

# Greater Dublin Drainage

## Alternative Sites Assessment - Phase One Preliminary Screening Outcomes Report

October 2011

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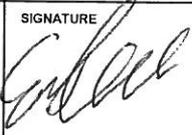
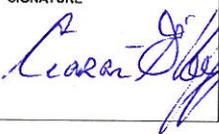
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### Appendix One – Constraints Consultation

# Document control sheet

P 04 F8

Client: Fingal County Council  
 Project: Greater Dublin Drainage Job No: 32102900  
 Document Title: ASA Stage 1: Preliminary Screening Outcomes Report

	Originator	Checked by	Reviewed by	Approved by
<b>ORIGINAL</b>	NAME Emma Delaney	NAME Ciarán O’Keeffe	NAME Jillian Bolton	NAME Graham McInally
DATE October 2011	SIGNATURE 	SIGNATURE 	SIGNATURE 	SIGNATURE 
<b>Document Status-</b>				
<b>REVISION</b>	NAME	NAME	NAME	NAME
DATE	SIGNATURE	SIGNATURE	SIGNATURE	SIGNATURE
<b>Document Status</b>				
<b>REVISION</b>	NAME	NAME	NAME	NAME
DATE	SIGNATURE	SIGNATURE	SIGNATURE	SIGNATURE
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## Glossary

ASA	Alternative Sites Assessment
EPA	Environmental Protection Agency
FEM FRAMS	Fingal East Meath Flood Risk Assessment and Management Study
GIS	Geographical Information System
GDA	Greater Dublin Area
GDD	Greater Dublin Drainage
GSDS	Greater Dublin Strategic Drainage Study
NHA	Natural Heritage Areas
PE	Population Equivalent
RMP	Record of Monuments and Places
RPS	Record of Protected Structures
SAC	Special Areas of Conservation
SEA	Strategic Environmental Assessment
SNR	Statutory Nature Reserve
SPA	Special Protection Areas
WFD	Water Framework Directive
WWTP	Wastewater Treatment Plant

# 1 Introduction

## 1.1 Title

The official name of the project is *Greater Dublin Drainage – Regional Wastewater Treatment Plant, Marine Outfall & Orbital Drainage System*

## 1.2 Core Requirements

The core requirement of the Greater Dublin Drainage project is to safely deliver through the entire planning process a:

- Regional Wastewater Treatment Plant (WWTP) and associated marine outfall located at a site, to be selected as part of this process, in the northern part of the Greater Dublin Area (GDA), and
- an Orbital Drainage System linking the Regional WWTP to the existing regional sewer network and to provide for future connections for identified developing areas within the catchment

## 1.3 Client

The Client is Fingal County Council as the Contracting Authority on behalf of Meath, Kildare, Dun Laoghaire / Rathdown and South Dublin County Councils and Dublin City Council.

## 1.4 Project Engineering Consultant

Following a competitive tender process Jacobs Engineering Ireland Ltd. supported by TOBIN Consulting Engineers was appointed to act as Project Engineering Consultant on this project with formal signing of Contract on the 14<sup>th</sup> March 2011.

## 1.5 Project Communications Consultant

Following a competitive tender process RPS Project Communications was appointed by FCC to act as Project Communications Consultant on this project.

## 1.6 Previous Reference Studies

- Greater Dublin Strategic Drainage Study (GDSDS) completed in April 2005, and
- Strategic Environmental Assessment of the Greater Dublin Strategic Drainage Study (SEA of GDSDS).

## 1.7 Project Stages

The Project is divided into a number of stages as follows:

- Sub – Stage (a): Project Inception
- Sub – Stage (b): Alternative WWTP Site Assessment (ASA) / Pipeline and Marine Routes Selection Report
- Sub – Stage (c): Preliminary Report (PR)
- Sub – Stage (d): Environmental Impact Statement (EIS)
- Sub – Stage (e): Wayleave / Land Acquisition
- Sub – Stage (f): Additional Reports
- Sub – Stage (g): Planning Stage
- Sub – Stage (h): Any Other Work

## 1.8 Commencement Date

The official commencement date of the project is set as the 14th March 2011.

## 1.9 Preliminary Screening Outcomes Report

This report completes Phase One of sub-stage (b): Alternative Sites Assessment (ASA) / Pipeline and Marine Routes Selection in accordance with the methodology detailed in Section 3.3 hereunder.

The objectives of the overall Alternative Sites Assessment (ASA) & Routes Selection sub-stage are to identify the following;

- The optimum location for the proposed Regional WWTP in North County Dublin;
- The optimum location for the treated effluent discharge to the Irish Sea including the route of the outfall pipeline connection to the WWTP; and
- The optimum routes of the Orbital Drainage System connecting existing drainage networks to the proposed Regional WWTP, including trunk/branch sewer connections, and any necessary pumping stations and storm water storage tanks.

The purpose of this ASA Phase One - Preliminary Screening is to identify a number of suitable land parcels within which a proposed Regional WWTP could potentially be located and to identify marine outfall locations and transfer pipeline corridors for associated infrastructure in the northern part of the Greater Dublin Area.

## 2 Study Area

The study area has been determined with reference to the Greater Dublin Strategic Drainage Study (GSDSDS) and the subsequent Strategic Environmental Assessment (SEA).

A key recommendation of the GSDSDS Final Strategy as amended by its SEA was for a single regional wastewater treatment plant (WWTP) to be located in North County Dublin with the treated effluent to be discharged to the marine environment of the Irish Sea.

The GSDSDS also made recommendations on the existing foul drainage catchments that should be diverted, either in full or in part, to the proposed regional WWTP.

These recommendations informed the initial selection of the study area, which included North County Dublin, the foul drainage catchments of Blanchardstown, the north city area (Finglas to Howth), the Lucan/Clondalkin foul drainage catchment in South County Dublin, the drainage catchment of Leixlip WWTP, and the County Meath towns of Ashbourne, Ratoath, Kilbride, Dunboyne, and Clonee.

The Study Area was then refined to omit the area north of Balbriggan following consideration of the topography in this area of north County Dublin, the location and extent of the Balbriggan/Skerries Shellfish Waters and the constraints imposed by these designated waters to locating a new marine outfall.

The study area is shown in Figure 2.1 included overleaf.

**Figure 2.1** *Greater Dublin Drainage Study Area*



## 3 Summary of Methodology

### 3.1 Introduction

The purpose of this ASA Phase One - Preliminary Screening is to identify a number of suitable land parcels within which a proposed Regional WWTP could potentially be located and to identify marine outfall locations and transfer pipeline corridors for associated infrastructure in the northern part of the Greater Dublin Area.

### 3.2 Guidance Documents

The Strategic Environmental Assessment of the Greater Dublin Strategic Drainage Study (SEA of GSDSDS) recommends that the Alternative Sites Assessment (ASA) be progressed to avoid significant environmental impact where possible through the selection of appropriate locations for the Regional WWTP, treated effluent outfall, and transfer pipeline corridors. It proposed that the ASA process be comprised of four distinct phases, as outlined in Section 3.3 of this report, and it also set out a range of technical and environmental criteria for the assessment of alternative sites. It recommended that a minimum of six potential sites should be identified.

Fingal County Development Plan 2011-2017 states the following in relation to wastewater treatment;

*'The lands adjoining the WWTP may be subject to an odour nuisance and it is deemed appropriate to establish a buffer zone around the plants. Given the size of the existing plants in Fingal, the nature of their locations, the prevailing winds and the risk of odour nuisance, a buffer zone of 100m should be established, measured from the odour producing unit within all WWTP. This buffer should apply to all new odour sensitive developments such as houses, schools, nursing homes. Developments which have non sensitive uses may be permitted within the buffer. Any new WWTP should establish a buffer zone suitable to the size and operation of the plant but should not be less than 100m from the odour producing units'* (Ref Section 4.2).

