UISCE ÉIREANN : IRISH WATER

Water Supply Project

Eastern and Midlands Region

Appendix H

Termination Point Reservoir Site Selection

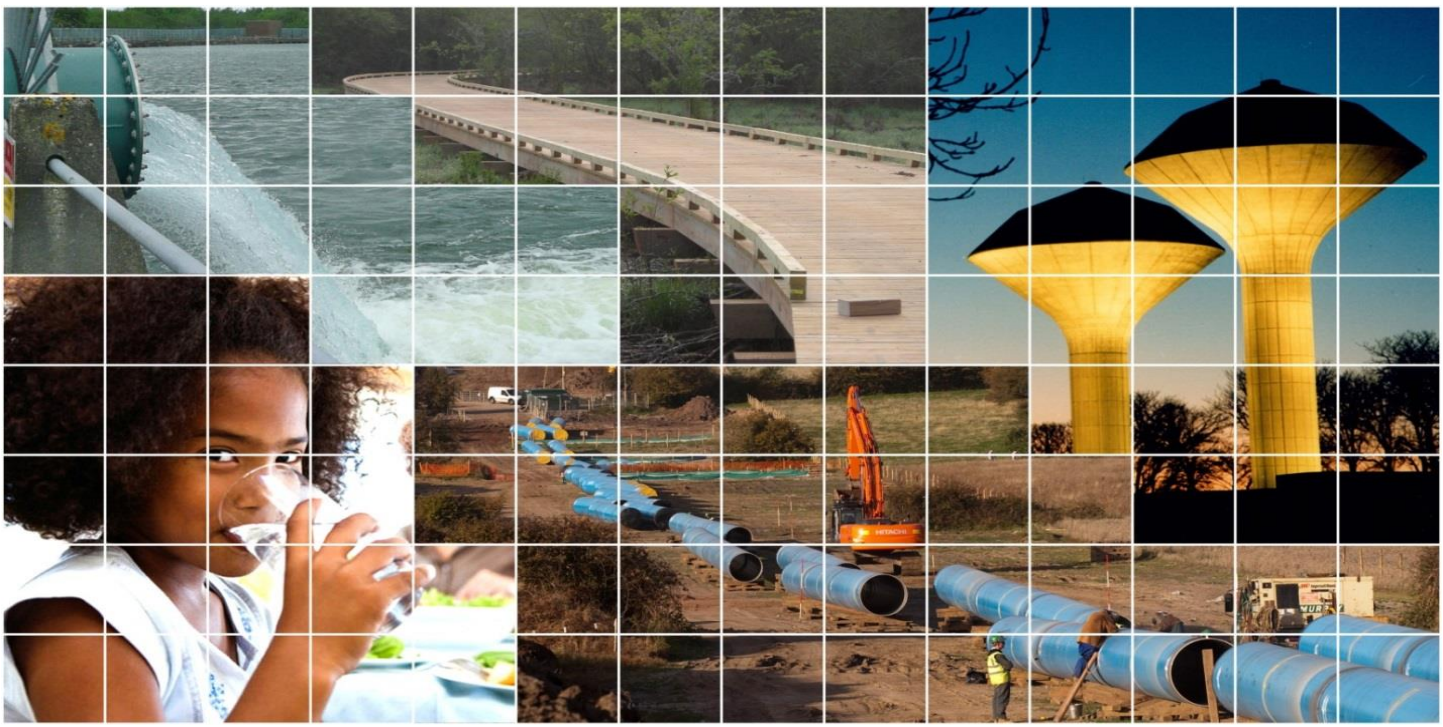
Water Supply Project, Eastern and Midlands Region

Irish Water

Final Options Appraisal Report – Non Linear Infrastructure Siting

Appendix H Termination Point Reservoir Site Selection

November 2016



Contents

1. Termination Point Reservoir Siting – Process Summary

Option C (Parteen Basin Reservoir Direct) has been confirmed as the Preferred Scheme on environmental grounds, on cost-benefit grounds, and in terms of meeting the fundamental objectives of the Water Services Strategic Plan and of the WSP itself; refer to Section 9 of the Final Options Appraisal Report (FOAR).

The Preferred Scheme will comprise a number of constituent components of infrastructure that collectively make up the water supply system (Figure 1.1). These can broadly be defined as:

> Non – Linear Infrastructure, including the Raw Water Abstraction Works, Water Treatment Plant, Break Pressure Tank and Termination Point Reservoir (FOAR Section 11) and
>
> The Transmission Pipeline (Linear Infrastructure) – refer to FOAR Section 12.

