

# Project Summary Report Appendix 1

(Details of the Proposed Project)

January 2025

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**Acronyms and Abbreviations**

Acronym	Meaning
BPS	Booster Pumping Station
BPT	Break Pressure Tank
CP	Cathodic Protection
DWSP	Drinking Water Safety Plan
ESB	Electricity Supply Board
ESBN	Electricity Supply Board Networks
FCV	Flow Control Valve
GDA WRZ	Greater Dublin Area Water Resource Zone
HLPS	High Lift Pumping Station
Mld	Million litres per day
mOD	Metres above Ordnance Datum
NSS	New Shannon Source
RWBT	Raw Water Balancing Tanks
RWI&PS	Raw Water Intake and Pumping Station
RWRMs	Raw Water Rising Mains
SAC	Special Area of Conservation
SCADA	Supervisory Control and Data Acquisition
SPF	Set Point Flow
TII	Transport Infrastructure Ireland
TPR	Termination Point Reservoir
UPS	Uninterruptible Power Supply
WRZ	Water Resource Zones
WTP	Water Treatment Plant

## 1. Introduction

1. Uisce Éireann is consulting on its proposals for the Water Supply Project Eastern and Midlands Region (the “Proposed Project”). The Proposed Project will secure a new safe, sustainable, secure and resilient source of drinking water from the River Shannon at the Parteen Basin and consists of a 172km pipeline, five infrastructure sites, a Flow Control Valve and other ancillary infrastructure. 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.
2. 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) (collectively “the Plans”). 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 Plans.
3. The Project Summary Report provides the information which is being consulted upon. This Appendix provides additional information on the Proposed Project.
4. The objectives 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.
5. The Proposed Project infrastructure will provide the capability to meet the drinking water need for a Water Supply Area consisting of 36 Water Resource Zones (WRZ) across the Eastern and Midlands Region.<sup>1</sup> It will do this by providing the capacity to supply up to 300 megalitres of water per day which will:
  - Immediately meet the identified need for water within the Greater Dublin Area Water Resource Zone (GDA WRZ) to 2050 and beyond.
  - Enable the future supply to 17 other WRZs by re-directing supply within the GDA WRZ and an expansion of 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.
6. This appendix provides a summary of key details regarding the Proposed Project. This information is intended to supplement the description of the Proposed Project that is provided in the Project Summary Report and facilitate responses to the consultation being undertaken.
7. This Appendix includes:
  - An overview of the Proposed Project.
  - A series of tables for each of the Infrastructure Sites.
  - A summary table for ancillary infrastructure.

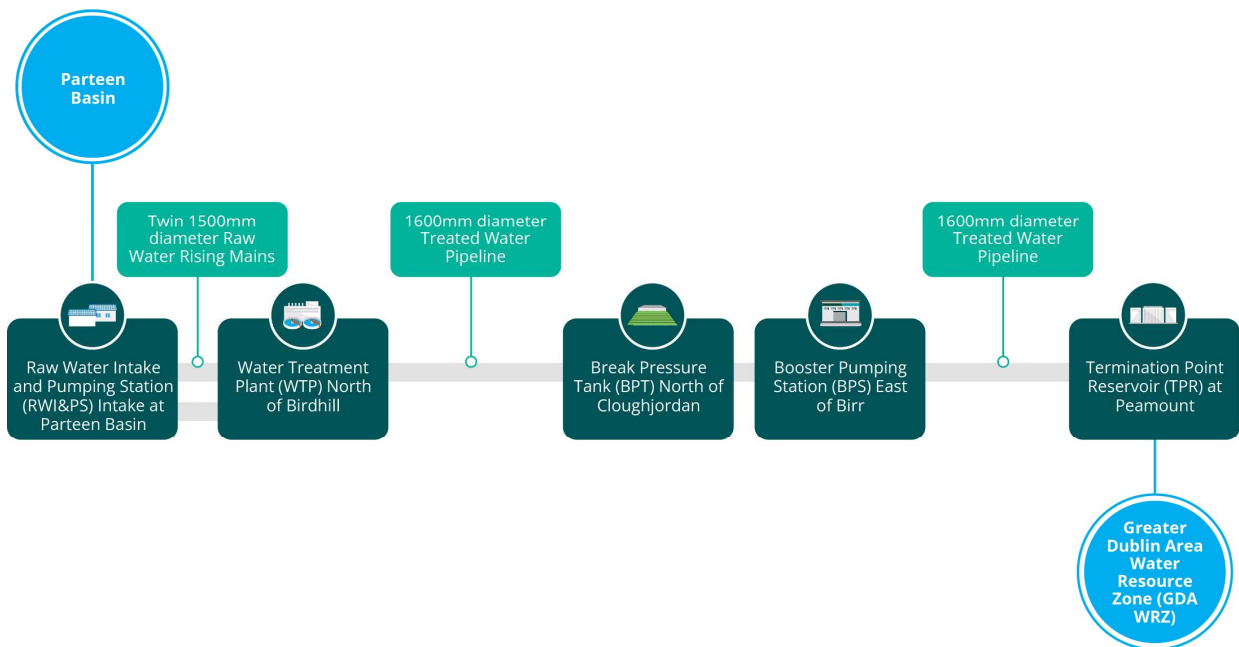
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<sup>1</sup> Note that 37 Water Resource Zones (WRZs) identified in the Eastern and Midlands Plan have since become 36 WRZs as Barndarrig WRZ was rationalised to Redcross WRZ. This does not result in a change to the water supply requirement.

- A summary table for construction.
8. All the design information and dimensions contained within this appendix are approximate and the design of the Proposed Project is not finalised. The feedback from the consultation being undertaken will, where appropriate, inform the design that is submitted as part of that application and therefore, it is expected that there will be refinement and alteration of the design prior to the submission of the planning application to An Bord Pleanála.

### 1.1. Overview

9. To provide a new source of drinking water for the Eastern and Midlands Region and meet the deficit in supply described in the Project Summary Report, 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.
10. 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 1.1 provides an overview of the principal infrastructure and pipeline elements of the Proposed Project.



**Image 1.1: Overview of the Principal Infrastructure and Pipeline Elements of the Proposed Project**

11. The pipeline will have three sections:
- Raw Water Rising Mains (RWRMs) approximately 2km in length between the Raw Water Intake and Pumping Station (RWI&PS) and the Water Treatment Plant (WTP).
  - The Treated Water Pipeline between the WTP and the Break Pressure Tank (BPT) which will be approximately 37km in length.
  - The Treated Water Pipeline between the BPT and the Termination Point Reservoir (TPR) which will be approximately 133km in length.
12. A combination of pumping and gravity will be used to move the water through the pipeline. Raw water will be pumped 2km from the RWI&PS to the WTP. Treated water will be pumped for the first 37km of the pipeline

from the WTP to the BPT. The BPT is designed to be located at the high point along the pipeline and so from there the water will usually flow by gravity along the remaining 133km to the TPR. This has been done to reduce the energy needed to move water through the pipeline and will therefore, reduce the carbon used during operation. At times when the volume of water needed is higher, the water will be pumped through the pipeline from the Booster Pumping Station (BPS) to the TPR. The BPS provides the capability for this additional pumping, when it is required.