EPA Landfill Manuals: Manual on Site Selection (Draft for consultation) was published in December 2006. The purpose of this manual is to provide guidance on the selection of a landfill site. This document has been used for reference and provides guidance on identification of areas considered to be generally unsuitable for landfill and buffer zones for sensitive receptors. In relation to buffer zones and landfills it states that;

*'A distance of 250m between housing (and similar sensitive receptors) and a landfill footprint should be maintained for new 'greenfield' landfills that are handling potentially polluting/odorous wastes. In the case of inert waste used in development or restoration related activities/landfills - these waste recovery activities being generally short-term in operation and non-odorous/gas forming - the selection of an appropriate buffer will be a site-specific determination'* (Ref Section 6.6).

EPA Wastewater Treatment Manuals: Treatment Systems for Small Communities, Business, Leisure Centres and Hotels was published in 1999. Although this document is directed towards the siting of small waste water treatment systems, it has some

guidelines in relation to the distance that should be left between the location of a small WWTP and residential developments.

A methodology has been devised for this Report that uses the above reference documents, best practice, recent experience, and builds on all the aforementioned. The resulting methodology for the Preliminary Screening is considered to be a comprehensive approach.

### 3.3 Methodology

The ASA/Route Selection will be undertaken in accordance with the recommendations set out in the Strategic Environmental Assessment (SEA) on the GDSDS, which envisages a process comprising four distinct phases:

- Phase One: - Preliminary screening of the study area to identify a short list (minimum of 6 No.) of potential alternative land parcels of suitable size to accommodate the proposed Regional WWTP and also to identify marine outfall locations and potential transfer pipeline corridors.
- Phase Two: - Assessment of the short listed potential alternative land parcels, marine outfall locations and transfer pipeline corridors identified in Phase 1 against a range of environmental and technical criteria including but not limited to ecology, cultural heritage, landscape, air quality, climate, traffic, landuse, planning policy, engineering and design constraints, capital and operational costs.
- Phase Three: - Consultation stage during which the emerging preferred sites marine outfall locations and transfer pipeline corridors from Phase 2 will be taken to wider public consultation..
- Phase Four: - The selection of the preferred site, marine outfall location and transfer pipeline corridors based on the assessment findings (Phase 2) and consideration of submissions received during Consultation (Phase 3).

#### 3.3.1 Assessment Methodology for Phase One – Preliminary Screening

The Phase One – Preliminary Screening assessment was undertaken as a step by step process as set out below.

- Step 1 - Determine the required treatment capacity at design year horizon of the Regional WWTP and the load centres from which wastewater could be transferred to the WWTP;
- Step 2 - Determine the area of land required to accommodate the proposed Regional WWTP;
- Step 3 – Constraints Consultation with statutory bodies and general public to assist in the identification of constraints within the Study Area;
- Step 4 - Map potential constraints based on environmentally designated areas and other screening criteria and submissions received following the Constraints Consultation;
- Step 5 - Apply appropriate buffer zones to sensitive receptors;

- Step 6 - Examination of available residual lands not subject to constraints for land parcels of suitable size;
- Step 7 - Assess the identified land parcels with respect to Planning Permissions granted but not yet constructed in their vicinity;
- Step 8 – Examination of constraint mapping to identify areas not subject to constraints for the possible location for a treated effluent marine outfall and to identify potential transfer pipeline corridors
- Step 9 - Assess the identified land parcels in terms of their proximity and accessibility to the identified load centres, feasible outfall locations, and transfer pipeline corridors;
- Step 10 – Assessment of the remaining land parcels under high level defined engineering and design constraints; and
- Step 11 - Compile a shortlist of suitable land parcels and potential transfer pipeline corridors not subject to the constraints listed above.

The deliverable from the ASA Phase One – Preliminary Screening process is this ASA Phase One - Preliminary Screening Outcomes Report, which documents the preliminary screening process and compiles a short list of land parcels of suitable size within which the proposed Regional WWTP might be located and identifies potential marine outfall locations and transfer pipeline corridors to take forward for detailed assessment under a range of environmental and technical criteria in Phase Two of the ASA methodology.

## 4 Preliminary Screening Process

### 4.1 Introduction

In progressing the Alternative Sites Assessment (ASA) the preferred mitigation approach is through avoidance of impact on human beings and the environment where possible. Therefore a key step in the selection process was to identify areas which met this preferred mitigation approach by 'screening out' areas considered undesirable for the location of a Regional WWTP and to progress with the selection of appropriate locations for further consideration from the residual available lands.

Therefore, the identification of areas to be 'screened out' is a very important part of the selection process in enabling the narrowing down of the detailed study area to a reasonable number of areas. These will, by virtue of the pre-screening process, comply with the constraints which define the screening layers.

It must be emphasised that areas that have been screened for this particular project have been used to aid in selecting generally suitable areas for location of a Regional WWTP and have no legal status preventing future development in these areas.

Whilst this Preliminary Screening Report considers site requirements for the plant size at the design year horizon of 2040, the plant is likely to be constructed on a phased or modular basis based on actual loading, short term development loads and availability of funding for each phased expansion.

### 4.2 Step 1 - Capacity of the Regional WWTP & Identification of Load Centres

It is anticipated that the proposed Regional WWTP will be required to have a treatment capacity in the order of 700,000 population equivalents (P.E.) by the design year horizon of 2040.

This required treatment capacity has been determined in the context of the newly defined ceiling (2.1 million PE) on treatment capacity to be provided at Ringsend WWTP and the requirement to divert load away from Ringsend WWTP when this ceiling on treatment capacity is reached.

The Greater Dublin Strategic Drainage Study (GDSDS) as amended by its Strategic Environmental Assessment (SEA), recommended the diversion of wastewater from the northern and western areas of the Ringsend catchment to the proposed Regional WWTP. It also proposed connections from Kildare, Swords and Malahide when the wastewater load in these areas exceeds the installed or planned capacity of their respective WWTPs.

Analysis of the existing and future projected wastewater loads in the Study Area has indicated that:

- the required load diversions from the Ringsend Catchment would be satisfied at all stages up to year 2040 (the design year horizon) by diverting the total wastewater load generated in the Route 9C (Blanchardstown) Catchment, and the North Dublin Catchment to the proposed Regional WWTP.

- Post 2040 it may be necessary to divert additional wastewater loads from the Ringsend Catchment and this requirement could be satisfied by diverting wastewater load generated in the Route 9B (Lucan/Clondalkin) Catchment of South Dublin to the Regional WWTP
- When the installed or planned treatment capacity at their respective wastewater treatment plants is exceeded diversions would also be required from:
  - Upper Liffey Valley (Osberstown WWTP) Catchment in Kildare,
  - Lower Liffey Valley (Leixlip WWTP) Catchment in Kildare, and
  - Swords and Malahide Catchments in Fingal

The Route 9C (Blanchardstown) Catchment and the North Dublin Catchment have been designated as the primary load centres for the proposed Regional WWTP with the other noted catchments designated as secondary load centres. The location of these load centres is illustrated in Figure 4.1.

### 4.3 Step 2 – Area of Land Required for Regional WWTP

In order to contain all the necessary unit processes for a treatment plant of the required capacity, a site of approximately 16 hectares would be required to accommodate the proposed Regional WWTP.

In order to provide:

- flexibility in the final selection of the treatment process to be utilised;
- to allow consideration of the possible integration of Fingal's Sludge Hub Centre with the Regional WWTP;
- to provide sufficient space to adequately construct and screen the site; and
- to ensure flexibility regarding purchase of the required land;

parcels of land c. 20 hectares in area were sought. Any land parcels smaller than this, were screened out as potential areas in which to site the proposed Regional WWTP.

### 4.4 Step 3 – Constraints Consultation

Constraints Consultation was undertaken with statutory bodies and the general public to assist in the identification of constraints. Issues raised during this consultation period and submissions received were considered as part of Step 4: Mapping of Constraints. Details of the submissions received are discussed further in chapter 5 of this report.

**Figure 4.1 Load Centres**



## 4.5 Step 4 – Mapping of Constraints

Mapping of potential constraints was carried out for the entire study area. This was a desk based process with all constraints mapped within the projects Geographical Information System (GIS). This approach allows areas considered undesirable for the location of the Regional WWTP by virtue of the preferred mitigation strategy to be identified at an early stage in the siting process and screened out from further consideration. The areas containing constraints were identified under the following headings;

- Ecology;
- Cultural Heritage;
- Geology;
- Water;
- Landscape; and
- Sensitive Receptors

Details of each of the areas containing constraints are provided below.

