



Final Scoping Report
for the
Strategic Environmental Assessment
of the
Greater Dublin Strategic Drainage Study

Report
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1 Introduction

1.1 GENERAL

Mott MacDonald Pettit Limited (MPI) and Environmental Resources Management Ireland Limited (ERM) were appointed by Fingal County Council in November 2006 to undertake a strategic environmental assessment (SEA) of the strategy developed during the Greater Dublin Strategic Drainage Study (GSDSDS).

The purpose of the GSDSDS was to carry out a strategic analysis of the existing foul and surface water systems in the Local Authority areas of Dublin City, Fingal, South Dublin, Dun-Laoghaire-Rathdown and the adjacent catchments of Counties Meath, Kildare and Wicklow. The Greater Dublin Strategic Drainage Study was prepared by the *Dublin Drainage Consultancy*, a joint venture between *Hyder Consulting*, *PH McCarthy Consulting Engineers* and *RPS-MCOS* (in association with *HR Wallingford*). The Greater Dublin Strategic Drainage Study was commissioned in June 2001 and the final Strategy Report was completed in April 2005.

Wastewater treatment and drainage infrastructure is a necessary requirement for modern day societal, health and safety, and environmental reasons. Wastewater, if inadequately treated, can contain numerous pathogenic or disease-causing microorganisms. Adequate wastewater collection and treatment is mandated by numerous national and European legislative instruments.

The preparation of the GSDSDS was necessary as the economic success since the 1990s has resulted in the foul and stormwater drainage infrastructure not keeping up with the demands of ongoing population growth and expansion of the Greater Dublin Area. Deficiencies in the existing system is evident from marked deterioration in water quality, increased risk of flooding and concerns that the drainage system and wastewater treatment plants have insufficient capacity to meet future demands.

The SEA may recommend that the final strategy in the GSDSDS be amended. Such a decision is the responsibility of each of the seven Local Authorities within the Greater Dublin Area as depicted in *Figure 1.1* below.

This document is the Final SEA Scoping Report and outlines the scope of the GSDSDS SEA Environmental Report. A draft SEA Scoping Report was prepared in March 2007 and was made available for public and statutory consultation for a 6 week period. A separate Submissions Report has been prepared which summarises the SEA Scoping consultation process.

Figure 1.1 Map depicting the GSDSDS Study area and the seven Local Authorities.



1.2 STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)

SEA is a formal, systematic evaluation of the likely significant environmental effects of implementing a plan or programme, before a decision is made to adopt the plan or programme. SEA in Ireland is based on *Directive 2001/42/EC (Assessment of the Effects of Certain Plans and Programmes on the Environment)*, more commonly known as the 'SEA Directive'.

The main objective of the SEA Directive is to “provide for a high level of protection for the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans and programmes with a view to promoting sustainable development.”

Directive 2001/42/EC came into force in Ireland during July 2004. The Directive has been transposed into Irish Law through two sets of Regulations as set out hereunder;