13. Details of these elements of the Proposed Project are provided in Sections 2 and 3.
14. There will be five infrastructure sites. These are:
  - The RWI&PS on the eastern shore of Parteen Basin which will abstract raw water from the Lower River Shannon at Parteen Basin downstream of Lough Derg.
  - The WPT near Birdhill, County Tipperary.
  - The BPT near Cloughjordan, Co. Tipperary.
  - The BPS east of Birr, Co. Offaly.
  - The TPR at Peamount, Co. Dublin.
15. The Infrastructure Sites are needed to abstract and treat the water to drinking water standard and to move the water through the pipeline.
16. The design is based on the following principles / requirements:
  - Sizing of the RWI&PS to facilitate a maximum abstraction of 300Mld during the short peak demand periods.
  - The RWRMs must be capable of transferring raw water up to a maximum throughput of 300Mld.
  - Sizing of the WTP 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 BPT at the point where the Treated Water Pipeline transitions from a pumped rising main to a gravity main.
  - A BPS on the Treated Water Pipeline to facilitate transition from normal average flows to peak flows.
  - The pipeline must be capable of transferring water up to the maximum throughput of 300Mld.
  - The TPR is to have a capacity of 75Mld.
  - The infrastructure, as far as reasonably practicable, must be modular in nature and with the potential for phased mechanical and electrical fit-out.
17. Details of the Infrastructure Sites are provided in Section 3.
18. In addition to the Infrastructure Sites there will be ancillary features along the length of the pipeline. These will include valves, lay-bys and power connections. There will also be a Flow Control Valve (FCV) on the pipeline prior to the Termination Point Reservoir. This will control the volume of water arriving at the reservoir. Details of these elements of the Proposed Project are provided in Section 4 and 5.
19. To allow for future connections for a supply of water from the pipeline there will be a series of Take-offs included in the design. These are summarised in Section 6.

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20. The Proposed Project will be constructed and operated within predominantly open countryside, generally avoiding towns and villages. Farming is the primary land use in the area, with the Proposed Project crossing approximately 500 agricultural landholdings.
21. Acquisition of land on a permanent basis will be required for the RWI & PS, WTP, BPT, BPS, FCV and TPR, 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.
22. Along the pipeline the Proposed 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 will 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 RWRMs and Treated Water Pipeline will be approximately 20 metres (m) in width, normally centred on the pipeline. However, at Line Valves the permanent wayleave will be widened to take account of additional permanent features including the kiosks and to provide access.
23. 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 the Electricity Supply Board (ESB).
24. The construction phase of the Proposed Project will require the establishment of a Construction Working Width along the length of the pipeline, temporary working facilities and the use of certain lands on a temporary basis. Land has been identified for the establishment of temporary Construction Compounds (to accommodate office space, materials and equipment) and temporary Pipe Storage Depots (to facilitate the delivery of the pipe). All of these temporary facilities and traffic management arrangements are collectively referred to as Temporary Works.
25. The Proposed Project Boundary, is shown on Figures 1-59 – Supporting Figures and encompasses all permanent and temporary land-take required for the Proposed Project and is the boundary that will be the subject of the planning application.
26. Details of the approach to construction are set out in Section 7.



## 2. The Pipeline

27. Tables 2.1, 2.2 and 2.3 summarise the design of the pipeline between the RWI&PS and the TPR. As described in Section 1 there are three sections to the pipeline:

- The RWRMs between the RWI & PS and the WTP (Table 2.1).
- The Treated Water Pipeline between the WTP and the BPT (Table 2.2).
- The Treated Water Pipeline between the BPT and the TPR (Table 2.3).

**Table 2.1: Summary of the key features of the Raw Water Rising Mains.**

Components of the Raw Water Rising Mains	Details
<b>Location</b>	<p>The RWRMs will extend in a generally east-south-easterly direction from the RWI &amp; PS for approximately 830m towards the R494.</p> <p>From the R494, the Raw Water Rising Mains will continue in an east-north-easterly direction to the WTP at Incha Beg.</p>
<b>Relevant Counties</b>	Tipperary.
<b>Pipeline length</b>	Approximately 2km.
<b>Number of pipes</b>	2
<b>Size of the pipes</b>	1500mm nominal diameter with approximately 1m in between the two pipes.
<b>Depth of the pipeline</b>	Generally between approximately 6m and 1.2m. However, it will be deeper at trenchless crossings.
<b>Method for moving the water</b>	Pumped.
<b>Permanent rights over land</b>	<p>A permanent wayleave will be retained to provide access to Uisce Éireann during the operation of the Proposed Project for inspection and maintenance. This will typically be 20m in width over the pipeline. This may be wider at line valves. It will not be a permanent acquisition of land, rather it is a right over the land.</p> <p>A further easement will be required for the power connection to the Line Valve.</p> <p>There will be isolated permanent acquisition at some Line Valves and for lay-bys that are needed for access to the line valves (see Section 5 – Ancillary Pipeline Features).</p>
<b>Temporary land take</b>	A Construction Working Width will be required to build the pipeline. This will typically be 50m wide. This will allow for material storage, access, excavations and drainage. In certain instances the working area will be widened near features such as crossings, access and egress points from the public road network and Construction Compounds and Pipe Storage Depots. There are further details on construction in Section 7 - Construction.
<b>Duration of construction</b>	The construction will last approximately four years between site establishment and demobilisation. However, the pipeline will be built in sections and therefore, each landowner along the route will typically be affected for a period of 18-24 months.
<b>Permanent access</b>	Once the pipeline is built and the land reinstated, access for inspection and maintenance purposes will be via the 20m wayleave.
<b>Temporary access</b>	During construction access to the RWRMs will be along the route of the pipeline corridor.



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Components of the Raw Water Rising Mains	Details
<b>Permanent fencing</b>	Not applicable
<b>Temporary fencing</b>	See Section 7 - Construction.
<b>Landscaping and reinstatement</b>	Land will generally be reinstated to its previous condition / use after construction, with excavations being backfilled with temporarily stored topsoil and subsoil. There will be some restrictions on the land within the 20m wayleave, above the pipelines, preventing future development and the planting of certain large trees. Therefore, one exception to the principle that the land will be reinstated to its previous use / condition is if the land use previously is incompatible with those restrictions e.g it was previously forestry.
<b>Operation</b>	The purpose of the RWRMs is to transfer raw water from the RWI & PS in Parteen to the WTP near Birdhill. There are two pipes proposed to allow one to be taken out of operation for cleaning without disrupting the supply of water.

Table 2.2: Summary of the key features of the Treated Water Pipeline between WTP and BPT.