### 4.5.1 Ecology

Sites designated for their nature conservation interest under European and Irish legislation including Natural Heritage Areas (NHA), proposed Natural Heritage Areas (pNHA), Special Protection Areas (SPA), Special Areas of Conservation (SAC), candidate SAC (cSAC) and RAMSAR Convention on Wetlands were mapped and these areas were screened out from further consideration.

Other areas of ecological value and protected areas such as designated shellfish waters, Nature Reserves, Annex 1 Habitats, Refuge for Fauna, Tree Preservation Orders Flora Protection Orders and Parks Biodiversity Buffer Designations/Nature Development Areas were also mapped and screened out as potential locations for the Regional WWTP. The mapping compiled from these ecological constraints is illustrated in Figure 4.2.

### 4.5.2 Cultural Heritage

Designated cultural heritage sites such as National Monuments, archaeological sites as identified in the Record of Monuments and Places (RMP), structures listed in the Record of Protected Structures (RPS), sites as identified in the Fingal Coastal Archaeological Inventory and Architectural Conservation Areas have also been mapped and screened out from further consideration as potential locations for the Regional WWTP. A buffer zone of 250m was applied to National Monuments to signify their importance. The mapping compiled from these cultural heritage constraints is illustrated in Figure 4.3.

### 4.5.3 Geology

The Geological Survey of Ireland identified sites of geological importance in the County and recommended their protection as County Geological Sites. Some of these sites may be designated, in due course, as Natural Heritage Areas (NHAs) because of their geological interest from a national perspective. Therefore Geological Heritage Sites were mapped and screened out from further consideration as potential locations for the Regional WWTP. Geological Heritage sites are illustrated in Figure 4.4.

#### 4.5.4 Water

In order to avoid significant direct and indirect impacts on protected water bodies, Salmonid Waters, designated SAC, SPA, and NHA areas, recreational waters, designated bathing waters, designated nutrient sensitive waters, designated shellfish waters and aquifers designated as extremely vulnerable were mapped and screened out of further consideration for siting the Regional WWTP.

Areas which are at risk from fluvial and tidal flooding as mapped by the Fingal East Meath Flood Risk Assessment and Management (FEMFRAM) Study were also included in the project GIS system and screened out of further consideration as potential locations for the Regional WWTP.

Protected water bodies and areas at risk from flooding are illustrated in Figure 4.5.

#### 4.5.5 Landscape

'Highly Sensitive Landscapes' are defined within the Fingal area and details of these have been included in the Fingal County Development Plan 2011-2017. It is stated in this Development Plan that these highly sensitive areas have a low capacity to absorb new development and that it is a challenge to locate new development in these areas without it becoming unduly obtrusive (Ref Section 5.4 Fingal County Development Plan 2011-2017).

Although landscape design measures would be employed to provide effective screening, it was decided at this stage to include Highly Sensitive Landscapes as a screening constraint and these areas were therefore screened out from further consideration.

Highly Sensitive Landscapes are shown in Figure 4.6. Particular protected views and routes will be assessed during Phase Two of the ASA.

#### 4.5.6 Sensitive Receptors

To aid in the identification of all sensitive receptors, residential and commercial dwellings, GeoDirectory digital data was utilised. This provides the grid coordinates and use of each postal address within the study area. Each residential and commercial dwelling as identified by GeoDirectory was mapped.

As well as commercial and residential dwellings, it was ensured, in so far as possible that known odour sensitive receptors, which included schools, hospitals, nursing homes, places of worship, graveyards, prisons, education facilities, sports clubs and facilities, childcare facilities, historical sites/buildings and museums were mapped.

#### 4.6 Step 5 – Application of appropriate Buffer Zone to Sensitive Receptors.

The Fingal County Development Plan states that *'Given the size of the existing plants in Fingal, the nature of their locations, the prevailing winds and the risk of odour nuisance, a buffer zone of 100m should be established, measured from the odour producing unit within all WWTP. This buffer should apply to all new odour sensitive developments such as houses, schools, nursing homes. Developments which have non sensitive uses may be permitted within the buffer. Any new WWTP should establish a buffer zone suitable to the size and operation of the plant but should not be*

*less than 100m from the odour producing units'* (Ref Section 4.2 Fingal County Development Plan 2011-2017).

A buffer zone of 300m from the centrepoin of sensitive receptors was applied. This dimension conservatively exceeds the Development Plan minimum distance requirement from the nearest receptor of 100m and is considered to meet the requirements of the guidance documents referred to in Section 3.2. As the proposed Regional WWTP will be significantly bigger than the existing treatment plants in Fingal a buffer suitable to its size and operation has been applied.

The principal purpose of this buffer was to identify suitable land parcels for a potential Regional WWTP site at the greatest possible distance from sensitive receptors, thereby minimizing the potential impact on these sensitive receptors. This buffer is only for the purposes of this study and has no statutory or other weight.

Sensitive receptors complete with buffer zone as applied are illustrated in Figure 4.7.

**Figure 4.2 Ecological Constraints**



**Figure 4.3 Cultural Heritage Constraints**



**Figure 4.4 Geological Constraints**



**Figure 4.5** *Protected Water Bodies and Areas at Risk from Flooding*



**Figure 4.6** *Highly Sensitive Landscapes*



**Figure 4.7 Sensitive Receptors**



## 4.7 Step 6 – Examination of Available Residual Lands

Completion of Steps 1 through 5 of the preliminary screening process ensured that potential constraints were identified in their entirety, mapped within the project GIS system and screened out of further consideration as part of this process. The mapping of these combined constraints is illustrated in Figure 4.8.

Step 6 of the preliminary-screening process entailed an examination of the available residual lands not subject to the constraints outlined above for land parcels of suitable size to accommodate the proposed Regional WWTP. A total of 22 such land parcels were identified. The land parcels so identified are all in excess of the 20 hectares required.

All identified land parcels are listed by Townland name in Table 4.1 and their location is shown in Figure 4.9

**Table 4.1 List of Identified Land Parcels**

<b>Clonshagh</b>	<b>Cloghran</b>
<b>Westereave</b>	<b>Saucerstown</b>
<b>Cookstown</b>	<b>Bellinstown</b>
<b>Baldurgan</b>	<b>Mainscourt</b>
<b>Annsbrook</b>	<b>Newtowncorduff</b>
<b>Rathartan</b>	<b>Tyrelstown Little</b>
<b>Pickardstown</b>	<b>Kingstown</b>
<b>Cherryhound</b>	<b>Kilsallaghan</b>
<b>Moortown</b>	<b>Barnanstown</b>
<b>Knockaneek</b>	<b>Jordanstown</b>
<b>Charstown</b>	<b>Adamstown</b>

**Figure 4.8 Preliminary Screening Constraints**



**Figure 4.9** *Locations of Potential Land Parcels*



## **4.8 Step 7 – Assessment of Identified Land Parcels with respect to Planning Permissions Granted.**

Planning applications within the last five years, as advised by Fingal County Council during September 2011, and which are in close proximity to the potential land parcels identified from Part Two of the Site Pre Screening Process (Section 4.5) were examined and the same buffer zone as sensitive receptors was applied. This ensured that any development covered by a planning application granted by Fingal County Council within the last five years and not yet constructed is subject to the same protection as other sensitive receptors.

Two of the identified land parcels, Kingstown and Pickardstown, were screened out from further consideration at this stage due to extant permissions, which when the buffer zone was applied to them reduced the size of the available land such that they were now of insufficient size to accommodate the proposed Regional WWTP.

## **4.9 Step 8 – Identification of Potential Locations for Transfer Pipelines & Marine Outfalls**

### **4.9.1 Marine Outfalls**

Examination of the marine and coastal zone constraint mapping mapped under Step 4 above identified that significant constraints are posed to the location of a new marine outfall off the coast of North County Dublin by designated shellfish waters – the Balbriggan/Skerries Shellfish Area and the Malahide Shellfish Area. These designations are provided for under the Shellfish Waters Directive and are to protect and improve shellfish waters in order to support shellfish life and growth.

