sites (RMP OF019-041, a class 3 toger; RMP OF019-041, an unclassified toger; KD009-041, an enclosure; and RMP KD010-051, a barrow) due to the removal or partial removal of these known and recorded archaeological sites; seven potential enclosures (AAP-64, 152, 158, 167, 170, 173, 181); and four potential fulacht fia sites. One potential significant negative effect has been identified in relation to burial site AAP-177, although a portion of this burial site has already been subject to archaeological excavation.	Pre-development archaeological underwater/wade assessments and archaeological testing. These will be carried out in advance of construction and under licence to the Department of Housing, Local Government and Heritage. The results of the assessments may lead to additional mitigation. Identification of an archaeological mitigation strategy agreed with the National Monuments Service. Subject to the value of the heritage asset and the potential impact, this may include preservation in situ, archaeological excavation (preservation by record) and written and photographic records carried out by a suitably qualified heritage specialist.
Potential impacts on the setting of cultural heritage sites due to noise, dust and visual disturbance during construction activities.	Locating compound areas and other focus areas of construction activities away from cultural heritage sites where practicable.

### 6.5.5. Material Assets, Waste and Carbon Management

Material assets are built services and infrastructure, including utilities infrastructure and transport infrastructure. This includes items such as canals, railway lines and power lines being crossed by or interacting with the Proposed Project. Existing utility information has been collated from the utility services providers. The routing and site selection of the Proposed Project has sought to avoid built services and infrastructure where feasible. This included consideration of trenchless crossing techniques to avoid the interruption of major services, as well as ongoing engagement with service providers and site surveys to confirm the current locations of buried services for the designs.

The Proposed Project will consume materials (such as aggregates, asphalt, concrete, steel, fuel and wood) and will generate waste. The majority of waste generated by the proposed project will be inert excavated and construction materials, such as soil, stone and rock, which will be reused within the project rather than being disposed to landfill. Desk studies of the market conditions do not identify any known supply or stock issues for key construction or operational materials.

For waste materials, the availability of landfill void to accept waste material for disposal is considered. This includes landfill facilities that are able to accept non-hazardous materials (that cannot be reused) and hazardous wastes for disposal.

The Proposed Project will also generate carbon including embodied carbon within materials consumed and also energy to power plant and construction vehicles and also to treat and pump water during operation.

Table 6.6 outlines the potential for significant effects and mitigation that is being considered to avoid or reduce the effects.

TABLE 6.6: POTENTIAL IMPACTS FOR MATERIAL ASSETS, WASTE AND CARBON MANAGEMENT

Potential Impact	Potential Mitigation
Potential disruption to services e.g. electricity, gas, communications, drainage, water supply and transport infrastructure during construction.	Trenchless crossing techniques to avoid the interruption of major services. Install diversions or provide alternative services during construction.
The consumption of materials will lead to a depletion of finite natural resources during construction and operation.	Using secondary or recycled construction materials as part of the designs where this does not affect the life or function of the Proposed Project.
Production of waste from material arisings, excavation and construction, which could deplete the capacity at waste management facilities or require new waste management facilities to meet forecast demands.	Promoting the waste hierarchy and circular economy principles throughout the design and construction of the project which prioritises re-use of materials ahead of recycling and disposal. Seeking to balance cut and fill, where soil is suitable, to avoid the need to import soil and reduce the creation of waste. This may also involve reusing surplus soils in landscaping.
Release of greenhouse gas emissions produced during construction from the use of construction plant and machinery and also embodied carbon within the materials used. Also, greenhouse gas emissions produced during operation of the Proposed Project from energy used to pumping and treatment of water. The carbon released could contribute to climate change.	Producing a Carbon Management Plan with specific carbon reduction targets to reduce embodied carbon in the design and operation of the Proposed Project e.g. using low carbon concrete and hydrotreated vegetable oil instead of diesel in construction plant and equipment. Using electricity generated from renewable sources for operational electrical power requirements. Procuring from suppliers that meet industry requirements for reducing their embodied carbon. Optimising the operation of the pipeline taking into account the size of the steel pipe and the frequency with which pumping will be needed to supplement gravity fed supplies. This had to balance material use, embodied carbon and operational energy use.
Vulnerability of the Proposed Project to future changes in climate (e.g. increased wind speeds and temperatures).	The risk from future climate hazards will be mitigated through the Proposed Project design. This will include, for example, choice of building materials to withstand high temperatures and calculating appropriate wind loads for structures.



## 7. What happens next?

**Section 8 describes how the feedback from this consultation will be used. This section provides an overview of the activities that need to be undertaken between the consultation and the submission of the SID application and the CPO application. This is summarised in Table 7.1.**

The intention is that the SID planning application and CPO application for the Proposed Project will be submitted to An Bord Pleanála in 2025. This will include all plans, particulars, supporting reports, EIAR, NIS and WFD assessment. An Bord Pleanála will undertake all necessary statutory consultations in respect of the Planning Application and it is expected that they will hold an Oral Hearing in advance of making a decision. In parallel with this process an application for an Abstraction Licence for the Proposed Project will also be made.