Components of the pipeline between WTP and BPT	Details
<b>Location</b>	The proposed Treated Water Pipeline from the WTP to the BPT will be located wholly within County Tipperary. It will extend from the WTP in an east to north-east direction generally through open agricultural grassland. The Treated Water Pipeline from the WTP to the BPT will cross a number of local, regional and national roads and a number of watercourses including the Nenagh River.
<b>Relevant Counties</b>	County Tipperary.
<b>Pipeline length</b>	Approximately 37km.
<b>Number of pipes</b>	1
<b>Size of the pipes</b>	1600mm nominal diameter.
<b>Depth of the pipeline</b>	Generally between approximately 6m and 1.2m. However, it will be deeper at trenchless crossings.
<b>Method for moving the water</b>	Pumped.
<b>Permanent rights over land</b>	<p>A permanent wayleave will be retained to provide access to Uisce Éireann during the operation of the Proposed Project for inspection and maintenance. This will typically be 20m in width over the pipeline. This may be wider at Line Valves. It will not be a permanent acquisition of land, rather it is a right over the land.</p> <p>A further easement will be required for the power connection to the Line Valves and for pipes connecting from Washout Valves to outfalls.</p> <p>There will be isolated permanent acquisition at some line valves and for lay-bys that are needed for access to the Line Valves (see Section 5 – Ancillary Pipeline Features).</p>
<b>Temporary land take</b>	A Construction Working Width will be required to build the pipeline. This will typically be 50m wide. This will allow for material storage, access, excavations and drainage. In certain instances the working area will be widened near features such as crossings, access and egress points from the public road network and Construction Compounds and Pipe Storage Depots. There are further details on construction in Section 7 - Construction.
<b>Duration of construction</b>	The construction will last approximately 5 years between site establishment and demobilisation. However, the pipeline will be built in sections and therefore, each landowner along the route will typically be affected for a period of 18-24 months.
<b>Permanent access</b>	Once the pipeline is built and the land reinstated, access for inspection and maintenance purposes will be via the 20m wayleave.
<b>Temporary access</b>	During construction access to the pipeline will be along the route of the pipeline corridor.
<b>Permanent fencing</b>	Not applicable
<b>Temporary fencing</b>	See Section 7 - Construction.
<b>Landscaping and reinstatement</b>	Land will generally be reinstated to its previous condition / use after construction, with excavations being backfilled with temporarily stored topsoil and subsoil. There will be some restrictions on the land within the 20m wayleave above the pipeline, preventing future development and the planting of certain large trees. Therefore, one exception to the principle that the land will be reinstated to its previous use / condition is if the land use previously is incompatible with those restrictions e.g it was previously forestry.

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Components of the pipeline between WTP and BPT	Details
<b>Operation</b>	The purpose of this section of the pipeline is to transfer clean, treated drinking water from the WTP near Birdhill to the BPT near Cloughjordan.

Table 2.3: Summary of the key features of the Treated Water Pipeline between BPT and TPR.

Components of the pipeline between the BPT and the TPR	Details
<b>Location</b>	<p>From the BPT, the pipeline will extend in an east to north-east direction through north County Tipperary and Counties Offaly and Kildare before terminating in County Dublin.</p> <p>The pipeline will be primarily routed through agricultural grassland but there are extensive areas of peatland in County Offaly and eastern County Kildare through which the pipeline will be constructed. The Treated Water Pipeline from the BPT to the TPR will cross a number of local, regional and national roads and a number of watercourses including the Liffey River. It will also cross the Grand Canal and have two railway crossings.</p>
<b>Relevant Counties</b>	County Offaly, County Tipperary, County Kildare and County Dublin.
<b>Pipeline length</b>	Approximately 133km.
<b>Number of pipes</b>	1
<b>Size of the pipes</b>	1600mm nominal diameter.
<b>Depth of the pipeline</b>	Generally between approximately 6m and 1.2m. However, it will be deeper at trenchless crossings.
<b>Method for moving the water</b>	<p>Gravity – for normal operation.</p> <p>Pumped – for occasional flows above 170Mld during peak demands.</p>
<b>Permanent rights over land</b>	<p>A permanent wayleave will be retained to provide access to Uisce Éireann during the operation of the Proposed Project for inspection and maintenance. This will typically be 20m in width over the pipeline. This may be wider at line valves. It will not be a permanent acquisition of land, rather it is a right over the land.</p> <p>A further easement will be required for the power connection to the Line Valves and for pipes connecting from Washout Valves to outfalls.</p> <p>There will be isolated permanent acquisition at some line valves and for lay-bys that are needed for access to the Line Valves (see Section 5 – Ancillary Pipeline Features).</p>
<b>Temporary land take</b>	A Construction Working Width will be required to build the pipeline. This will typically be 50m wide. This will allow for material storage, access, excavations and drainage. In certain instances the working area will be widened near features such as crossings, access and egress points from the public road network and Construction Compounds and Pipe Storage Depots. There are further details on construction in Section 7 - Construction.
<b>Duration of construction</b>	The construction will last approximately 5 years between site establishment and demobilisation. However, the pipeline will be built in sections and therefore, each landowner along the route will typically be affected for a period of 18-24 months.
<b>Permanent access</b>	Once built and the land reinstated, access for maintenance will be via wayleave agreements with landowners.
<b>Temporary access</b>	During construction access to the pipeline will be along the route of the pipeline corridor.
<b>Permanent fencing</b>	Not applicable
<b>Temporary fencing</b>	See Section 7 - Construction.

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<b>Components of the pipeline between the BPT and the TPR</b>	<b>Details</b>
<b>Landscaping and reinstatement</b>	Land will generally be reinstated to its previous condition / use after construction, with excavations being backfilled with temporarily stored topsoil and subsoil. There will be some restrictions on the land within the 20m wayleave above the pipeline, preventing future development and the planting of certain large trees. Therefore, one exception to the principle that the land will be reinstated to its previous use / condition is if the land use previously is incompatible with those restrictions e.g it was previously forestry.
<b>Operation</b>	The purpose of this section of the pipeline is to transfer clean, treated drinking water from the BPT in Cloughjordan to the TPR in Peamount.

### 3. The Infrastructure Sites

28. Tables 3.1, 3.2, 3.3, 3.4 and 3.5 summarise the design of the Infrastructure Sites. There are five Infrastructure Sites along the length of the pipeline. There is a table for each of these, as follows:

- The RWI&PS at the Parteen Basin, County Tipperary (Table 3.1).
- The WTP near Birdhill, County Tipperary (Table 3.2).
- The BPT near Cloughjordan, County Tipperary (Table 3.3).
- The BPS east of Birr, County Offaly (Table 3.4).
- The Termination Point Reservoir at Peamount, County Dublin (Table 3.5).