The undesignated areas between these shellfish waters and to the south of the Malahide Shellfish Area have been identified as potential areas for the location of a new marine outfall.

Potential Marine Outfall locations are illustrated on Figure 4.10 and 4.11.

The selection of the optimum location for the marine outfall within these areas will be facilitated through a 3D hydrodynamic modelling process of the proposed outfall as part of Phase Two of the ASA process.

### **4.9.2 Routing of Transfer Pipelines**

The transfer pipelines (the orbital sewers) will transfer untreated effluent from the primary and secondary load centres to the proposed Regional WWTP. Treated effluent will be discharged to the Irish Sea via a transfer pipeline from the WWTP to the marine outfall location.

Routing of the transfer pipelines considers how to link the main load centres to the outfall locations via the potential WWTP sites while minimising the construction impacts on ecology, cultural heritage, geology, water, landscape and humans.

**Figure 4.10** *Locations of Potential Areas for a Marine Outfall (Northern Outfall)*



**Figure 4.11** *Locations of Potential Areas for a Marine Outfall (Southern Outfall)*



## 4.10

### **Step 9 – Assessment of Identified Land Parcels with respect to proximity to Load Centres, Transfer Pipeline Corridors and Feasible Outfall Locations**

A topographical map of north County Dublin was applied, as a background layer, to the 20 remaining land parcels as illustrated in Figure 4.12. A desk based review, visual survey and assessment of each land parcel in terms of proximity and accessibility to the identified load centres, transfer pipeline corridors and outfall locations was then undertaken. Each land parcel is described below in terms of location, size, elevation, surrounds and access with a summary of the assessment findings provided.

#### **Area 1 – Clonshagh**

##### **Location**

This land parcel is located primarily in the townland of Clonshagh, approximately 2.5km east of Dublin Airport and 1.3km north of Belcamp and Darndale and has a total area of 40ha. The lands slope in a west-east direction with a central elevation of approximately 42.3mOD.

##### **Surrounds**

This land parcel is located in agricultural land. The N32 is approximately 0.5km from the southern boundary and the Clonshaugh Road and the M1 motorway are running approximately 0.4km and 1.0km respectively to the west. The Cuckoo Stream runs along its northern boundary and the Mayne River lies to the south. Football grounds are located to the south of the land parcel with industrial developments located to the east. Housing developments occupy all lands to south of N32.

##### **Access**

Access to this land parcel could be achieved directly off the N32 or from the Clonshaugh Road.

##### **Proximity to Load Centres, transfer Pipeline Corridors and Outfall**

This land parcel is favourably located to the two primary load centres, the transfer pipeline corridor and the potential southern outfall point. Transfer pipeline routes from Swords and Malahide are also possible.

Connection of Ashbourne, Ratoath, the Kildare catchments and Route 9B (Lucan/Clondalkin) Catchment would best be achieved by routing them through the Route 9C sewer.

**This land parcel is proposed for further consideration under Step 10 as it is favourably located to the load centres and transfer pipeline corridors.**

**Figure 4.12 Topographical Map**



## Area 2 – Cherryhound

### Location

This land parcel is located primarily in the townland of Cherryhound, approximately 2.7km north east of Tyrrelstown and 5.8km north west of Finglas and has a total area of 34ha. The lands slope in a north-south direction with a central elevation of approximately 75.0mOD.

### Surrounds

This land parcel is located in open agricultural land (tillage and grassland). The N2 runs along its northern boundary with the R121 approximately 0.7km to the west. A small stream runs along its southern and eastern boundaries. There is a disused quarry immediately to the south-east and a 110kv overhead power line traverses the land parcel in an east-west direction.

### Access

Access to this land parcel would best be achieved directly off the R135 - N2 link road. However, access from the R121 could also be achieved.

### Proximity to Load Centres, transfer Pipeline Corridors and Outfall

The most likely outfall area for this land parcel would be the southern outfall.

This land parcel is favourably located to the Route 9C Catchment load centre. It is not favourably located to the North Dublin Catchment load centre.

Connection of Ashbourne and Ratoath would be best achieved by a direct connection from Kilbride pumping station.

Connection of the Kildare catchments could either be a direct connection or via the Route 9C sewer.

Connection of the Route 9B (Lucan/Clondalkin) catchment would best be achieved via the Route 9C sewer.

This land parcel is not favourably located to the secondary load centres of Swords and Malahide.

**Further consideration of this land parcel is not proposed as it is not favourably located to all load centres and transfer pipeline corridors**

## Area 3 – Cloghran

### Location

This land parcel is located primarily in the townland of Cloghran, approximately 2.2km east of Dublin Airport and 3.3km south of Swords with a total area of 32ha. The lands slope generally in a south-west / north-east direction with a central elevation of approximately 35.8mOD.

### Surrounds

This land parcel is located in open agricultural land currently used for grazing cattle and horses. The M1 forms its western boundary. A 3<sup>rd</sup> Class road (Stockhole Lane) linking the R132 to the N32 touches the south west corner of the land parcel. The Sluice River runs close to its northern boundary.

### **Access**

Access to this land parcel would need to be via Stockhole Lane.

### **Proximity to Load Centres, transfer Pipeline Corridors and Outfall**

This land parcel is favourably located to the two primary load centres, the transfer pipeline corridor and the potential southern outfall point. Transfer pipeline routes from Swords and Malahide are also possible.

Connection of Ashbourne, Ratoath, the Kildare catchments and Route 9B (Lucan/Clondalkin) Catchment would best be achieved by routing them through the Route 9C sewer.

**This land parcel is proposed for further consideration under Step 10 as it is favourably located to the load centres and transfer pipeline corridors.**

## **Area 4 – Westereave**

### **Location**

This land parcel is located primarily in the townland of Westereave, approximately 4.0km west of Sword and has a total area of 43ha. The lands slope in a north-west / south-east direction with a central elevation of approximately 61.1mOD.

### **Surrounds**

This land parcel is used as agricultural land (grasslands). The R108 runs approximately 0.75km from its eastern boundary with 3<sup>rd</sup> Class roads lying to the north, west and south of the land parcel. It is situated immediately north of the Ward River. Rivermeade school and housing estates lie to southwest of land parcel with a Nursing home located to the north of the land parcel.

### **Access**

Access to this land parcel could be achieved from either the R108 or from the surrounding 3<sup>rd</sup> class roads.

### **Proximity to Load Centres, transfer Pipeline Corridors and Outfall**

This land parcel is favourably located to the two primary load centres, the transfer pipeline corridors and an outfall route could be achieved to either the southern or northern outfall areas.

Transfer pipeline corridors from Swords and Malahide are also achievable

Connection of Ashbourne and Ratoath could be achieved by either a direct connection from Kilbride pumping station or by continuing via Route 9C sewer.

Connection of the Kildare catchments and the Route 9B (Lucan/Clondalkin) Catchment would best be achieved by routing them through the Route 9C sewer.

**This land parcel is proposed for further consideration under Step 10 as it is favourably located to the load centres and transfer pipeline corridors.**

## Area 5 – Kilsallaghan

### Location

This land parcel is located primarily in the townland of Kilsallaghan on the western fringe of the Study Area, approximately 6.0km south east of Ashbourne. This land parcel has a total area of 26ha. The lands slope from south to north with a central elevation of approximately 74.0mOD.

### Surrounds

This land parcel is located in open agricultural land (tillage and grassland). The R122 lies approximately 0.75km to the east with the R130 a similar distance to the west. A 3<sup>rd</sup> Class road linking the R122 with the R130 lies to the north of the land parcel.

### Access

Access could be provided from either the R122 or the R130.

### Proximity to Load Centres, transfer Pipeline Corridors and Outfall

This land parcel is not favourably located to the two primary load centres or to the transfer pipeline corridors to either outfall area.