Subject to successfully obtaining the relevant permissions and undertaking detailed design and construction it is currently Uisce Éireann’s intention that the Proposed Project will be operational at the end of 2032.

TABLE 7.1: SUMMARY OF WHAT HAPPENS NEXT ACTIVITIES

Work to be undertaken	What does this involve?
Completion of the design for the SID application	<ul style="list-style-type: none"> <li>Considering matters raised in this consultation.</li> <li>Considering matters raised by landowners.</li> <li>Responding to further environmental mitigation measures.</li> <li>Continuing assessments e.g flood risk assessment or design calculations, as required.</li> <li>Completing the modelling of the abstraction.</li> <li>Finalising the planning application boundary.</li> </ul>
Completion of the environmental assessments and reporting including the EIAR, NIS and WFD assessment for the SID application	<ul style="list-style-type: none"> <li>Completing surveys during 2025.</li> <li>Updating the assessment of the environmental effects in response to the final design e.g traffic modelling or noise assessments.</li> <li>Identifying any additional mitigation measures.</li> <li>Complete the Construction Environment Management plan.</li> <li>Completing the EIAR and NIS document. The EIAR will have sections explaining the existing baseline conditions, the likely effects of the Proposed Project, the proposed mitigation measures and the residual effects. It will also include the CEMP.</li> </ul>
Land and Wayleave Acquisition Programme	<ul style="list-style-type: none"> <li>It is Uisce Éireann’s intention to offer a package to landowners to acquire wayleaves on a voluntary basis and will also engage with landowners in relation to the permanent acquisition of land in advance of the submission of the SID application.</li> </ul>
Prepare the planning application	<ul style="list-style-type: none"> <li>Preparing and finalise the documents needed for the planning application (in addition to the design and the EIAR). This will include, for example a planning report explaining how the project complies with planning policy and a design report setting out why the project has been designed in the way that it has.</li> </ul>
Prepare the CPO application	<ul style="list-style-type: none"> <li>Preparing and finalise the documents needed to acquire any land and wayleaves required to be acquired by CPO. This will include maps identifying the affected lands together with a schedule describing the required plots and listing the affected landowners.</li> </ul>

## 8. Non-Statutory Consultation Feedback

### 8.1. What are we Consulting on?

Uisce Éireann is asking stakeholders and all interested parties to provide feedback on the proposed Water Supply Project Eastern and Midlands Region in advance of the proposed planning application for the Proposed Project, which will be submitted to An Bord Pleanála later this year.

### 8.2. How can I get involved?

Uisce Éireann is undertaking an 8 week non-statutory public consultation on the Proposed Project.

To make a submission please send it to us by email, feedback form or post by 4 March 2025. Stakeholders can use the following consultation questions to guide their feedback. However, this is just an aide, and all relevant submissions received in response to the consultation will be considered.

- What are your thoughts on the potential benefits of the Proposed Project?
- Do you have any feedback on the key infrastructure components of the Proposed Project, such as the water intake and pumping station, pipelines, water treatment plant, break pressure tank, storage reservoir, and booster pumping station?
- What are your views on the proposed construction approach, including the use of identified roads for construction traffic, and the locations of temporary storage and working areas?
- Can you provide any comments on the potential environmental impacts of the Proposed Project and the measures proposed to mitigate these impacts?
- Are there any additional comments you would like to share regarding the Proposed Project?

### 8.3. How will feedback be used?

The feedback from this consultation alongside further technical and environmental studies and engagement with landowners and other stakeholders will inform the details of the final project. This will be detailed in the Strategic Infrastructure Development (SID) Planning Application (including all plans, particulars, supporting reports, EIAR and NIS) to be submitted to An Bord Pleanála.

The activities to be undertaken as part of the process of finalising the SID application will include:

- Consideration of the consultation feedback and updating the application documents, where appropriate.
- Voluntary wayleave acquisition programme.
- Continue working external stakeholders and statutory bodies on the proposals as they are being finalised.
- Confirm the final Proposed Project that will form the basis of the SID planning application.
- Feedback on the public consultation and what Uisce Éireann have done in response.
- Continuing with environmental surveys.
- Finalise the environmental reports, which will inform An Bord Pleanála's environmental assessments of the project.

Finalise all drawings, supporting reports, statutory planning documents and documentation, which will inform, inter alia, An Bord Pleanála's assessment in respect of proper planning and sustainable development and the Water Framework Directive.

### 8.4. How can I get in touch?

✉ [watersupply@water.ie](mailto:watersupply@water.ie)

📍 Water Supply Project, PO Box 13748, Dublin 16

☎ LoCall: 01 2027770

🌐 [www.water.ie/watersupplyprojec](http://www.water.ie/watersupplyprojec)