**Table 3.1: Summary of the key features of the RWI&PS**

Raw Water Intake and Pumping Station	Details
<b>Location</b>	The abstraction point will be located on the eastern shore of the manmade Parteen Basin, downstream of Lough Derg in the townland of Garrynatineel, immediately north of and adjacent to the linear reservoir embankment (Fort Henry Embankment - Category A dam). This is approximately 3.3km north-east of the Parteen Weir and approximately 14.3km upstream of ESB's Ardnacrusha Generating station.
<b>Relevant County</b>	Tipperary.
<b>Permanent land take for the Infrastructure Site</b>	2.6 hectares (ha).
<b>Land take for permanent access</b>	1.6ha.
<b>Total permanent land take</b>	4.2 ha.
<b>Additional temporary land take for construction</b>	0.8ha.
<b>Additional temporary land take for construction of the access</b>	0.5ha.
<b>Total temporary land take for construction</b>	5.5ha.
<b>Tallest structure</b>	11m (Microfiltration buildings).
<b>Site Infrastructure</b>	The site will include:  Raw Water Intake Basin Chamber (with Passive Wedge-wire Screens), Inlet Chambers, Raw Water Pumping Station Building, Microfiltration Buildings, Raw Water Rising Mains Scour Tank, 20 kV electricity substation site, ESB Switchgear Building.
<b>Raw Water Intake Basin Chamber</b>	1 structure, 40m long and 10m wide. This is below ground.
<b>Inlet Chambers</b>	3 structures, each 5m long and 12m wide. These are below ground.

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Raw Water Intake and Pumping Station	Details
<b>Raw Water Pumping Station Building</b>	<p>1 structure, 31m long, 38m wide and 10m above ground level. The structure below ground will be bigger than the above ground building and will be 45m long and 38m wide.</p> <p>The pumping station's housing would be located at the front of the Parteen Basin and incorporates three simple repeated forms to create a 'boathouse' architectural form of regular elements, emphasised by the curved roofline sections.</p>
<b>Microfiltration Buildings</b>	2 structures, each 21m long, 16m wide and 11m above ground level.
<b>Raw Water Rising Mains Scour Tank</b>	1 structure, 45m long and 20m wide. This is below ground.
<b>20 kV electricity substation site</b>	1 structure, 40m long, 36m wide.
<b>ESB Switchgear Building</b>	1 structure, 15m long, 9m wide and 4m above ground level.
<b>Duration of construction</b>	Approximately five years between site establishment and demobilisation.
<b>Permanent access</b>	It is proposed to construct a new access road from the R494 to the proposed RWI&PS site. The road will be 5m in width and will have a length of approximately 680m.
<b>Temporary access</b>	The permanent access road will also be used during the construction of the RWI&PS.
<b>Permanent fencing</b>	The RWI&PS site boundary will be fenced with a stockproof fence with a second, 2.4m-high polyester powder-coated paladin security fence set back 5m from the boundary fence. Where the boundary is facing into Parteen Basin, concrete walls will be faced in local stone. Landscape planting, such as hedgerows, will be used to break up and soften the appearance of the fencing.
<b>Temporary fencing</b>	See Section 7 - Construction.
<b>Power Supply</b>	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.
<b>Landscaping and reinstatement</b>	The RWI has been designed to blend into the local landscape with minimal visual impact to the Parteen Basin embankment and the adjacent woodland. This includes a curved 'boathouse' design, paladin fencing and a mixture of mosaic habitat and woodland planting.
<b>Operation</b>	<p>The Raw Water Intake provides the abstraction of water from the Parteen basin through an Intake Chamber. Some initial treatment of the water will be undertaken at the Raw Water Intake site including removal of large debris using screens between the Intake Chamber and the Inlet Chamber and passing the water through a further filtration process to remove invasive species. The Pumping Station will then pump the raw water approximately 2km, to the WTP. There will be two sets of three pumps and these will operate on a duty/assist/standby configuration. Under normal operation, this flow will be abstracted over 24 hours with the pumps operated at variable speed to allow flows of water to be altered based on the amount needed.</p> <p>The RWI&amp;PS will operate continuously during the operation of the pipeline, but operatives will only need to be on site occasionally for periodic routine maintenance.</p>



Table 3.2: Summary of the key features of the WTP

Water Treatment Plant	Details
<b>Location</b>	The proposed WTP site will be 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.
<b>Relevant County</b>	Tipperary.
<b>Permanent land take for the Infrastructure Site</b>	27.5ha.
<b>Land take for permanent access</b>	1.8ha.
<b>Total permanent land take</b>	29.3ha.
<b>Additional temporary land take for construction</b>	0.9ha.
<b>Additional temporary land take for construction of the access</b>	1.7ha.
<b>Total temporary land take for construction</b>	31.8ha (Total is affected by rounding).
<b>Tallest structure</b>	14m (Sludge Storage Silo) <sup>2</sup> .
<b>Site Infrastructure</b>	The site will include:  RWRM Swab Chambers, Raw Water Balancing Tanks, Chemical Dosing Manifold Building, Water Treatment Module Buildings, Used Washwater Equalisation and Settlement Tanks, UV Treatment and Post Filtration Chemical Dosing Building, Backwash Water Tank and Pumping Station, Clear Water Storage Tanks, High Lift Pumping Station, Sludge Balancing Tanks, Sludge Thickeners, Sludge Forward Pumping Station, Sludge Storage Tanks, Sludge Storage Silo, Sludge Dewatering Buildings, Washwater Settlement Lamella Clarifiers Building, Tank Draindown Management and Commissioning Lagoons, Lagoon Pumping Station, Control Building, Visitor/Interpretive Centre, 38 kV electricity substation site, ESB Switchgear Building, Medium Voltage/Low Voltage Power Distribution Building, Sludge Storage Buildings.
<b>RWRM Swab Chambers</b>	2 structures, each 26m long, 21m wide and 1m above ground level.
<b>Raw Water Balancing Tanks</b>	2 structures, each 65m in diameter and 8m above ground level.
<b>Chemical Dosing Manifold Building</b>	1 structure, 77m long, 35m wide and 11m above ground level.
<b>Water Treatment Module Buildings</b>	3 structures, each 141m long, 59m wide and 13m above ground level.

<sup>2</sup> The Washwater Settlement Lamella Clarifiers Building is also defined as approximately 14m tall. Both heights are rounded to the nearest metre. The silo is the tallest building on site.

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Water Treatment Plant	Details
<b>Used Wash water Equalisation and Settlement Tanks</b>	8 structures, each 30m long and 20m wide.
<b>UV Treatment and Post Filtration Chemical Dosing Building</b>	1 structure, 70m long, 39m wide and 8m above ground level.
<b>Backwash Water Tank and Pumping Station</b>	1 structure, 43m long, 31m wide, and 6m above ground level.
<b>Clear Water Storage Tanks</b>	2 tanks, 4 cells, all cells 40m long and 38m wide.
<b>High Lift Pumping Station</b>	1 structure, 44m long, 25m wide, 13m below ground level and 6m above ground level.
<b>Sludge Balancing Tanks</b>	4 structures, 10m in diameter and less than 1m above ground level.
<b>Sludge Thickeners</b>	4 structures, each 12m in diameter and 3m above ground level.
<b>Sludge Forward Pumping Station</b>	2 structures, each 13m long and 7.0m wide.
<b>Sludge Storage Tanks</b>	6 structures, each 9m long, 9m wide and 6m above ground level.
<b>Sludge Storage Silo</b>	2 structures, each 4m in diameter and 14m above ground level.
<b>Sludge Dewatering Buildings</b>	2 structures, each 39m long, 28m wide and 13m above ground level.
<b>Washwater Settlement Lamella Clarifiers Building</b>	1 structure, 51m long, 30m wide and 14m above ground level.
<b>Tank Draindown Management and Commissioning Lagoons</b>	2 structures, each 78m long, 43m wide.
<b>Lagoon Pumping Station</b>	1 structure, 12m long, 10m wide and less than 1m above ground level.
<b>Control Building (2 storeys)</b>	1 structure, 56m long, 30m wide and 10m above ground level. The Control Building and Visitors Centre are effectively one large, combined building and have a combined length of 73m.
<b>Visitor/Interpretive Centre (2 storeys)</b>	1 structure, 16m long, 30m wide and 10m above ground level.
<b>38 kV electricity substation site</b>	1 structure, 40m long, 36m wide.
<b>ESB Switchgear Building</b>	1 structure, 15m long, 9m wide and 4m above ground level.
<b>Medium Voltage/Low Voltage Power Distribution Building</b>	1 structure, 44m long, 11m wide and 6m above ground level.
<b>Sludge Storage Buildings</b>	2 structures, each 73m long, 40m wide and 8m above ground level.
<b>Duration of construction</b>	Approximately 5 years between site establishment and demobilisation.
<b>Permanent access</b>	The site proposed for the Water Treatment Plant 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.