This land parcel is not favourably located to the secondary load centres of Swords and Malahide

Connection of Ashbourne and Ratoath could be achieved by a direct connection from Kilbride pumping station.

Connection of the Kildare catchments and the Route 9B (Lucan/Clondalkin) Catchment would be difficult and potentially not viable.

**Further consideration of this land parcel is not proposed as it is not favourably located to all load centres and transfer pipeline corridors**

## Area 6 – Saucerstown

### Location

This land parcel is located primarily in the townland of Saucerstown, approximately 3.3km northwest of Swords with a total area of 36ha. The lands slope in a general south-west / north-east direction with a central elevation of approximately 16.9mOD.

### Surrounds

This land parcel is located in open agricultural lands immediately south of the Broadmeadow River. The R125 lies 0.75km to the south with the R108 a similar distance to the west. A school complex lies to south of the land parcel with Swords and Roganstown golf course situated to the northwest. Balheary game association signs were noted in proximity to this land parcel.

### Access

Access to this land parcel would be best achieved from the R125.

### Proximity to Load Centres, transfer Pipeline Corridors and Outfall

This land parcel is favourably located to the transfer pipeline corridors from the primary load centres to the northern outfall area.

Transfer pipeline routes from Swords and Malahide are achievable

Connection of Ashbourne, Ratoath, the Kildare catchments and the Route 9B (Lucan/Clondalkin) Catchment would best be achieved by routing them through the Route 9C sewer

**This land parcel is proposed for further consideration under Step 10 as it is favourably located to the load centres and transfer pipeline corridors.**

### Area 7 – Cookstown

#### Location

This land parcel is located primarily in the townland of Cookstown, approximately 2.5km south east of Ballyboughal with a total area of 80ha. The lands slope generally in a west / east direction with a central elevation of approximately 24.3mOD.

#### Surrounds

This land parcel is located in open agricultural land (tillage). The R108 lies approximately 1.0km to the west with 3<sup>rd</sup> Class roads to the east and south of the land parcel. A small stream runs along its northern boundary. Balheary game association signs were noted in proximity to this land parcel and a stud farm is situated on the western boundary.

#### Access

Access to this land parcel would best be achieved from the R108.

#### Proximity to Load Centres, transfer Pipeline Corridors and Outfall

This land parcel is favourably located to the transfer pipeline corridors from the primary load centres to the northern outfall area. Transfer pipeline routes from Swords and Malahide are also achievable

Connection of Ashbourne, Ratoath, the Kildare catchments and Route 9B (Lucan/Clondalkin) Catchment would best be achieved by routing them through the Route 9C sewer.

**This land parcel is proposed for further consideration under Step 10 as it is favourably located to the load centres and transfer pipeline corridors.**

### Area 8– Bellinstown

#### Location

This land parcel is located primarily in the townland of Bellinstown, approximately 1.5km south of Ballyboughall. This land parcel has a total area of 98ha. The lands slope generally in north-west / south-east direction with a central elevation of 41.8mOD.

#### Surrounds

This land parcel is located in open agricultural lands (tillage and grassland). The R108 is routed in a north-south alignment approximately 0.5km to the east. 3<sup>rd</sup> Class roads lie to the north, west and south. A small stream traverses the northern part of this land parcel.

### **Access**

Access to this land parcel would best be achieved from the R108.

### **Proximity to Load Centres, transfer Pipeline Corridors and Outfall**

This land parcel is favourably located to the transfer pipeline corridors from the primary load centres to the northern outfall area. Transfer pipeline routes from Swords and Malahide are also achievable

Connection of Ashbourne, Ratoath, the Kildare catchments and Route 9B (Lucan/Clondalkin) Catchment would best be achieved by routing them through the Route 9C sewer.

**This land parcel is proposed for further consideration under Step 10 as it is favourably located to the load centres and transfer pipeline corridors.**

## **Area 9 –Moortown**

### **Location**

This land parcel is located primarily in the townland of Moortown, on the western fringe of the Study Area approximately 2.0km south east of Oldtown and 4.5km east of Ashbourne. This land parcel has a total area of 137ha. The lands slope generally in a north-west / south-east direction with a central elevation of approximately 66.8mOD.

### **Surrounds**

This land parcel is located in undulating agricultural lands (tillage and grassland). The R122 lies to the east with the R130 to the south west, the R125 to the south and a 3<sup>rd</sup> Class road to the north-west. The Daws River runs close to its northern boundary.

### **Access**

Access to this land parcel could be from either the R122 or the R130.

### **Proximity to Load Centres, transfer Pipeline Corridors and Outfall**

This land parcel is not favourably located to the transfer pipeline corridor from the primary load centres to the northern outfall area.

Similarly it is not favourably located for transfer pipeline corridors from any of the secondary load centres.

**Further consideration of this land parcel is not proposed as it is not favourably located to all load centres and transfer pipeline corridors**

## **Area 10 – Knockaneek**

### **Location**

This land parcel is located primarily in the townland of Knockaneek on the western fringe of the Study Area approximately 2.0km north east of Ashbourne with a total area of 106ha. The lands slope generally in a north-west / south-east direction with a central elevation of approximately 78.0mOD.

### **Surrounds**

This land parcel lies in open agricultural lands (tillage and grassland). The R130 lies immediately to the west with 3<sup>rd</sup> class roads to the north and south of the land parcel.

### **Access**

Access to this land parcel would best be achieved from the R130

### **Proximity to Load Centres, transfer Pipeline Corridors and Outfall**

This land parcel is not favourably located to the transfer pipeline corridor from the primary load centres to the northern outfall area.

Similarly it is not favourably located for transfer pipeline corridors from any of the secondary load centres.

**Further consideration of this land parcel is not proposed as it is not favourably located to all load centres and transfer pipeline corridors**

## **Area 11 – Baldurgan**

### **Location**

This land parcel is located primarily in the townlands of Baldurgan approximately 1.6km south east of Ballyboughall with a total area of 57ha. The lands slope generally from west to east with a central elevation of 24.8mOD.

### **Surrounds**

This land parcel is located in open agricultural land. The R108 lies to the west and the R129 lies to the north with a 3<sup>rd</sup> Class road to the east. The Ballyboughal River runs along its northern boundary and a small stream runs close to its southern boundary. Balheary Game Association signs were noted in proximity to this land parcel.

### **Access**

Access to this land parcel would best be achieved from the R129. Access could also be achieved from the R108 and the 3<sup>rd</sup> class road.

### **Proximity to Load Centres, transfer Pipeline Corridors and Outfall**

This land parcel is favourably located to the transfer pipeline corridors from the primary load centres to the northern outfall area. Transfer pipeline routes from Swords and Malahide are also achievable.

Connection of Ashbourne, Ratoath, the Kildare catchments and Route 9B (Lucan/Clondalkin) Catchment would best be achieved by routing them through the Route 9C sewer.

**This land parcel is proposed for further consideration under Step 10 as it is favourably located to the load centres and transfer pipeline corridors.**

## Area 12 – Barnanstown

### Location

This land parcel is located primarily in the townland of Barnanstown approximately 0.75km east of Oldtown with a total area of 101ha. The lands slope in a north-west / south-east direction with a central elevation of 55.3mOD.

### Surrounds

This land parcel is located in open agricultural lands (tillage and grassland). The R122 runs close to the western edge of the land parcel with the R129 runs close to the northern edge with a 3<sup>rd</sup> Class road lying to the east and south east. A small stream runs close to its southern boundary.

### Access

Access to this land parcel would best be achieved from either the R129 or the R122.

### Proximity to Load Centres, transfer Pipeline Corridors and Outfall

This land parcel is not favourably located to the transfer pipeline corridor from the primary load centres to the northern outfall area.

Similarly it is not favourably located for transfer pipeline corridors from any of the secondary load centres.

**Further consideration of this land parcel is not proposed as it is not favourably located to all load centres and transfer pipeline corridors.**

## Area 13 – Mainscourt

### Location

This land parcel is located primarily in the townland of Mainscourt, approximately 1.0km east of Ballyboughal with a total area of 72ha. The lands slope generally in a north-west / south-east direction with a central elevation of approximately 34.2mOD.