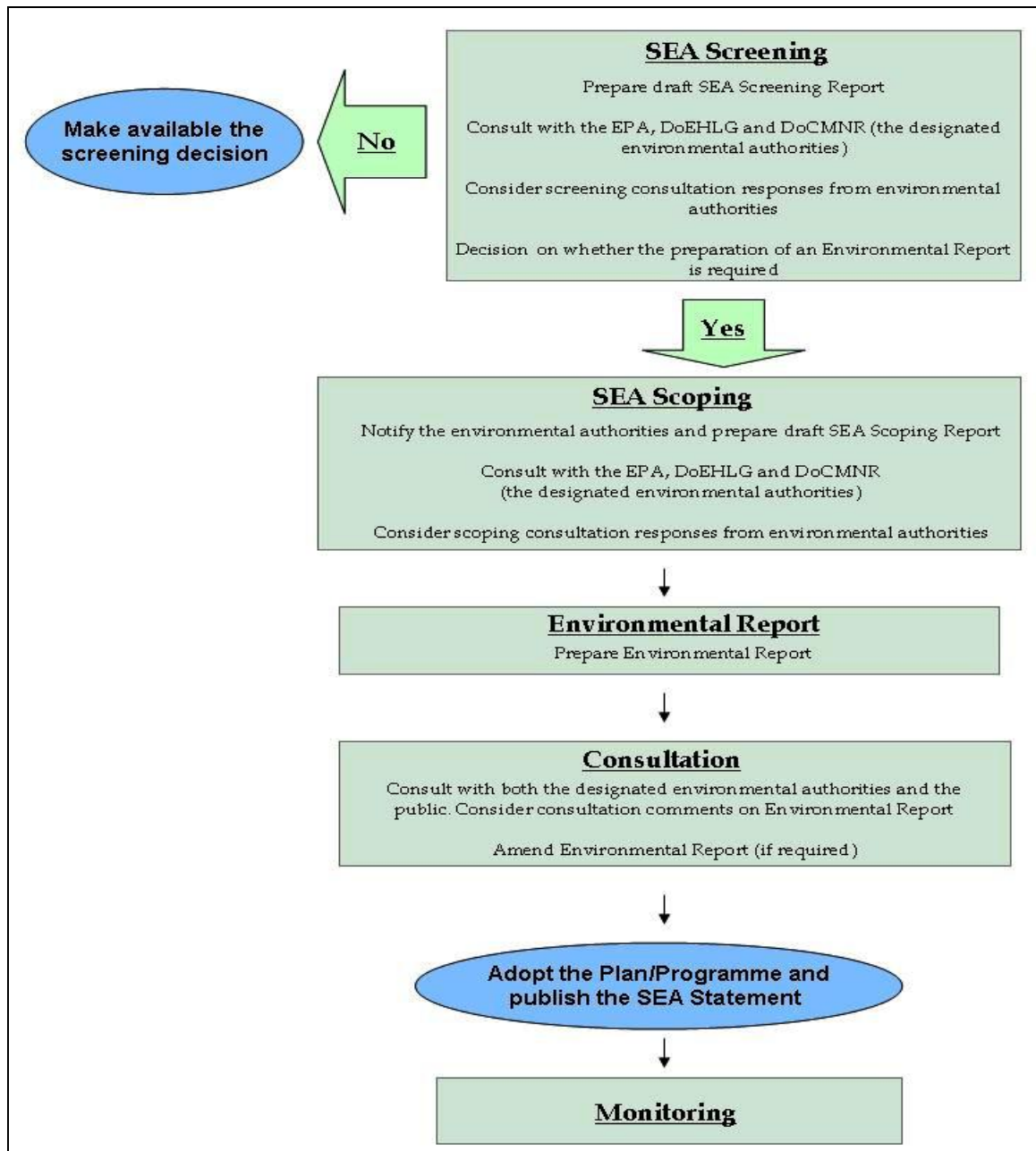
- *European Communities (Environmental Assessment of Certain Plans and Programmes) Regulations 2004 (S.I. 435 of 2004)*; and
- *Planning and Development (Strategic Environmental Assessment) Regulations 2004 (S.I. 436 of 2004)*.

Regarding the SEA of the GSDSDS, the relevant Regulation is considered to be S.I. 435 of 2004. It is however, important to note that no statutory obligation to undertake an SEA applies to the GSDSDS. Nevertheless, this SEA is being completed in accordance with the requirements of the underpinning legislation.

1.2.1 SEA Process

There are six key stages in the SEA process and these are illustrated in *Figure 1.2*.

Figure 1.2 Main Stages in the SEA Process



1.2.2 SEA Screening

This is the first stage in the SEA Process and is the mechanism for determining whether the preparation of an Environmental Report is required for a plan or programme. The key basis for this decision is whether significant effects on the environment are likely to arise as a result of the implementation of the plan or programme.