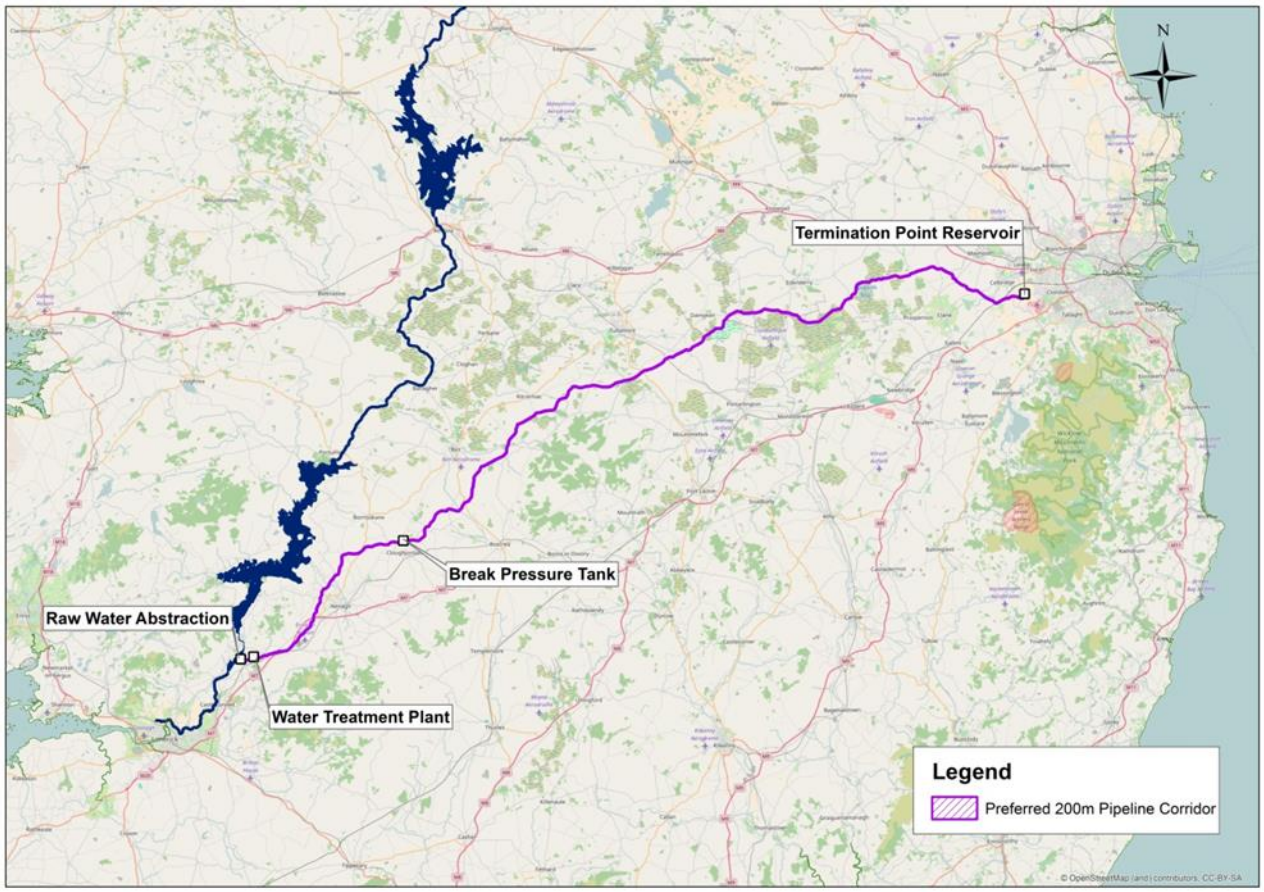


Figure 1.1 The Transmission Pipeline (Linear Infrastructure) and Other (Non – Linear Infrastructure)

FOAR Sections 11 and 12 outline how the different siting options for these components were developed to minimise impact on their environment; Appendices E to H detail the appraisal of these site and route options. They set out multi-criteria analyses (MCA) of the options available, to identify a preferred site for each component from the multiple sites considered (FOAR Section 11), and to identify the preferred pipeline route corridor in a similar way (FOAR Section 12), with recommendations on preferred sites and pipeline routes.

The process of multi-criteria analysis is outlined in the FOAR Section 11.1.

The non – linear infrastructure components comprise the followings assets:

Intake and Raw Water Pumping Station (FOAR Section 11.3 and Appendix E)

Abstraction of raw water will be from the Lower Lake (Parteen Basin) via a submerged pipeline or open channels, which will extend a relatively short distance out into the basin. The abstraction works will incorporate a raw water pumping station which will deliver raw water to the proposed water treatment plant.

Water Treatment Plant (FOAR Section 11.4 and Appendix F)

The water treatment plant will treat the raw water from Parteen Basin to Drinking Water Standards for human consumption in accordance with relevant legislation. The water treatment plant will also incorporate a high lift pumping station to deliver treated water to a Break Pressure Tank.

Note: The transmission pipeline is discussed in FOAR Section 12 and Appendix I.

Break Pressure Tank (FOAR Section 11.5 and Appendix G)

A Break Pressure Tank (BPT) will be located at the highest elevation of the transmission pipeline and is required to manage the water pressures that will be generated in the operation of the transmission pipeline. The tank is the point at which the transmission line will change from a pumped to a gravity flow. In practice, treated water will be pumped from the water treatment plant to this tank, and the water will flow by gravity from the tank to the termination point reservoir. It will act as a balancing tank for pumped flows, e.g. from the WTP, it will help to limit variability in operating pressures, and it will provide sufficient storage such that there is adequate reserve flow to maintain the on-going pipe full after the pumps have stopped or tripped.

Termination Point Reservoir (FOAR Section 11.6 and this Appendix H)

Located at the end of the transmission pipeline, the Termination Point Reservoir (TPR) acts as storage facility for the treated water; providing capacity to serve the varying demand profile of the Dublin Water Supply Area. The TPR will be integrated with the existing water distribution system (FOAR Section 11.7) at Peamount in south Dublin, ensuring onward transmission to end users.

This Appendix H describes the multi criteria analysis (MCA) process used to appraise a **Least Constrained Termination Point Reservoir (TPR)**.

Multi criteria analysis (MCA) is a mechanism that explicitly considers multiple criteria within a decision-making environment. The fundamental approach is to utilise Specialist expertise to conduct the analysis. Comparing alternatives against multiple objectives and criteria through MCA allows for a collective balancing of different impact types, understanding of the merits of each option, and the establishment of a preference ranking, in a collective way; informing and justifying the decision making process.