### Surrounds

This land parcel lies in open agricultural lands (tillage and grassland). The R129 runs along the southern edge of the land parcel with 3<sup>rd</sup> Class roads to the west and east. The Richardstown River runs along its northern boundary.

### Access

Access to this land parcel would best be achieved from the R129.

### Proximity to Load Centres, transfer Pipeline Corridors and Outfall

This land parcel is favourably located to the transfer pipeline corridors from the primary load centres to the northern outfall area. Transfer pipeline routes from Swords and Malahide are also achievable

Connection of Ashbourne, Ratoath, the Kildare catchments and Route 9B (Lucan/Clondalkin) Catchment would best be achieved by routing them through the Route 9C sewer.

**This land parcel is proposed for further consideration under Step 10 as it is favourably located to the load centres and transfer pipeline corridors.**

#### Area 14 – Annsbrook

##### Location

This land parcel is located primarily in the townland of Annsbrook approximately 2.5km north east of Ballyboughall. It has a total area of 62ha. The lands slope in a north-west / south-east direction with a central elevation of approximately 30.2mOD.

##### Surrounds

This land parcel lies in open agricultural land (tillage and grassland). The M1 lies some 1.6km to the east with the R129 some 1.2km to the south. 3<sup>rd</sup> class roads lie to the east and west of the land parcel. The Richardstown River runs along its southern boundary and the Wimbletown Stream forms its northern boundary.

##### Access

Access to this land parcel would be from the 3<sup>rd</sup> class roads to the east and west of the land parcel; however, a longer access road from the R129 could also be achieved.

##### Proximity to Load Centres, transfer Pipeline Corridors and Outfall

This land parcel is favourably located to the transfer pipeline corridors from the primary load centres to the northern outfall area. Transfer pipeline routes from Swords and Malahide are also achievable

Connection of Ashbourne, Ratoath, the Kildare catchments and Route 9B (Lucan/Clondalkin) Catchment would best be achieved by routing them through the Route 9C sewer.

**This land parcel is proposed for further consideration under Step 10 as it is favourably located to the load centres and transfer pipeline corridors.**

#### Area 15 – Newtowncorduff

##### Location

This land parcel is located primarily in the townland of Newtowncorduff approximately 2.2km west of Lusk. This land parcel has a total area of 43ha. The lands slope generally in a north / south direction with a central elevation of 20.5mOD.

##### Surrounds

This land parcel lies in open agricultural land (primarily tillage). The M1 forms the western boundary of the land parcel with the R132 (old N1) some 0.6km to the east. An overhead power line parallels the M1 on the western boundary. The Wimbletown Stream runs along the southern boundary. Rural businesses are located to the north of the land parcel with Corduff rural cluster located to the southeast

### **Access**

Access to this land parcel would best be achieved from the R132 (old N1)

### **Proximity to Load Centres, transfer Pipeline Corridors and Outfall**

This land parcel is favourably located to the transfer pipeline corridors from the primary load centres to the northern outfall area.

Transfer pipeline routes from Swords and Malahide are achievable

Connection of Ashbourne, Ratoath, the Kildare catchments and Route 9B (Lucan/Clondalkin) Catchment would best be achieved by routing them through the Route 9C sewer.

**This land parcel is proposed for further consideration under Step 10 as it is favourably located to the load centres and transfer pipeline corridors.**

## **Area 16 – Jordanstown**

### **Location**

This land parcel is located primarily in the townland of Jordanstown approximately 3.5km north east of Ashbourne with a total area of 61ha. The lands slope in a north-west / south-east direction with a central elevation of approximately 82.0mOD.

### **Surrounds**

This land parcel lies in open agricultural lands (tillage and grassland). The R130 forms part of its western boundary with 3<sup>RD</sup> Class roads to the north and east. The Daws River runs along its southern boundary.

### **Access**

Access to this land parcel would best be achieved from the R130.

### **Proximity to Load Centres, transfer Pipeline Corridors and Outfall**

This land parcel is not favourably located to the transfer pipeline corridor from the primary load centres to the northern outfall area.

Similarly it is not favourably located for transfer pipeline corridors from any of the secondary load centres.

**Further consideration of this land parcel is not proposed as it is not favourably located to all load centres and transfer pipeline corridors**

## **Area 17 – Rathartan**

### **Location**

This land parcel is located primarily in the townland of Rathartan approximately 2.0km west of Rush and approximately 3.0km to the east of Lusk with a total area of 41ha. The lands slope in a north / south direction with a central elevation of approximately 18.7mOD.

### **Surrounds**

This land parcel lies in open agricultural lands (tillage). The R128 from Lusk-Rush lies some 0.7km to the south with 3<sup>rd</sup> Class roads to the west and north. The Dublin - Belfast railway line runs close to the western edge of the land parcel (0.7km at its closest point). The Bride's Strea runs along the eastern boundary. Rush & Lusk Game Association signs were noted in proximity to this land parcel.

### **Access**

Access to this site would best be achieved from the R128.

### **Proximity to Load Centres, transfer Pipeline Corridors and Outfall**

This land parcel is favourably located to the transfer pipeline corridors from the primary load centres to the northern outfall area. Transfer pipeline routes from Swords and Malahide are also achievable

Connection of Ashbourne, Ratoath, the Kildare catchments and Route 9B (Lucan/Clondalkin) Catchment would best be achieved by routing them through the Route 9C sewer.

**This land parcel is proposed for further consideration under Step 10 as it is favourably located to the load centres and transfer pipeline corridors.**

## **Area 18– Charstown**

### **Location**

This land parcel is located primarily in the townland of Charstown approximately 3.6km north of Ashbourne and 3.0km south of Garristown with a total area of 42ha. The lands generally slope in a north / south direction with a central elevation of approximately 101.0mOD.

### **Surrounds**

This land parcel lies in open agricultural lands (tillage and grassland). The R130 runs some 0.4km from its eastern boundary. The Hurley River runs along the northern boundary.

### **Access**

Access to this site would best be achieved from the R130.

### **Proximity to Load Centres, transfer Pipeline Corridors and Outfall**

This land parcel is not favourably located to the transfer pipeline corridor from the primary load centres to the northern outfall area.

Similarly it is not favourably located for transfer pipeline corridors from any of the secondary load centres.

**Further consideration of this land parcel is not proposed as it is not favourably located to all load centres and transfer pipeline corridors**

## Area 19 – Tyrelstown Little

### Location

This land parcel is located primarily in the townland of Tyrelstown Little, approximately 2.8km north east of Lusk and 3.6km north west of Rush with a total area of 114ha. The lands slope in a north / south direction with a central elevation of approximately 29.8mOD.

### Surrounds

This land parcel lies in open agricultural land. The R127 runs approximately 1.6km to the west with 3<sup>rd</sup> class roads lie to the north, south, east and west of the site. The Dublin – Belfast railway line runs close to the eastern edge of the land parcel. Ballydongan Castle, which is a National Monument, is located approximately 1.4km to north.

### Access

Access to this land parcel is currently very limited. Future access could be achieved by constructing an access road to the land parcel from the R127.

### Proximity to Load Centres, transfer Pipeline Corridors and Outfall

This land parcel is favourably located to the transfer pipeline corridors from the primary load centres to the northern outfall area. Transfer pipeline routes from Swords and Malahide are also achievable

Connection of Ashbourne, Ratoath and the Kildare catchments would best be achieved by routing them through the Route 9C sewer.

**This land parcel is proposed for further consideration under Step 10 as it is favourably located to the load centres and transfer pipeline corridors.**

## Area 20 – Adamstown

### Location

This land parcel is located primarily in the townland of Adamstown approximately 5.1km north east of Ashbourne and 3.4km south east of Garristown. It has a total area of 80ha. The lands generally slope from south to north with a central elevation of approximately 93.0mOD.

### Surrounds

This land parcel lies in open agricultural lands (tillage and grassland). The R122 lies approximately 1.0km from its eastern boundary with the R130 some 1.5km to the north. 3<sup>rd</sup> Class roads lie to the south and west of the land parcel. A small stream runs close to its northern boundary.