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Water Treatment Plant	Details
<b>Temporary access</b>	<p>The permanent access road will also be used during the construction of the WPT.</p> <p>The access road crosses a tributary of the Kilmastulla River and so additional land will be required for the construction of the crossing. In addition, construction of the access road junction with the R445 public road requires the demolition of some disused and derelict buildings and old petrol pumps associated with a disused petrol station on the north-western side of the R445.</p>
<b>Permanent fencing</b>	<p>The WTP site boundary will be fenced with a stock proof fence at the boundary and a 2.4m high palisade security fence 5m inside the boundary. Landscape planting, such as hedgerows, will be used to break up and soften the appearance of the fencing.</p>
<b>Temporary fencing</b>	<p>See Section 7 – Construction.</p>
<b>Power Supply</b>	<p>The power supply will be provided by ESB Networks from the Birdhill 38 kV Substation, through two bundles of underground cable ducts laid in the R445 from Birdhill to the entrance of the Water Treatment Plant Access Road. In addition, some of the buildings will have solar panels and further on-site renewable energy will be provided from ground mounted solar panels.</p>
<b>Landscaping and reinstatement</b>	<p>Visual screening, in the form of native tree and hedgerow planting is proposed on the perimeter of the site, and in certain locations within the site, to reduce the impact of buildings and other infrastructure on higher ground. This is intended to break up the perceived size of the site and to blend it with the surrounding landscape.</p> <p>Within the site ecological reinstatement in the form of wet grassland is proposed in order to reduce the impact on biodiversity. Also, wildflower areas will be planted, including on some building roofs (known as green roofs).</p>
<b>Operation</b>	<p>The WTP treats the raw water. This will be done in a number of stages: Firstly, large impurities are removed through pre-treatment. Then the pre-treated water is passed through filters. The water then undergoes UV treatment and chlorine disinfection before being pumped from the clear water tanks via the High Lift Pumping Station to the BPT.</p> <p>The operation of the site and the wider pipeline will be controlled from a Control Building which will include laboratories, a workshop, storage, and welfare facilities for operational staff. As a result this site will be permanently staffed.</p> <p>The Visitor Centre has been included in the design after consultation with Tipperary County Council and will be used for pre-arranged events such as school visits.</p>

Table 3.3: Summary of the key features of the BPT

Break Pressure Tank	Details
<b>Location</b>	The site for the proposed BPT is located in the townland of Knockanacree in County Tipperary, approximately 1.8km north of the town centre of Cloughjordan and south of the Scohaboy (Sopwell) Bog SAC (Site Code 002206) and Scohaboy Bog Natural Heritage Area (NHA) (Site Code 000937).
<b>Relevant County</b>	County Tipperary.
<b>Permanent land take for the Infrastructure Site</b>	5.2ha.
<b>Land take for permanent access</b>	1.6ha.
<b>Total permanent land take</b>	6.8ha.
<b>Additional temporary land take for construction</b>	No additional land required for temporary access.
<b>Additional temporary land take for construction of the access</b>	0.4ha.
<b>Total temporary land take for construction</b>	7.2ha.
<b>Tallest structure</b>	7m (Control Building).
<b>Site Infrastructure</b>	Break pressure tank, control building.
<b>Break pressure Tank</b>	3 cells, each 23m long, 48m wide, 4m below ground and less than one metre above ground level.
<b>Control Building</b>	1 structure, 40m long, 20m wide and 7m above ground level.  The Control Building has been designed to be similar in appearance to an agricultural barn.
<b>Duration of construction</b>	Approximately four years and ten months between site establishment and demobilisation.
<b>Permanent access</b>	A new access road from the L1058 will be constructed, which will be 5m in width and approximately 740m in length.
<b>Temporary access</b>	The permanent access road will also be used during the construction of the BPT.
<b>Permanent fencing</b>	The BPT site boundary will be fenced with a stock proof fence and a 2.4m high palisade security fence 3m inside the boundary. Woodland planting, proposed for habitat creation will screen and soften the appearance of the fencing.
<b>Temporary fencing</b>	See Section 7 – Construction.
<b>Power Supply</b>	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. The Control Building will have solar panels over part of the roof.
<b>Landscaping and reinstatement</b>	The BPT is proposed to be predominantly buried. The only visible part of the PT will be the control building and the top of the tank. The views of both these structures will be substantially screened from all directions in part by planting trees.  The top of the tanks will have a wildflower roof cover.  The control building is designed to look like a barn-like structure to blend in with the existing landscape.

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Break Pressure Tank	Details
	<p>To deliver habitat creation an extensive area of woodland planting will be undertaken to the east of the site, along with a narrower belt of woodland planting to the west and a mosaic habitat to the north. This will also help to screen the infrastructure site and to integrate it into the surrounding landscape.</p>
<b>Operation</b>	<p>The BPT will have two functions during operation: It will provide a way to stabilise the water pressure in the pipeline and ensure that it always remains full. This is needed to maintain efficient pumping during flow changes. It will also act as a large damping device to bring the water in the pipeline to a standstill in the event of a temporary shutdown of supply. The BPT will operate continuously during the operation of the pipeline, but operatives will only need to be on site for periodic routine maintenance.</p>

Table 3.4: Summary of the key features of the BPS.