For the MCA the following specialisms and disciplines were involved:

i. Ecology – the consideration of impact on animals, plants and their environment.

ii. Water – the consideration of impacts on the surface water environment.

iii. Air and Noise - the consideration of air and noise pollution

iv. Cultural Heritage - the consideration of existing archaeological and built heritage

v. Soils, Geology and Hydrogeology – the consideration of impact on soils, geology and hydrogeology.

vi. Landscape and visual – the consideration of landscape and visual impact.

vii. Agronomy – the consideration of impact on land based enterprise.

viii. People – the consideration of impacts on people

ix. Planning – the consideration of planning and land use policy in relation to proposed works

x. Engineering - the consideration of technical challenges associated with proposed works.

xi. Traffic - the consideration of impact on traffic and road network

The following methodology was employed:

1. Each of the specialist disciplines (identified above) assessed the site options against the criteria of Table 1-1 to determine the site option for each ancillary component with the overall least impact from their specialist perspective.

2. The preliminary position of each Specialist, on each ancillary component, presented in matrix format, was collated for each of the ancillary components and presented at a workshop where all the Specialists were represented.

3. In this workshop setting, the matrix of preliminary individual assessments for each individual component was presented to the collective specialist group. The position of each of the specialists was then discussed to reach a consensus of agreement on a preferred site for each main infrastructure component, from the various alternatives.

A breakdown of the criteria employed by each of the specialisms is presented in Table 1-1.

Table 1-1 Applicable Criteria for each Specialism

Specialism	Applicable Criteria
Ecology	Biodiversity, Flora and Fauna, Fisheries
Air and Noise	Air/Climatic Factors
Cultural Heritage	Cultural Heritage (including Architecture & Archaeology)
Soils, Geology and Hydrogeology	Soils, Geology and Hydrogeology
Landscape and visual	Landscape & Visual
Agronomy	Material Assets (Land use)
Water	Water
Engineering	Material Assets (Energy), Safety, Engineering and Design, Capital and Operational Cost, Sustainability
Planning	Planning Policy
People	Tourism, Population, Human Health

The Specialists, in completing the MCA, also incorporated feedback from the POAR consultation process, primarily to establish if the process had identified any new information which needed to be included in the assessment process for relevant individual specialists. This was to establish if the consultation submissions contained additional information relevant to the MCA and to determine any impact on the individual assessments, or collective arrangements facilitated by the workshop setting.

1.1.1 Categories of impact

A simple classification was used for the MCA - one of five categories of impact were applied to each of the locations under consideration; colour coded for ready identification. These were:

Very high	Dark blue
High	Blue
Mid-range	Green
Low	Light Green
Very low	Cream

1.2 Preliminary Site

The 'reservoir' is a critical piece of infrastructure within the water supply and distribution system, where clean water is stored after it has been treated in a water treatment plant, and before it is delivered to the end users. Its main purpose is to provide a buffer within the water supply system so that water supplies can be maintained across periods of varying demand.

The 'reservoir' is the termination point for the WSP. As the main population centre in the Eastern and Midlands Region, the nation's capital defines a significant proportion of the need within the region, and the focus for identifying a suitable site for the 'reservoir'.

The dynamic, and balance, between hydraulic engineering and whole life cycle costs indicates that it would be preferable for the termination point site to be in an elevation range of between 70m and 80mOD. The POAR identified Peamount as the preferred site for the location of a Termination Point Reservoir (TPR).

The proposed TPR will be integrated with the existing facility at Peamount. To facilitate this integration, maintain system performance and operational flexibility, a termination point at Peamount would reflect the existing levels of the existing reservoir which has a top water level (TWL) of 87.5m. In addition, facilities adjacent to each other, or in close proximity, can benefit from less complex control systems, and minimise extent of likely construction 'footprint'. On the basis of the foregoing a single location for the TPR site was identified; see Figure 1.2.

Figure 1.2 Termination Point Reservoir Site (Peamount, south Dublin)

1.3 MCA of Preliminary Sites

The assessment of the proposed site adjacent to the existing facility at Peamount in south Dublin, by Specialist assessment, is presented Table 1-2.

Table 1-2 Matrix of Multi-Criteria Analysis

Ref	Criteria	TPR
1.0	**Environmental ***	
1.1	**Biodiversity, Flora & Fauna (Terrestrial)**	
1.1.1	Potential to impact on Natura 2000 Sites	N/A - no connectivity
1.1.2	Potential to impact on Natural Heritage Areas and proposed Natural Heritage Areas	N/A - no connectivity
1.1.3	Potential impact Annex I listed habitats (designated)	N/A - No Natura 2000 connectivity. Surveys identify GA1 / modified habitats
1.1.4	Potential impact Annex I listed habitats (non-designated)	N/A - Surveys identify GA1 / modified habitats