### Access

Access to this site would best be achieved from the R122.

### Proximity to Load Centres, transfer Pipeline Corridors and Outfall

This land parcel is not favourably located to the transfer pipeline corridor from the primary load centres to the northern outfall area.

Similarly it is not favourably located for transfer pipeline corridors from any of the secondary load centres.

**Further consideration of this land parcel is not proposed as it is not favourably located to all load centres and transfer pipeline corridors**

### Summary

This step of the preliminary screening process resulted in eight land parcels being screened out of further consideration at this time, as they are not favourably located to the identified load centres and pipeline corridors – Cherryhound, Kilsallaghan, Moortown, Knockaneek, Barnanstown, Jordanstown, Charstown and Adamstown.

The remaining 12 land parcels as listed in Table 4.2 are brought forward to Step 10 for further consideration.

**Table 4.2 Land Parcels remaining for further consideration following Step 9**

<b>Clonshagh</b>	<b>Cloghran</b>
<b>Westereave</b>	<b>Saucerstown</b>
<b>Cookstown</b>	<b>Bellinstown</b>
<b>Baldurgan</b>	<b>Mainscourt</b>
<b>Annsbrook</b>	<b>Newtowncorduff</b>
<b>Rathartan</b>	<b>Tyrelstown Little</b>

#### 4.11 **Step 10 – Assessment of Land Parcels with respect to High Level Defined Engineering and Design Constraints.**

The 12 remaining land parcels as listed in Table 4.2 were assessed under high level engineering and design constraints as follows:

- Interception points and invert levels on the existing drainage network in each of the load centres;
- Elevation of the individual land parcels;
- Consideration of whether the forward flows to the WWTP from the load centres could be achieved by gravity or pumped flows;
- Pipeline gradients; and
- Consideration of power requirements and energy usage for pumped flows.

The entire land profile, from the interception point on the existing drainage networks, to the treatment plant inlet, through the plant itself, and onwards to the coast and the submarine outfall, are all important factors in defining the overall engineering advantages of a given land parcel.

The combined system defined by the Orbital Sewer-WWTP-Outfall pipeline, links the source interception points, to the two broad outfall locations, within pipeline corridors, which should, where reasonable, be minimised in length

Adequate gradient to achieve self-cleansing velocities in foul sewage conveyance pipelines or tunnels, in all flow conditions of operation, is essential, in order to avoid solids deposition, septicity, and shock loadings at the onset of wet weather.

The volumes to be transferred are very large, and minimisation of pumping energy usage is important. An ideally elevated site will be just high enough, so as to permit the treated effluent to discharge, from the WWTP, to the outfall, at all stages of the tide. Pumping to a site which is unnecessarily high, beyond this minimum desirable elevation, is wasteful of energy.

Under this assessment the land parcels at Westereave, Bellinstown and Mainscourt performed less favourably than the other land parcels. As a result these three land parcels have not been brought forward to Step 11. However, as they remain viable alternative (albeit at present not preferred) locations for the Regional WWTP, it is considered prudent to reserve these land parcels pending completion of the ASA (Phase 2) assessment for the nine land parcels now proposed for short listing.

#### 4.12 **Step 11 – Compilation of Short List of Land Parcels to take forward to Phase Two**

It is recommended that the nine remaining land parcels listed in Table 4.3 and shown on Figure 4.13 and the potential pipeline corridors shown in Figure 4.14 be brought forward for further consideration against a range of technical and environmental criteria under Phase Two: Alternative Sites Assessment.

At this stage of the assessment process potential route corridors of varying width as shown in Figure 4.14, have been identified. The final routing of the transfer pipelines within these corridors will be determined following Phase 2 (assessment) and Phase 3 (consultation) of the Alternative Sites Assessment process

**Table 4.3 Recommended Short Listed Land Parcels**

Clonshagh
Cloghran
Saucerstown
Cookstown
Baldurgan
Annsbrook
Newtowncorduff
Rathartan
Tyrelstown Little

**Figure 4.13 Final Proposed Land Parcels**



**Figure 4.14 Potential Pipeline Corridors**



## 5 Constraints Consultation

Fingal County Council sought specific feedback from members of the public and interested parties to assist in the identification of constraints for the study area as a whole. The four week consultation period ran from the 30th of May to the 24th of June 2011. As discussed in Section 4.4 of this report, issues raised during this phase of consultation were reviewed by the project team and were considered in the context of short listing specific sites for the project. Details of this review are provided in Appendix One of this document.

A number of specific locations for the proposed WWTP were suggested by the consultees for consideration by the project team. These specific sites were examined in terms of their viability as potential sites and details of these are provided in Table 5.1 below.

**Table 5.1 Specific Locations Suggested during Public Consultation**

Areas Suggested as Locations for WWTP	Response from Study Team
<b>Dublin Airport red zone</b>	This area surrounding Dublin Airport was screened out during the pre screening process due to buffer zones applied for sensitive receptors and granted planning permissions at the airport.
<b>Disused airport in Gormanstown</b>	Gormanstown is outside the study area
<b>Proposed Nevitt landfill site</b>	<p>This site was screened out as full planning permission has been granted for the proposed Tooman/Nevitt landfill and it must be considered as a committed development. Were the landfill and WWTP to be located on the same land parcel operational and management issues could arise in particular respect of noise and odour monitoring and enforcement.</p> <p>Locating the WWTP within the same land parcel as the landfill would in all likelihood necessitate a new application (and EIS) for the landfill site as it would not be possible to implement the permission and associated ABP conditions without amendments.</p> <p>The elevation of the landfill site coupled with its distance from all load centres is such that significant pumping costs would be incurred should the WWTP be located here.</p> <p>The site and lands surrounding the site are also located in lands considered to be a highly sensitive landscape.</p>
<b>Bremore in Balbriggan</b>	Bremore in Balbriggan is outside the study area
<b>Closed Turvey Golf Course</b>	This site was screened out during the pre screening process due to buffer zones applied for sensitive receptors. The site is also a Parks Biodiversity Nature Development Area and is considered a highly sensitive landscape as outlined in Fingal County Development Plan 2011-2017.
<b>Lambay Island</b>	Lambay Island was screened out during the pre screening process as it is a SAC, SPA, pNHA, Geological Heritage Site, is a highly sensitive landscape and has numerous protected sites and monuments

## 6 Alternative Sites Assessment - Phase Two

This next phase of the Alternative Sites Assessment and Route Selection will involve a study of the nine land parcels identified in this report to determine possible sites to locate the Regional WWTP. This will include an examination of each area from an environmental perspective, technical feasibility, ease of access and costs. The outcomes of Phase Two will be contained in the Draft Alternative Sites Assessment and Route Selection Report, which will then proceed to Public Consultation following which the preferred site will be selected.

# Appendix One

## Constraints Consultation

## Response to Feedback from Constraints Consultation

Public consultation on the identification of constraints ran from the 30<sup>th</sup> of May to the 24<sup>th</sup> of June 2011 and views were sought on the following questions:

1. What regional or locally important constraints should Fingal County Council consider in the identification of sites for the drainage system, treatment plant, and marine outfall?
2. What concerns or potential issues do you consider important that Fingal County Council should address during this alternative site identification phase?
3. How would you like to be involved and communicated with as the project progresses?
4. Are there any other points that are relevant that you would like Fingal County Council to consider?

Each and every submission received by the Greater Dublin Drainage Team was acknowledged and logged (Appendix H of the Constraints Consultation Report). All submissions were then compiled and reviewed in their entirety by the project team.

Not all of the questions raised by members of the public can be answered at this early stage but as the details of the project are confirmed those questions can subsequently be addressed. Issues that arose during the constraints consultation are addressed under the following headings; Planning Issues, Ecology, WWTP Site Selection Process and Suggested Locations, Strategic Considerations, Technology, Size, and Catchment of Plant, Sludge Management, Consultation, Location of the Outfall Pipe and Orbital Sewer, Health Risk and Nuisances, Leisure, Local Amenity, and Visual impact, Construction Impacts, Social and Economic, Energy and General Issues. The following section is a summary response to the issues raised.