Booster Pumping Station	Details
<b>Location</b>	The proposed BPS site is located to the east of Birr, in the townland of Coagh Upper, County Offaly, approximately 66km east of the proposed WTP. The BPS site is located within a rural area of agricultural land adjacent to the L3003.
<b>Relevant County</b>	County Offaly.
<b>Permanent land take for the Infrastructure Site</b>	2.2ha.
<b>Land take for permanent access</b>	0.4ha.
<b>Total permanent land take</b>	2.6ha.
<b>Additional temporary land take for construction</b>	2.9ha.
<b>Additional temporary land take for construction of the access</b>	0.9ha.
<b>Total temporary land take for construction</b>	6.4ha.
<b>Tallest structure</b>	8m (Booster pumping station)
<b>Site Infrastructure</b>	Booster pumping station, 38 kV electricity substation and Power Distribution Building.
<b>Booster pumping station</b>	1 structure, 60m long, 36m wide, 4m below ground and 8m above ground level.  The Pumping Station has been designed to be similar in appearance to an agricultural barn.
<b>38 kV electricity substation and Power Distribution Building</b>	1 structure, 15m long, 10m wide and 4m above ground level.
<b>Duration of construction</b>	Approximately four years from site establishment and demobilisation.
<b>Permanent access</b>	Access to the BPS site will be directly off the L3003.  A separate access will be provided to the Electricity Substation. The substation will be slightly set back from the L3003 and so an access road approximately 5m wide and 22m long will be provided to get to the electricity substation gates.
<b>Temporary access</b>	The temporary access for the BPS will be from the L3003.
<b>Permanent fencing</b>	The BPS site boundary will be fenced with a stock proof fence and a 2.4m high palisade security fence 3m inside the boundary. Landscape planting, such as hedgerows, will be used to break up and soften the appearance of the fencing.
<b>Temporary fencing</b>	See Section 7 – Construction.
<b>Power Supply</b>	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. The Pumping Station building will also have solar panels on top and additional on-site renewable energy will be provided from ground mounted solar panels.

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Booster Pumping Station	Details
<b>Landscaping and reinstatement</b>	A combination of visual screening and integration into the existing landscape will make sure that the site is as unobtrusive as possible. Visual screening will consist of planting hedges around the perimeter of the site.
<b>Operation</b>	<p>The BPS will have three functions during operation:</p> <ul style="list-style-type: none"><li>• Most of the time it will not operate but permit gravity flow to bypass the pumping station.</li><li>• During short periods it will provide the pumping needed to increase the flow of water through the pipeline when the demand for water goes over 170 Mld.</li><li>• It will also provide surge protection to manage changes in the pressure within the pipeline.</li></ul> <p>The BPS will be controlled remotely and only operate during higher flows. Operatives will only be needed on site for periodic routine maintenance.</p>



Table 3.5: Summary of the key features of the TPR.

Termination Point Reservoir	Details
<b>Location</b>	The proposed TPR will be located adjacent to the existing service reservoir site at Peamount in County Dublin. The TPR will occupy the northern portion of the site where ground levels are in the range of approximately 79–80mAOD.
<b>Relevant County</b>	County Dublin.
<b>Permanent land take for the Infrastructure Site</b>	7.5ha.
<b>Land take for permanent access</b>	0.7 ha.
<b>Total permanent land take</b>	8.1ha (Total is affected by rounding).
<b>Additional temporary land take for construction</b>	3ha.
<b>Additional temporary land take for construction of the access</b>	Less than 0.1ha.
<b>Total temporary land take for construction</b>	11.1 ha (Total is affected by rounding).
<b>Tallest structure</b>	11m (Termination point Reservoir)
<b>Site Infrastructure</b>	The TPR site includes the above-ground TPR structure, associated underground pipework and Emergency Overflow Storage Tank and a Chlorine Dosing and Control Building.
<b>Termination point reservoir</b>	3 cells, with each cell being 90m long, 40m wide, 11m above ground level.
<b>Emergency overflow storage tank (underground)</b>	1 structure, 40m long and 40m wide and 3m below ground level.
<b>Chlorine Dosing Control Building</b>	1 structure, 40m long, 40m wide and 8m above ground level.
<b>Duration of construction</b>	Four years and ten months between site establishment and demobilisation.
<b>Permanent access</b>	A new access road, 5m in width and approximately 340m in length, is proposed to be constructed off the R120 regional road, and adjacent to the western and northern perimeter of Peamount Hospital.
<b>Temporary access</b>	The permanent access road will also be used during the construction of the TPR.
<b>Permanent fencing</b>	The TPR site boundary will be fenced with a stock proof fence and a 2.4m high palisade security fence 3m inside the boundary. Landscape planting, such as hedgerows, will be used to break up and soften the appearance of the fencing
<b>Temporary fencing</b>	See Section 7 – Construction.
<b>Power Supply</b>	The power supply for the TPR will be provided from the existing Uisce Éireann 40MI service reservoir facility, adjacent to the site. The Control Building will also have solar panels over part of the roof.

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Termination Point Reservoir	Details
<p><b>Landscaping and reinstatement</b></p>	<p>The reservoirs will appear in the landscape as an earth embankment and will have wildflower planting over the top of the tanks and on top of the Control Building (known as a green roof)</p> <p>Additionally, areas of mosaic planting and hedgerows will be used to soften the visibility of buildings, to break up the perceived size of the site and to blend it with the surrounding landscape.</p>
<p><b>Operation</b></p>	<p>The TPR site will have three functions during operation:</p> <ul style="list-style-type: none"> <li>• The TPR will store treated water temporarily until it is needed to meet demand.</li> <li>• It will be used to manage variations in demand. For example, peaks in the morning before people go off to work / school and when they return home in the evening.</li> <li>• The quality of the water will be monitored at the TPR and chlorine levels will be maintained using a dosing system to ensure the water is safe to drink.</li> </ul> <p>The TPR will be controlled remotely and only operate during higher flows. Operatives will only be needed on site occasionally for routine maintenance.</p>

## 4. Flow Control Valve

29. In addition to the Infrastructure Sites there will be a FCV. This is summarised in Table 4.1.

Table 4.1: Summary of the key features of the Flow Control Valve

Flow Control Valve	Details
<b>Location</b>	The FCV will be approximately 5km west of the Termination Point Reservoir at Newtown in County Kildare.
<b>Relevant County</b>	Kildare.
<b>Permanent land take for the Infrastructure Site</b>	0.4ha.
<b>Land take for permanent access</b>	There will be no additional land take for permanent access.
<b>Total permanent land take</b>	0.4ha
<b>Additional temporary land take for construction</b>	0.4ha
<b>Additional temporary land take for construction of the access</b>	0.1ha
<b>Total temporary land take for construction</b>	0.9ha
<b>Tallest structure</b>	2.5m high for the control kiosks.
<b>Site Infrastructure</b>	<p>The FCV site will consist of three 700mm diameter FCVs and three flow meters installed in parallel with the Line Valve, housed within an underground chamber.</p> <p>Two other kiosks at the FCV site will be housed the control Programmable Logic Controller, telemetry and the actuators for the Line Valve.</p>
<b>Duration of construction</b>	The FCV will be built as part of the construction of the pipeline.
<b>Permanent access</b>	Access will be directly off the L1016 Commons Road Upper.
<b>Temporary access</b>	The permanent access road will also be used during the construction of the Proposed Project.
<b>Permanent fencing</b>	The BPT site boundary will be fenced with a stock proof fence and a 2.4m high palisade security fence 3m inside the boundary.
<b>Temporary fencing</b>	See Section 7 – Construction.
<b>Power Supply</b>	Power supply to the FCV site will be provided by from the existing network via a combination of overhead lines and buried cables routed to a control kiosk on the site. In addition on-site renewable energy will be provided from ground mounted solar panels.
<b>Landscaping and reinstatement</b>	The FCV site will feature an area of wildflower planting, around the access road and pond, covering areas not used for the running of FCV.