1.1.5	Potential to impact high ecological value habitats (semi natural habitats)	Site lies within anthropogenically modified habitat, improved grassland dominates. No access for detailed survey at this point
1.1.6	Potential to impact on protected Flora - Flora Protection Order	Site lies within anthropogenically modified habitat, improved grassland dominates. No access for detailed survey at this point
1.1.7	Potential to impact on Annex II species	N/A - human disturbance, modified habitat, no connectivity to high value semi-natural habitat
1.1.8	Potential to Impact on Annex IV species (wherever they occur)	Annex IV listed bat species may utilities the site for foraging; however, in the absence of suitable connectivity it is evaluated as sub-optimal.
1.1.9	Potential to impact on the breeding / wintering habitat for Annex I listed and other qualifying interest bird species	Breeding bird activity identified as low, Annex I species not recorded. Wintering bird surveys not conducted but potential for significant impacts evaluated as very low due to site location and character.
1.1.10	Potential to impact flora and fauna protected under Wildlife Act e.g. Birds, badger	Badger may forage on the site; potential for a dwelling exists. Modified habitat, potential for FPO / rare flora very low. Survey access not permitted to date
1.1.11	Potential to impact on salmonid habitat - protected under SI Regulations	N/A - no connectivity to aquatic habitats, no pathways to effects on aquatic receptors
1.1.12	Potential to impact on a freshwater pearl mussel - protected under SI Regulations	N/A - no connectivity to aquatic habitats, no pathways to effects on aquatic receptors
1.1.13	Potential to impact upon high quality aquatic habitat for protected aquatic species.	N/A - no connectivity to aquatic habitats, no pathways to effects on aquatic receptors
1.1.14	Potential to impact on coastal zone habitats (intertidal)	N/A - no connectivity to coastal / marine habitats. No potential for effects on coastal / marine receptors
1.1.15	Potential to impact on marine habitats (e.g. Subtidal)	N/A - no connectivity to coastal / marine habitats. No potential for effects on coastal / marine receptors
1.1.16	Potential to impact marine/coastal birds	N/A - no connectivity to coastal / marine habitats. No potential for effects on coastal / marine receptors
1.1.17	Potential to impact marine mammals	N/A - no connectivity to coastal / marine habitats. No potential for effects on coastal / marine receptors
1.2	**Biodiversity, Flora & Fauna (Aquatic)**	
1.2.1	Potential to impact on Natura 2000 Sites	N/A - no aquatic connectivity to Natura 2000 sites
1.2.2	Potential to impact on Natural Heritage Areas and proposed Natural Heritage Areas	N/A - no aquatic connectivity to NHA / pNHA sites
1.2.3	Potential impact Annex I listed habitats (designated)	N/A - no aquatic connectivity to Natura 2000 sites
1.2.4	Potential impact Annex I listed habitats (non-designated)	N/A - no aquatic connectivity to high value aquatic habitats aligning with Annex I
1.2.5	Potential to impact high ecological value habitats (semi natural habitats)	N/A - no aquatic connectivity to high value aquatic habitats
1.2.6	Potential to impact on protected Flora - Flora Protection Order	N/A - no aquatic connectivity to high value aquatic habitats potentially supporting FPO flora

1.2.7	Potential to impact on Annex II species	N/A - no Annex II aquatic species occur
1.2.8	Potential to Impact on Annex IV species (wherever they occur)	N/A - no Annex IV aquatic species occur
1.2.9	Potential to impact on the breeding / wintering habitat for Annex I listed and other qualifying interest bird species	N/A - no aquatic Annex I birds or aquatic supporting habitat occurs
1.2.10	Potential to impact flora and fauna protected under Wildlife Act e.g. Birds, badger	N/A - no protected aquatic flora or fauna occurs
1.2.11	Potential to impact on salmonid habitat - protected under SI Regulations	N/A - no connectivity to aquatic habitats, no pathways to effects on aquatic receptors
1.2.12	Potential to impact on a freshwater pearl mussel - protected under SI Regulations	N/A - no connectivity to aquatic habitats, no pathways to effects on aquatic receptors
1.2.13	Potential to impact upon high quality aquatic habitat for protected aquatic species.	N/A - no connectivity to aquatic habitats, no pathways to effects on aquatic receptors
1.2.14	Potential to impact on coastal zone habitats (intertidal)	N/A - no connectivity to coastal / marine habitats. No potential for effects on coastal / marine receptors
1.2.15	Potential to impact on marine habitats (e.g. Subtidal)	N/A - no connectivity to coastal / marine habitats. No potential for effects on coastal / marine receptors
1.2.16	Potential to impact marine/coastal birds	N/A - no connectivity to coastal / marine habitats. No potential for effects on coastal / marine receptors
1.2.17	Potential to impact marine mammals	N/A - no connectivity to coastal / marine habitats. No potential for effects on coastal / marine receptors
1.3	**Fisheries**	
1.3.1	Potential to impact on water quality and inshore fishing grounds based on regional fisheries datasets.	N/A - no connectivity to aquatic habitats, no pathways to effects on aquatic receptors

1.3.2	Potential to impact on transient protected marine species (cetaceans and salmonids), which may pass through the affected area within the survey area footprint.	N/A - no connectivity to coastal / marine habitats. No potential for effects on coastal / marine receptors
1.4	**Water**	