### Planning Issues

There has been no predetermination of sites for consideration as a Wastewater Treatment Plant (WWTP) site. The preliminary screening process as discussed in the *Alternative Sites Assessment - Stage 1: Preliminary Screening Outcomes Report* has been undertaken using an impartial and wholly transparent process. Designations as identified in the current Fingal County Development Plan 2011-2017 have been given due consideration during Preliminary Screening and will also be thoroughly examined during the Alternative Sites Assessment phase. All sites designated for their nature conservation interest under European and Irish legislation have been screened out as locations for consideration as a Regional WWTP. Buffer zones have been established for sensitive receptors as per requirements set out in the Fingal County Development Plan 2011-2017. All relevant published plans have been taken into consideration during this process and identified constraints have been mapped and screened out as locations for consideration where appropriate. The strategic rationale and need for the project has been updated since the publication of the Greater Dublin Strategic Drainage Study

(GDSDS) in 2005. This has included analysis of the 2006 Census of Population and the most recent Census data available from the 2011 Census.

### **Ecology**

Sites designated for their nature conservation interest under European and Irish legislation have all been screened out as areas for consideration for a Regional WWTP site during the preliminary screening process. All known areas of ecological value and ecological protected areas have been screened out during the WWTP site identification process and these will also be examined by a suitably qualified ecologist during the site assessment process. Construction and operational impacts will be also considered during the site assessment process and in greater detail during the Environmental Impact Assessment process.

### **WWTP Site Selection Process and Suggested Locations**

Issues raised during this phase of consultation were reviewed by the project team and were considered in the context of short listing specific sites for the project. A number of specific locations for the proposed WWTP were suggested by the consultees for consideration by the project team. These specific sites were examined in terms of their viability as potential sites and details of these are provided in Table 5.1 of the *Alternative Sites Assessment - Phase One, Preliminary Screening Outcomes Report*.

### **Strategic Considerations**

The Greater Dublin Strategic Drainage Study (GDSDS) Final Strategy Report as amended by the subsequent Strategic Environmental Assessment (SEA) recommended that a single regional wastewater treatment plant (WWTP) be located in North County Dublin with the treated effluent to be discharged to the marine environment of the Irish Sea.

The GDSDS also made recommendations on the existing foul drainage catchments that should be diverted, either in full or in part, to the proposed regional WWTP. These recommendations informed the initial selection of the study area, which included North County Dublin, the foul drainage catchments of Blanchardstown, the north city area (Finglas to Howth), the Lucan/Clondalkin foul drainage catchment in South County Dublin, the drainage catchment of Leixlip WWTP, and the County Meath towns of Ashbourne, Ratoath, Kilbride, Dunboyne, and Clonee.

### **Technology, Size, and Catchment of Plant**

An examination of available processes and current best practice in waste water treatment has yet to be undertaken. This will be done in the coming months. The final design and construction of the WWTP will most likely be procured under a Design, Build & Operate Contract and therefore the final treatment processes on the site will only be decided at that stage. Fingal County Council is required by legislation to apply to the Environmental Protection Agency (EPA) for a licence or wastewater discharge

authorisation for the treated effluent discharge from the proposed wastewater treatment plant (WWTP). This licence is subject to monitoring and auditing by the EPA.

### **Sludge Management**

Sustainable solutions for the management and reuse of the wastewater sludges generated by the Regional WWTP will be recommended.

Sludge generated during the waste water treatment process will be treated on site most likely by Anaerobic Digestion processes, followed by thermal drying to produce a granular product. EU and Irish legislation requires that sludge arising from wastewater treatment shall be reused whenever appropriate and in such a manner as to minimise adverse effects on the environment. Reuse of such sludges to land, especially agricultural land, can only be undertaken provided these sludges receive appropriate treatment, either biological, chemical, or heat treatment. There are many possible reuse outlets for treated sludges including, but not limited to, agricultural fertiliser (as long as it is used in accordance with the legislation), topsoil conditioner, use in landfill / contaminated land remediation, and remediation of tailings ponds. The final end use of the treated sludge will ultimately be decided by the future operator of the wastewater treatment plant in compliance with all relevant legislation. Transportation of this sludge has been considered during the site selection process and will also be examined during the detailed site assessment and the environmental impact assessment.

### **Consultation**

The project team have taken into consideration all issues raised in relation to the consultation process undertaken during May and June 2011. The consultation process complies with and even exceeds the requirements set out in the Aarhus Convention. Article 6(3) states that the public participation process should include different phases with reasonable timeframes (which have been provided by Greater Dublin Drainage), allowing the public to be informed (which has been and will be achieved by Greater Dublin Drainage), and for the public to participate effectively during the decision-making process (which has been and will be achieved by Greater Dublin Drainage).

### **Location of the Outfall Pipe and Orbital Sewer**

The selection of the optimum location for the marine outfall will be facilitated through a comprehensive 3D hydrodynamic modelling process. Consideration will also be taken of the impact of global warming. Consultation with stakeholders and the EPA will be undertaken and agreement will be sought on an acceptable mixing zone around the point of discharge and the range of determinants to be modelled, so that the environmental quality objectives of the Water Framework Directive are not jeopardised.

### **Health Risk and Nuisances**

Potential odour generation is a significant concern and will be assessed during each stage of the project. During the preliminary screening process a buffer zone from the

proposed WWTP sites to all known sensitive receptors has been applied. During the preliminary process design consideration of appropriate technologies and their potential for odour generation will be fully considered. It is proposed that odours will be contained at source, at those points in the treatment process where they are most heavily emitted, and most easily contained. An odour modelling specialist will advise on required mitigation measures.

The full impacts of the proposed development on health and property will be examined during the Site Assessment process and the Environmental Impact Assessment process.

### **Leisure, Local Amenity, and Visual impact**

Leisure, local amenity and visual impact will be taken into consideration during the assessment of each proposed site and during the Environmental Impact assessment process. A comprehensive consultation process will be undertaken with statutory consultees and key stakeholders with the objective of promoting a community involved process to identifying the preferred option.

### **Construction Impacts**

The construction impacts of the proposed development will be taken into consideration during the Site Assessment process and will be considered in greater detail during the Environmental Impact Assessment process.

### **Social and Economic**

Greater Dublin Drainage is needed to facilitate vibrant social expansion, economic growth and to protect the environment in the GDA. It will provide vital strategic infrastructure that will facilitate employment, social progress and economic growth. Currently, the lack of wastewater treatment capacity in certain parts of the GDA is placing constraints on development. Without Greater Dublin Drainage, future development may be seriously curtailed and, the potential for developing essential resources and facilities, such as schools, hospitals, industry, businesses and homes, will be severely restricted throughout the Greater Dublin Area. Greater Dublin Drainage is a vital project in order to facilitate employment, social progress and economic growth in the Dublin Region, hand-in-hand with the improvement and protection of water quality in line with the Water Framework Directive.

### **Energy**

Energy conservation and minimisation of carbon emissions are two of the critical factors and have been taken into consideration during the site selection process and will be given further consideration during the detailed design process. A Carbon Calculator will be used to gauge the sustainability of various design options and this tool will pinpoint where carbon savings can be made from an early project planning stage. It is proposed to integrate sustainability considerations into the engineering designs, and in particular to identify low energy solutions for transfer and treatment of the wastewater.

**General Issues**

Greater Dublin Drainage is a project that is financed by the Department of Environment, Community and Local Government Water Service Investment Programme (2010-2012), which will support the goals and targets of the policy document, Building Ireland's Smart Economy. Among other items, the Water Service Investment Programme aims to rehabilitate existing water supply networks, repair and replace existing water mains, and to improve drinking water and wastewater treatment standards.

There will be no direct financial benefit to Fingal County Council from the operation of the WWTP as the scheme will be operated on a cost break even basis. A portion of the capital and running costs will be allocated to those local authorities discharging to the proposed wastewater treatment plant. The charge levied to the local authorities will be proportionate to their use.