The elected representatives of Fingal County Council, having given due consideration to the GSDSDS Strategy during the preparation of Fingal's Assessment of Needs Report, voted to accept a motion requiring an SEA, including the preparation of an associated Environmental Report, to be completed on the GSDSDS Strategy. This Assessment of Needs, which contained the recommendation to prepare an SEA of the GSDSDS Strategy, was subsequently accepted and completed.

1.2.3 SEA Scoping

The second stage in the SEA Process (assuming that the decision to proceed with the SEA is made) is the determination of the key issues which are to be addressed in the Environmental Report. Scoping will ensure that the SEA is focused on the relevant issues and also examines issues at the appropriate level of detail.

Table 1.1 below outlines the recommended list of information to be included in an SEA Scoping Report. This list is based on the Environmental Protection Agency's SEA guidance document *Development of Strategic Environmental Assessment (SEA) Methodologies for Plans and Programmes in Ireland* (2003).

Table 1.1 Recommended List of Information to be Included in an SEA Scoping Report

Information	Section Reference
Introduction (includes brief introduction to the P/P and the P/P preparation process, the purpose of the scoping report)	1 & 3
Proposed SEA methodology (includes a time frame and list of consultees)	2
Maps of area to be covered	1
Key purpose of the P/P	3
Preliminary list of alternatives within the P/P	4
Key environmental baseline issues	5
Environmental objectives, indicators and targets	6
Interaction with other P/Ps	3
Environmental constraints	5
Conclusions on proposed scope of the SEA	10
Sources of data	9
Contact point for comments	10

Consultation with the relevant designated environmental authorities is required as part of SEA Scoping. Further detail on SEA scoping is provided in *Section 1.3* below.

1.2.4 Environmental Report

This stage involves the preparation of the Environmental Report. This is the key document in the SEA Process and it outlines the likely significant effects on the environment and recommends mitigation measures to address the significant adverse effects.

Further detail on proposed content of the Environmental Report is provided in *Section 8*.

1.2.5 Consultation

Consultation with the relevant designated environmental authorities is required on the Environmental Report. In addition, consultation is also required with the public. Both the Environmental Authorities and the public will be provided with an opportunity to make submissions in relation to the Environmental Report.

An additional legal requirement is that submissions from the Environmental Authorities and the public must be considered and the Environmental Report amended, if deemed necessary.

If any amendments are made to the plan or programme (due to comments received during consultation on the plan or programme), then the Environmental Report may also need to be amended.

1.2.6 Adoption of the Plan or Programmes and the SEA Statement

Upon consideration of the consultation findings of both the plan or programme and the Environmental Report, the plan or programme can be adopted. Part of this process requires the preparation of an SEA Statement. This is a document which outlines how the SEA Process influenced the preparation of the plan or programme and also outlines how the consultation comments were considered. Another requirement of the SEA Statement is the inclusion of reasons for choosing the plan as adopted in light of the other reasonable alternatives considered.

1.2.7 Monitoring

Monitoring requirements refer to the need to monitor the significant effects on the environment as a result of the implementation of the plan or programme. Monitoring begins with the adoption of the plan or programme and continues for the duration of the plan or programme.

1.3 PURPOSE OF THE DRAFT & FINAL SEA SCOPING REPORTS

The SEA Scoping process had a number of objectives, which are as follows:

1. determination and consultation on the likely significant environmental issues within the Strategy area, namely the area illustrated in *Figure 1.1* above;
2. identification and consultation on the environmental objectives, which will be used to ensure the integration of the environment into the preparation of the GSDSDS Strategy and will also be used to identify the likely significant effects on the environment;
3. consultation on the proposed SEA methodology;
4. provisional identification of the various alternatives which can be implemented to achieve the overall objectives of the GSDSDS;
5. consultation on the draft contents for the Environmental Report;
6. identification of baseline data gaps and additional baseline data needs.

Consultation with the Environmental Authorities and the general public was undertaken on the draft SEA Scoping Report for a six week period (it was initially a four week period, which was subsequently extended by two weeks at the request of some public interest groups). A summary of the issues raised during the consultation can be found in the separate SEA Scoping Consultation Submissions Report.