1.4.1	Potential to support the objectives of the WFD water bodies. - Potential to impact on the water quality, hydromorphology of a WFD water bodies of "good" or higher status. - Potential to impact on a WFD Annex IV - Protected Areas: A) Waters used for the abstraction of drinking water - Potential to impact on a WFD Annex IV - Protected Areas: B) Areas designated to protect economically significant aquatic species - Potential to impact on a WFD Annex IV - Protected Areas: C) Recreational Waters - Potential to impact on a WFD Annex IV - Protected Areas: D) Nutrient Sensitive Areas - Potential to impact on a WFD Annex IV - Protected Areas: E) Areas designated for the protection of habitats or species (Ecology Scope)	There are no identified constraints with the TPR Site. There are no water bodies within the boundary or within 100m of the site.
1.4.2	Area prone to flooding (PRFA/SCFRAMs) and predicted flood extents within and adjacent to the site. - Proximity to water bodies in terms of flooding and as an indicator of sensitive surface water receptors.	No known fluvial flooding within 100m of the site
1.5	**Air/Climatic Factors**	
	NOISE	
1.5.1	Potential for Construction phase noise impact at Sensitive receptors	Approximately 60m from site boundary to nearest Hospital receptor.
1.5.2	Potential for Operational phase noise impact at Sensitive receptors	Approximately 60m from site boundary to nearest Hospital receptor.
1.5.3	Existing Ambient Noise Climate in the Area (significant noise sources)	Hospital set back from regional road. Existing ambient and background noise expected to be fairly quiet (to be confirmed)
1.5.4	Construction Phase Impact rating	High (but manageable with consideration of mitigation and good practice construction methods).
1.5.5	Operational Phase Impact rating	Mid to High Range. Depending on the Operational Phase Plant Items proposed and their associated noise ratings

	AIR	
1.5.6	Potential for Construction phase Air Quality impact at Sensitive receptors	Approximately 60m from site boundary to nearest Hospital receptor.
1.5.7	Potential for Operational phase Air Quality impact at Sensitive receptors	Approximately 60m from site boundary to nearest Hospital receptor.
1.5.8	Proximity to EPA Waste Licensed facility	Site is approximately 2km north of EPA Waste Licensed Facilities in Greenogue Business Park
1.5.9	Proximity to EPA IPPC Licensed Intensive Agriculture facility	No EPA IPPC Licensed Intensive Agriculture Facilities in the Area
1.5.10	EPA Air Quality Zone Classification	Zone A
1.5.11	Wind Rose Assessment	Westerly Prevailing Wind. Average Wind Speed of 5.5 m/s over period 1981- 2010 (Casement Aerodrome)
1.5.12	Construction Phase Impact rating	Mid-Range
1.5.13	Operational Phase Impact rating	Very Low
1.6	**Material Assets (Energy)**	
1.6.1	Potential for energy recovery	N/A
1.7	**Cultural Heritage (including Architecture & Archaeology)**	
1.7.1	Potential to impact (direct/indirect) on National Monuments (designated sites)	**Very low** - none present within the receiving environment
1.7.2	Potential to impact (direct/indirect) on RMPs (designated sites)	**Very High** - portion of an enclosure located within the site
1.7.3	Potential to impact (direct/indirect) on RPS (designated sites)	**Mid-range** - Four structures within Peamount complex are protected (90-150m ESE)
1.7.4	Potential to impact (direct/indirect) on NIAH	**Mid-range** - Four structures within Peamount complex are protected (90-150m ESE)
1.7.5	Potential to impact (direct/indirect) on historic designed landscapes	**Low** - site partially located within highly denuded former demesne landscape
1.7.6	Potential to impact on ACA	**Very low** - none present within the receiving environment

1.7.7	Recorded shipwreck sites	**Very low** - none present within the receiving environment
1.8	**Landscape & Visual**	
1.8.1	Potential to impact on designated areas of 'Highly Sensitive Landscape'	**Very Low** - General rural land use zoning
1.8.2	Potential to impact on rare or distinctive landscape elements (rock outcrops, water bodies etc.)	**Very Low** - no distinctive landscape elements identified
1.8.3	Potential to disrupt landscape structure (treelines / hedgerows / field pattern etc.)	**Low** - Large fields defined by hedgerows
1.8.4	Potential to impact on woodlands and significant tree groups	**Very Low** – Canal-side vegetation the most notable vegetation pattern
1.8.5	Potential to impact on historic designed landscapes	**Very Low** - Does not appear to be any designed landscapes in this area
1.8.6	Potential to alter the prevailing landscape character	**Low** - Although predominantly rural this is a transition urban fringe area. County Development Plan (CDP) policies promote rural land use and enhancement
1.8.7	Potential to impact on designated scenic routes / views	**Very Low** - Some distant views from designations in Dublin Mountains
1.8.8	Potential to impact on views from heritage/tourist/amenity features of national or regional importance	**Mid-Range** - Grand canal adjacent to the north
1.8.9	Potential to impact on views from settlements	**Mid-Range** - Rural fringe of Dublin City
1.8.10	Potential to impact on views from dwellings / local roads	**Low** - Sparsely populated rural area despite proximity to western suburbs of Dublin
1.8.11	Potential to impact on views from motorways	**Very Low** - None in the vicinity
1.8.12	Potential to impact on views from other major roads (national or regional roads)	**Mid-Range** - R120 adjacent to the south-east
1.8.13	Potential to impact on views from rail lines	**Low** - National rail line to Limerick passes <1km to the north and west
1.8.14	Potential to impact on arrival views from Airports including aerial approach and vehicular egress	**Low** - Casement Aerodrome approximately 1.5km south-east but not a tourist airport