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Flow Control Valve	Details
<b>Operation</b>	The FCV provides the flow control to ensure the BPT does not overflow or empty. It also facilitates the means to shut-off the water arriving at the TPR and to ensure, for example, that the capacity of the storage at the TPR is not exceeded.

## 5. Ancillary Pipeline Features

30. To operate and maintain the pipeline there will be additional permanent infrastructure along the length of the pipeline. These are referred to as Ancillary Pipeline Features. Table 5.1 summarise the design of Ancillary Pipeline Features include valves, line valves, lay-bys and power supply.

**Table 5.1: Summary of the Ancillary Pipeline Features**

Pipeline Features and Ancillary Infrastructure	Description
<b>Line Valves</b>	<p>Line Valves will be installed along the length of the pipeline to enable sections of appropriate lengths to be isolated, and drained for maintenance purposes during the Operational Phase. They will also be used to commission the pipeline.</p> <p>Line Valves are buried with only small control kiosks visible at the surface. At the surface there will be a cover on a raised plinth.</p> <p>They may be operated either locally or remotely from the WTP control room and require a permanent power supply from the Mains network.</p> <p>There will be approximately 50 Line Valves.</p>
<b>Washout Valves</b>	<p>Washout Valves will be located at every low point along the pipeline. 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. Even then, the Washout Valves will only be used to drain short sections of pipeline, which cannot otherwise be drained to either end of the pipeline section due to the topography.</p> <p>There will be around approximately 200 Washout Valves.</p>
<b>Air Valves</b>	<p>Air Valves will be located at high points along the pipeline to release any accumulated air during normal operation and to prevent vacuum pressures from forming by admitting air into the pipeline when emptying sections of the pipeline for maintenance.</p> <p>There will be approximately 300 Air Valves.</p>
<b>Kiosks</b>	<p>Each Line Valve location will incorporate an above-ground kiosk directly over the valve for the actuator. Two smaller kiosks beside the layby will contain the power, control, isolation and telemetry.</p>
<b>Laybys</b>	<p>At Line Valve locations adjacent to roads, laybys will be constructed to facilitate safe parking of vehicles and safe working during planned periodic maintenance of the Line Valves.</p>
<b>Cathodic Protection</b>	<p>As well as internal and external protective coatings, the steel pipeline will be protected against corrosion by a remotely monitored Cathodic Protection system. An impressed-current Cathodic Protection system involves placing a very low continuous voltage (one or two volts) on to the pipeline which can be continuously monitored by the Supervisory Control and Data Acquisition system. This alerts the operators of changes in system current 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.</p>

## 6. Future Connections

31. In accordance with the Eastern and Midlands Plan provision has been made for take-off points at strategic locations between the WTP and TPR. These facilitate future connections to supply communities in the Midlands without disruption to the ongoing operation of the pipeline. The connecting downstream pipelines and associated infrastructure will be delivered by Uisce Éireann through separate projects, that will be subject to their own separate consenting processes. The proposed take-offs are summarised in Table 6.1.

**Table 6.1: Summary of the Take-offs**

Summary of Take-Offs	Details
<b>Take Off Points</b>	<p>Tee pieces will be installed on the Pipeline between the BPT and the TPR at strategic Take-Off Points, that could be used in the future to supply areas of local demand in the Midlands. The take-offs are installed with double isolation valves. This will allow these locations to be connected to the Proposed Project at a later stage with no disruption to the operation of the Proposed Project.</p> <p>There will be five take-offs proposed at the following locations:</p> <ul style="list-style-type: none"> <li>• WTP access road in Birdhill, County Tipperary for Newport / Killaloe.</li> <li>• At the R491 in Newtown, County Tipperary for North Tipperary / Newtown.</li> <li>• At the L6052 in Rathrobin, County Offaly for Tullamore / Mountbolus.</li> <li>• At the R400 in Ballyhugh, County Offaly for Mulligar.</li> <li>• TPR at Peamount, South Dublin for the Greater Dublin Area.</li> </ul>

## 7. Construction

32. In order to build the Proposed Project there will be a five year construction programme that will include a phased delivery of works from site clearance and establishment through to testing and commissioning. Table 7.1 summarises the key features of the construction of the project.

**Table 7.1: Summary of Construction**

Construction Compounds and Pipe Storage Depots	Details
Principal Construction Compounds	<p>The Principal Construction Compounds will act as the appointed Contractor’s central strategic (operational) hub for plant/material/worker movement, general storage, administration, logistical support, technical (design) staff, etc.</p> <p>It has been determined, from experience and from consideration of the space requirements for management and welfare facilities, plant storage, vehicle parking and traffic circulation, that approximately 12ha of land-take will be needed for each Principal Construction Compound</p> <p>There will be four Principal Construction Sites. These will be located:</p> <ul style="list-style-type: none"> <li>• In the townland of Incha Beg, County Tipperary within the Water Treatment Plant Site (CC1).</li> <li>• In the townland of Lisgarrieff, County Tipperary (CC2).</li> <li>• In the townland of Killananny, County Offaly (CC5).</li> <li>• In the townland of Drummond, County Kildare (CC6).</li> </ul>
Satellite Construction Compounds	<p>Satellite Construction Compounds will be required at specific locations between the Principal Construction Sites due to the sustained period of work at each of these locations. They will also improve efficiency in the movement of plant, worker and materials, minimising traffic to and from Principal Construction Compounds.</p> <p>There will be four Satellite Construction Sites. These will be located:</p> <ul style="list-style-type: none"> <li>• Raw Water Intake and Pumping Station Site (CC0).</li> <li>• Break Pressure Tank site (CC3).</li> <li>• Booster Pumping Station site (CC4).</li> <li>• Termination Point Reservoir sites (CC7).</li> </ul>
Pipe Storage depots	<p>Pipe Storage Depots will be used to take direct delivery of the pipe for storage before onward journey to the required location along the pipeline. They avoid the need to deliver the sections of pipe to a construction compound and then re-distribute them along the length of the works.</p> <p>It has been determined that a land take requirement of the order of 2ha for a Pipe Storage Depot site is suitable.</p> <p>There will be capacity for pipe storage within the Construction Compounds; specific Pipe Storage Depots are only proposed where necessary to support construction between the compounds. Construction Compound CC1 (the WTP) will provide sufficient storage of pipe for the RWRMs. Pipe Storage Depots are required to augment those Principal Construction Compounds, namely CC2 (Lisgarrieff), CC5 (Killananny) and CC6 (Drummond), which will serve the installation of pipe between the WTP and the TPR.</p>