1.8.15	Potential to impact on views from national 'way marked' walking routes	**Mid-Range** - Grand Canal Way
1.8.16	Potential to impact on local walks	**Mid-Range** - Grand Canal utilised as a local walking amenity
1.8.17	Potential to impact on views from angling or swimming locations (rivers, lakes, sea)	**Low** - Fishing and swimming not particularly popular along this section of Grand Canal but it is utilised by barges
1.8.18	Potential that landscape screening measures will be ineffective or incongruous	**Very Low** - Screen planting can be assimilated into prevailing vegetation patterns and built development
1.9	**Material Assets (Land use)**	
1.9.1	Land take	10ha
1.9.2	Farming Enterprise	Tillage
1.9.3	Number of landowners impacted within site boundary	1
1.9.4	Land Quality	Good
1.9.5	Severance based on site location within overall land holdings	Individual farm impact to be evaluated when exact site location decided
1.9.6	Potential Impacts on landholdings	Loss of land, possible severance and injurious affection
1.9.7	Crop rotation practiced	Yes rotated annually.
1.9.8	Overall Impact	**Low** impact-slight at national level
1.10	**Tourism**	
1.10.1	Potential to impact on known tourism amenities/facilities or Tourism Hotspots located within 1km from site boundary.	The Grand Canal is located approximately 750m north of the proposed termination point reservoir site. No other known tourism amenities/ facilities or tourism hotspots located in the area.
1.11	**Population**	
	PEOPLES & COMMUNITIES	
1.11.1	Number of residential & commercial buildings 300-500m from site boundary	Approximately no. 5 residential receptors located as well as approximately 3 commercial receptors within 500m
1.11.3	Potential to impact on known community amenities and facilities within 1km from site boundary.	Peamount Hospital Dublin (approximately 160m south), Newcastle Golf Course (approximately 400m east) and an existing fresh water reservoir (approximately 80m east) are located adjacent to the proposed WSP termination point reservoir.

1.11.4	Potential to impact on areas of Significant Population Densities	Site location for the proposed WSP termination point reservoir is not located close to any significant centres of population densities.
1.12	**Human Health**	
1.12.1	Human Health	Regardless of plant siting, all plant would be operated within appropriate safeguards i.e. permissions and licences with respect to human health to ensure that there are no significant health risks to the population.
1.13	**Soils, Geology and Hydrogeology**	
1.13.1	Aquifer Classification - importance of the groundwater resource to a given area	Locally important
1.13.2	Vulnerability Classification - potential for groundwater contamination	High Vulnerability
1.13.3	GSI Groundwater Protection Response matrix	N/A
1.13.4	Groundwater Supplies - identification of water supply springs and bored wells based on GSI, EPA and FCC records	None identified
1.13.5	Groundwater Source Protection Area's and Zones of Contribution as per available GSI & EPA data	None identified
1.13.6	Potential to impact on Geological Heritage Sites / County Geological Sites	None identified, All are >1km from Terminal
1.13.7	Potential to interact with contaminated land	None identified
1.13.8	Potential to sterilise mineral resource	N/A
1.13.9	Potential to encounter shallow bedrock during construction (interactions with other disciples during construction - noise, dust etc)	Depth to Bedrock (DTB)<3m
1.13.10	Potential impact on karst features	None identified
1.13.11	Potential to encounter soft ground	None identified
1.13.12	Soils Types	BminDW
1.13.13	Sub Soil Types	TLs
1.13.14	Depth to rock	Estimated <3m
2.0	**Technical ****	
2.1	**Safety**	
	TRAFFIC	

2.1.1	Length of access road required	Alternative access is likely to be required. Construction traffic could access via the pipeline corridor.
2.1.2	Number of crossings required for access road	N/A
2.1.3	Potential Impact on landowners	High impact to Hospital of close running construction traffic adjacent to hospital grounds. Possible restrictions due to sensitivity of location (Traffic Noise etc.)
2.1.4	Works required to provide safe access entrance	Alternative new access is likely to be required
2.1.5	Potential impact on surrounding local road network	No details of Local Road Traffic Volumes or potential construction and operational traffic volumes
2.1.6	Frequency of accidents near entrance	No Details
2.1.7	Frequency of accidents on surrounding network (indication of general road safety issues)	No Details
2.1.8	Road link impacted upon by all construction traffic (excluding major routes i.e. R132/N32)	Local Road
2.1.9	Construction Risk	Local road is narrow; pavement condition may be poor for construction traffic volumes. Haul route is likely to be Local Road to R120, R120 to N7 - total distance is 9.3 km. Alternative is to M4 but it is unlikely that all construction traffic can utilise the motorway due to restrictions. If no restrictions in place, then approximately 8km travel distance. With traffic passing through suburban area of Lucan This route will see construction traffic pass through an urban/residential area (Newcastle)
2.2	**Planning Policy**	
2.2.1	Planning Policy	South Dublin County Development Plan 2016-2022
2.2.2	Existing Land Use	Agricultural
2.2.3	Zoning	RU- 'to protect and improve rural amenity and to provide for the development of agriculture' Objective for the future expansion of the EE Economic and Enterprise zoning to these lands.

2.2.4	Local Objectives	Long Term Road Proposal **C11 SLO 1** *'to support and facilitate the appropriate future development of Peamount Healthcare for rehabilitation and continuing care facilities'* **ET3 SLO 1** *'to conduct a review of the zoning of lands south of the Grand Canal and west and north of the R120, including lands adjoining Peamount Healthcare, with a view to preparing a long term plan for the expansion of the Grange Caste Economic and Enterprise Zone to this area, to accommodate strategic investment in the future, while also seeking to provide public open space along the Canal, including a natural heritage area in the vicinity of the historic canal quarries at Gollierstown'.*
2.2.5	Other local objectives	**TA** *'to provide for traveller accommodation'.*
2.2.6	Land Uses present in the vicinity	Baldonnel / Casement Airport. Weston Airport. Newcastle Village Adamstown SDZ Clonburris SDZ Grange Castle Business Park
2.2.7	Zoning present in the vicinity	Rural / Agricultural Economic and Enterprise Residential
2.2.8	Local objectives in the vicinity	Baldonnel / Casement Airport noise zone. Weston Airport conical approach zone Consultations with Department of Defence and Irish Aviation Authority necessary
2.3	**Engineering and Design**	
2.3.1	Hydraulic requirements	Top Water level (TWL) to reflect the operating TWL of the existing reservoir in Peamount, i.e. 87.5m OD for ease of integration, system performance and operational flexibility
2.3.2	Constructability	Can be readily integrated with the landscape - construction footprint on a gentle incline.
2.3.3	Land Access	New access road may be required to access the site. There is a permanent access to the existing facility, in the ownership of the adjoining hospital, which would be suitable for use once the site was operational, assuming permissions were in place. The permanent access would not be suitable for construction. Access for construction could be facilitated via the works associated for the incoming transmission pipeline. To be investigated further.
2.4	**Capital and Operational Costs**	
2.4.1	CAPEX	€55M