Construction Compounds and Pipe Storage Depots	Details
	<p>There are nine Pipe Storage Depots Proposed.</p> <ul style="list-style-type: none"> <li>• Pipe Storage Depot (PSD1) at Carrigatogher, County Tipperary, will be located in an area of farmland accessed directly off the R445 Regional Road.</li> <li>• Pipe Storage Depot (PSD2) at Toora, County Offaly, will be located in an area of farmland, which will be accessed directly off the L4022 Local Road.</li> <li>• Pipe Storage Depot (PSD3) at Boveen, County Offaly, will be located in an area of farmland accessed directly off the N62 National Secondary Road.</li> <li>• Pipe Storage Depot (PSD4) at Fortel, County Offaly, will be located in an area of farmland off L4004 Local Road between the R421 Regional Road and the R440 Regional Road.</li> <li>• Pipe Storage Depot (PSD5) at Derrinboy, County Offaly, will be located on agricultural land adjoining the Construction Working Width.</li> <li>• Pipe Storage Depot (PSD6) at Derryweelan, County Offaly, will be located in an area of forestry with relatively flat topography.</li> <li>• Pipe Storage Depot (PSD8) at Rathlumber, County Offaly, will be located in an area of relatively flat agricultural land south-west of Edenderry.</li> <li>• Pipe Storage Depot (PSD9) at Graiguepottle, County Kildare, will be located in an area of agricultural land south of Kilcock.</li> <li>• Pipe Storage Depot (PSD10) at Barberstown Upper, County Kildare, will be located in an area of agricultural land north of Straffan.</li> </ul>
Working hours	<p>Proposed typical working hours during the Construction Phase will be 0700-1900 Monday to Friday, and 0800-1630 on Saturdays.</p> <p>It will be necessary to complete certain tasks outside of these hours to cut the amount of time roads are closed for, including trenchless and open cut crossings, and the movement of exceptional loads.</p>
Number of workers	<p>The number of workers on site will vary but will be up to 200 at each infrastructure site and the construction compounds across the Proposed Project.</p>
Haul Roads	<p>Haul Roads are parts 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.</p> <p>They have been determined by 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).</p>
Temporary Construction Roads	<p>Temporary Construction Roads will be constructed within the Construction Working Width to facilitate the movement of plant, workers and materials. These roads are formed by stripping the topsoil and upper level of subsoil and then laying a formation layer and geogrid mattress and stone.</p>
General Working Width	<p>A Construction Working Width will be temporarily required for the period of construction of the RWRMs, the Pipeline between the WTP and the BPT, and the pipeline between the BPT and the TPR. It will generally be 50m in width but will be locally wider near features such as crossings, access and egress points from the public road network and Construction Compounds and Pipe Storage Depots.</p>

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Construction Compounds and Pipe Storage Depots	Details
Earthworks	<p>Initially, topsoil will be stripped across the required site area to its full depth, as determined by an Agronomist, and records will be kept of the depths stripped in each of the parcels of land. Topsoil typically has a depth of between 150mm and 400mm across the Construction Compounds and Pipe Storage Depots depending on the rooting depth of the plants growing there. The upper level of subsoil, typically 300mm to 400mm in depth, will also be stripped across the site area. Soil stripping will be carried out during favourable weather conditions when the soil is drier and more friable. Soil handling will be avoided during periods of persistent rainfall.</p> <p>Topsoil and subsoil will not be mixed and will be stored in separate stockpiles positioned within designated areas. Typically, the stockpiles will be up to 4m in height. A minimum separation distance of at least 1m will be kept between heaps of topsoil and subsoil to prevent cross contamination.</p> <p>Construction of the pipelines will generally not take place on agricultural lands during conditions when the soil is more likely to be frozen or saturated. Preparatory works such as pre-construction surveys, the removal of sections of hedgerow for pipeline crossings, demarcation of the Construction Working Width with wayleave fencing, establishing construction access to the Construction Working Width, installing pre-construction drainage, and other advanced works such as pipeline installation by trenchless construction techniques at major crossings may take place during these periods to allow the pipelines to be constructed efficiently.</p>
Construction Sequence	<p>The typical construction sequence for the pipeline will be:</p> <ul style="list-style-type: none"> <li>• Fence the temporary working area.</li> <li>• Remove vegetation and strip topsoil.</li> <li>• Install temporary drainage and if required, divert existing drainage.</li> <li>• Build temporary access track within the temporary construction area.</li> <li>• Lay out sections of the pipeline and welding together.</li> <li>• Excavate the trench for the pipe.</li> <li>• Lift pipe sections into the trench and weld sections together.</li> <li>• Low pressure air test on installed sections.</li> <li>• Backfill sections of installed pipe, (excluding e.g valves).</li> <li>• Install Air Valves, Washout Valves and chambers.</li> <li>• Pressure test the pipe.</li> <li>• Install Line Valve infrastructure including power supply.</li> <li>• Complete backfilling of trench.</li> <li>• Remove surface water interceptor drains and re-instate land drains.</li> <li>• Re-instate subsoil/ topsoil.</li> <li>• Sow grass seed and re-instate hedgerows.</li> <li>• Remove fencing and hand-back to landowner.</li> <li>• Testing and commissioning of the pipeline.</li> </ul>
Working in peat	<p>For sections of the pipeline that will pass through areas of peat, specific construction methodologies have been developed. These include the use of temporary floating roads during construction, additional temporary drainage, specific requirements for handling excavated materials and the reinstatement of drainage in accordance with the site drainage prior to construction.</p>
Drainage	<p>Generally, the Construction Compounds and Pipe Storage Depots will be pervious as they are overlain in stone, which will allow surface water to percolate through to the underlying subsoil, as happens currently, and to maintain the existing drainage pattern. Those areas with impervious pavement will be graded to a fuel/oil separator for collection of any surface water runoff contaminants.</p>

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Construction Compounds and Pipe Storage Depots	Details
	<p>The sites will include refuelling and plant servicing areas. These will be impermeable, bunded and will incorporate a forecourt separator for any potential spillages which may occur during vehicle refuelling and road tanker delivery.</p>
Temporary lighting	<p>Lighting will be provided for all circulation areas (vehicle and pedestrian) within the Construction Compounds and Pipe Storage Depots. Task lighting will also be provided as required along the length of the construction working area.</p>
Temporary Fencing	<p>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.</p> <p>Where access across the Construction Working Width is required by landowners to facilitate activities on the lands, access gates will be provided.</p> <p>The Construction Compounds and Pipe Storage Depots will be bounded by a 2.4m high hoarding fence on all sides. A 2m tall sound barrier, typically a noise reduction tarpaulin affixed to the rear elevation of the hoarding, will be installed to reduce noise levels. Fencing adjacent to public roads will not typically incorporate the sound barrier.</p>
Reinstatement features	<p>On completion of the Proposed Project, all temporary works facilities will be removed, and the sites reinstated to their pre-existing condition This means the reinstatement of vegetation post-construction on a like for like basis, wherever reasonably practicable and subject to restrictions within the 20m permanent wayleave. Linear features will also be reinstated, including hedgerows and fence lines.</p> <p>There will be some planting restricted over the permanent wayleave, as roots of large trees could damage the pipe. Therefore, species which grow to larger than this will not be reinstated above the pipeline.</p>