2.4.2	OPEX	< €50k per annum

1.4 Preferred Site

A comparison of the three BPT site locations is presented in Table 1-3. For ease of reference the colour legend is repeated as follows:-

Impact Category	Colour Code
Very high	Dark blue
High	Blue
Mid-range	Green
Low	Light Green
Very low	Cream

Table 1-3 – MCA – TPR Site

Constraint	TPR Site 1
Ecology	
Surface Water	
Air Quality	
Noise	
Cultural Heritage	
Landscape and Visual	
Agronomy	
People	
Soils, Geology & Hydrogeology	
Planning Policy	
Traffic	
Engineering & Design	
Overall Ranking	**N/A**

The MCA assessment confirmed that the proposed TPR site was a suitable location.

There are a number of additional benefits:

a) A supply to Peamount maximises the natural topography to bring water from the WTP; limiting the requirement for boosting of flows through other means, i.e. pumping plant;

b) The topography of Peamount allows a TPR site at this location to be readily integrated into its environs;

c) A site at Peamount facilitates integration with both the existing water distribution system, and future proposals being planned by Irish Water in the Dublin Water Supply Area.

2. Screening to Identify Preliminary Sites

The POAR identified Peamount as the preferred site for the location of a Termination Point Reservoir (TPR); see Section 1.2.

2.1.1 Identification of TPR Site

The proposed TPR will be integrated with the existing facility at Peamount. To facilitate this integration, maintain system performance and operational flexibility, a termination point at Peamount would reflect the existing levels of the existing reservoir which has a top water level (TWL) of 87.5m. In addition, facilities adjacent to each other, or in close proximity, can benefit from less complex control systems, and minimise extent of likely construction 'footprint'.

On the basis of the foregoing a single location for the TPR site was identified; see Figure 1.1.

The ground, where the TPR is proposed to be sited, is gently sloping from east to west (see Figure 2.1); and could be readily integrated into its environs similarly to the existing facility.

Figure 2.1 –TPR Site Elevation Map

2.1.2 Appraisal of BPT Site

The identified TPR site was subject to MCA analysis.

The TPR Site lies in agricultural land between the Grand Canal to the north and the Grange Industrial/Business Park to the east. To the southeast is Peamount Hospital with Casement Aerodrome a short distance beyond.

(i) Ecology

The site is evaluated as being of local ecological importance (lower value) comprising improved grassland and tillage within an agricultural and anthropogenically modified landscape. No semi-natural habitats were identified,

with the exception of hedgerows and treelines in the wider surrounding lands. There are no Annex I habitats or potential Annex I habitats located at the site.

No signs of rare or protected flora or fauna were identified and the site is not connected to high value, semi-natural habitat in the wider study area. Annex IV listed bat species may utilise this site for foraging; however, in the absence of suitable connectivity it is evaluated as sub-optimal.

The site was identified as having low breeding and wintering bird value. Survey access has not been permitted to date and wintering bird surveys have not yet taken place, but potential for significant impacts have been evaluated as low due to the site location and character. Potential for flora protected under the Wildlife Act 1979 (Amendment 2000) to exist is also expected to be very low. Badgers however, may forage on the site and the potential for a dwelling exists.

There is no connectivity to salmonid or freshwater pearl mussel watercourses or no potential effects on coastal or marine receptors at the site. The potential for significant impacts on sensitive ecological receptors is evaluated as being ‘very low’.

(ii) Aquatic Ecology

There is no surface water or groundwater associated features within the site. There are no connections or pathways for impacts on aquatic or water-dependant habitats or species in the wider study area. No aquatic Annex II or Annex IV species occur at the site, nor Annex I water birds or aquatic supporting habitat.

There is no connectivity to salmonid or freshwater pearl mussel watercourses or no potential effects on coastal or marine receptors at the site. The potential for significant impacts affecting aquatic ecological receptors is evaluated as ‘very low’.

(iii) Surface Water

There are no identified constraints with the site. There are no water bodies within the boundary or within 100m of the site.

(iv) Air Quality

The focus of the assessment consisted of determining the potential for dust emissions to occur during the construction phase of the proposed development. Receptors which are closer to the site, have a higher risk of experiencing dust impacts during the construction phase, as there is unlikely to be any significant impacts to occur during the operational phase. The proposed site is approximately 60m from the site boundary of the nearby Peamount Hospital. As the site is at a close distance to the hospital, dust mitigation must be employed during the construction phase to ensure that no significant impact occur at the hospital.

(v) Noise

The focus of the assessment consisted of determining the potential for noise/vibration emissions to occur during the construction and operational phase of the proposed development. Receptors which are closer to the site have a higher risk of experiencing noise/vibration impacts during the construction/operational development phases. The site lies approximately 60m from the site boundary to the nearest sensitive receptor.

(vi) Cultural Heritage

There is one recorded enclosure located approximately 80m west-northwest of the footprint of the proposed reservoir. A number of protected structures and National Inventory of Architectural Heritage structures are located within the hospital complex to the immediate southeast. The development has the potential to have a mid-range impact on these sites, which will be significantly lessened should the reservoir be constructed at grade. The reservoir is also partially located within a highly denuded demesne landscape formerly associated

with Peamount House. The potential impact here is deemed to be low due to the loss of character – the landscape has been subsumed back into agricultural use.

(vii) Landscape and Visual

Overall the Peamount location is considered to be relatively robust in terms of landscape and visual constraints. The main consideration is its proximity to the Grand Canal and the associated 'Grand Canal Way' along its towpath, which is a national 'way-marked' walking route. The canal tends to be strongly contained by embankments and vegetation along this section. With considered siting and mitigation screen planting of the termination point infrastructure it is not envisaged that proximity to the Grand Canal is a critical landscape and visual factor for this location

Whilst there is potential for some mid-range visual impacts from surrounding residential receptors, the R120 regional road and Peamount Hospital, this is an urban fringe location already characterised by substantial industrial / business park buildings in the near vicinity to the east. Again, potential visual impacts can be substantially mitigated by considered site design and screen planting that will assimilate readily with surrounding vegetation structures. Significant landscape and visual impacts are not envisaged at this site.

(viii) Agronomy

a) Farm Enterprise

The site is currently in tillage and is intensively farmed. There are no farm buildings located within the site boundary. The site area encompasses a number of large fields.

b) Number of Landowners impacted within the site boundary

According to folio data supplied by the land registry one land owner will be impacted within the site boundary.

c) Land Quality

According to the EPAs Soil Classification of Ireland, the soils in the region consist in the main of a fine loamy drift with limestones. The soils are particularly suited to grassland and tillage. The soils are suitable for a wide variety of uses and are highly productive. The land quality would be considered good quality land.

d) Crop Rotation Practised

The land is in tillage and crop rotation is practised. The land is used for crop production and it is likely that crops are rotated on yearly basis.

(ix) People

The site is located to the north-west of Peamount Hospital, next to an existing reservoir facility on the north-eastern boundary of the hospital campus grounds. There are also a number of residential (approximately 10) and commercial (approximately 3) receptors in the vicinity of the hospital campus as well the communal amenity of Newcastle Golf Centre to the east. The site itself consists of vacant green field/agricultural land, similar to the land use to the north-west.

(x) Soils, Geology and Hydrogeology

The site has been mapped[1] as shallow, well drained, mineral soil, derived mainly from calcareous parent materials and belonging to the soil groups Grey Brown Podzolics, Brown Earths (BminSW).

[1] Information regarding the soil classifications was obtained from the EPA web-mapping site, containing soil information from the Teagasc/EPA soil & subsoil mapping project.

The vulnerability of site is classified as 'High' and 'Extreme' Vulnerability based on the GSI data. The bedrock map indicates that the site is underlain by Dinantian Upper Impure Limestones. There are no geological heritage sites or source protection zones located within 1 km of the site. The nearest geological heritage site, the Newcastle Buried Channel is located 2 km to the south of the location. The site is a green field site with low potential for encountering contamination. There are no active quarries or pits on or immediately adjacent to the site.

(xi) Planning Policy

Land Use Zoning

The site is located in an area currently zoned RU *'to protect and improve rural amenity and to provide for the development of agriculture'.* It is in close proximity to lands zoned for Enterprise and Employment related uses. Casement (Baldonnel) Airport and Newcastle Village, as well as Adamstown and Clonburris SDZ's are all within the vicinity of the proposed location.

Local Objectives

There is a Long Term Road Proposal in the South Dublin County Development Plan 2016-2022 which passes to the west and north of the site. There is a specific Local Objective on the adjacent lands at Peamount Hospital (C11 SLO 1) '*to support and facilitate the appropriate future development of Peamount Healthcare for rehabilitation and continuing care facilities'.*

Adjacent lands to the east of the proposed site carry local objective ET3 SLO 1 '*to conduct a review of the zoning of lands south of the Grand Canal and west and north of the R120, including lands adjoining Peamount Healthcare, with a view to preparing a long term plan for the expansion of the Grange Caste Economic and Enterprise Zone to this area, to accommodate strategic investment in the future, while also seeking to provide public open space along the Canal, including a natural heritage area in the vicinity of the historic canal quarries at Gollierstown'.*

Other Objectives

Other local objectives in the vicinity of the site include TA *'to provide for traveller accommodation'.*

Weston Airport is located to the north and the site is located within the conical approach zone of the airport. The proposed location is within the noise boundary of Casement Aerodrome.

(xii) Traffic, Engineering and Design

The site is located to the north of the Peamount Hospital grounds along the R120 regional road in Smithfield, Co. Dublin. The area is accessed via a series of regional roads with connectivity to the N7 national route to the south, the M50 motorway to the east and the M4 motorway to the north.

The site is currently accessed via an existing Peamount Hospital entrance. Alternative access is likely to be required for the TPR site during construction. This requirement is likely to result in construction traffic being routed to site via the local road network. It is envisaged that construction traffic will be required to travel from the N7 to the site via the R120 and the local road network. This will result in an approximate travel distance of 9 km. Construction traffic will be required to negotiate the urban area of Newcastle and turn right from the R120 onto the R120 at a raised table junction situated on Main Street, Newcastle fronting St. Finian's Church.


UISCE
ÉIREANN : IRISH
WATER