It should be noted that public consultation regarding SEA Scoping is not required under the SEA Regulations and consultation in relation to the scoping stage of the GDSDS Strategy SEA has been undertaken to ensure that the public can provide input into the scope of the Environmental Report and the SEA Process.

1.4 STRUCTURE OF THIS REPORT

The remainder of this Final SEA Scoping Report is structured as follows;

Section 2 outlines the proposed SEA methodology.

Section 3 provides a summary of the key aspects of the GDSDS.

Section 4 presents a provisional list of options/alternatives which will be considered in the Environmental Report. It should be noted that this list will not be confined to the options considered in the GDSDS Final Strategy Report.

Section 5 outlines the relevant key environmental issues within the Greater Dublin Area and also identifies any baseline data gaps and data needs identified at this stage of the project.

Section 6 presents the list of environmental objectives which will be used to determine the likely significant effects on the environment.

Section 7 briefly summarises the SEA Scoping consultation process (although a more detailed summary can be found in the SEA Scoping Consultation Submissions Report) and the key amendments made to the draft SEA Scoping Report, in light of a consideration of the submissions received during the consultation process.

Section 8 outlines the proposed contents of the Environmental Report.

Section 9 lists the references and data sources consulted during the preparation of this Final SEA Scoping Report.

Section 10 provides a brief conclusion to the Final SEA Scoping Report.

2 Methodology

2.1 INTRODUCTION

This section will outline how the SEA assessment (i.e. the identification of the likely significant effects on the environment) will be undertaken.

2.2 ASSESSMENT METHODOLOGY

The determination of the likely significant effects on the environment will be based on a qualitative assessment under a series of Environmental Objectives, which are presented in *Section 6*.

The proposed environmental objectives have been based on;

1. environmental headings in Annex 2(f) of S.I. 435 of 2004, which are;
 - Biodiversity;
 - Population;
 - Human health;
 - Fauna;
 - Flora;
 - Soil;
 - Water;
 - Air;
 - Climatic factors;
 - Material assets;
 - Cultural heritage including architectural and archaeological heritage;
 - Landscape; and
 - The inter-relationship of the above factors.
2. EU and national environmental policies. There are various 'higher-tier' policies which have influenced the development of the environmental objectives. These include for example:
 - i. Water Framework Directive (2000/60/EC);
 - ii. Urban Wastewater Treatment Directive (91/271/EEC);
 - iii. Shellfish Water Directive (79/923/EEC);
 - iv. Bathing Water Directive (2006/7/EC);
 - v. Freshwater Fish Directive (78/659/EEC);
 - vi. Habitats Directive (92/43/EEC);
 - vii. Birds Directive (79/409/EEC);
 - viii. Nitrates Directive (91/676/EEC);
 - ix. Groundwater Directive (80/68/EEC as amended by 91/692/EEC¹);
 - x. Proposed Floods Directive (adoption expected in 2007);
 - xi. National Sustainable Development Policy;
 - xii. National Climate Change Strategy; and,
 - xiii. National Biodiversity Plan.
3. stated objectives of the Greater Dublin Strategic Drainage Strategy which are summarised in *Section 3*.

¹ This existing Directive will be replaced by a new Groundwater Directive in 2007.

For the SEA of the GSDSDS Strategy, an assessment will be undertaken of all the options (those in final strategy report and the additional options developed as part of this SEA process), a provisional list for which is presented in *Section 4*. The decision to substantially widen the scope of the options to be considered in the SEA assessment is based on the importance of selecting the preferred option; that which performs best against the environmental objectives. The selection of the preferred option will be based on a qualitative consideration of the relative performance of each option against the individual environmental objectives.

It is important to note that the assessment is focused on the strategic/high-level effects, rather than site-specific issues. The Environmental Report will not be recommending specific site(s) for infrastructure development as part of the preferred option. Site-specific issues and potential impacts on specific receptors will be addressed at the appropriate stage in the planning process. Regardless of the chosen option and location, all relevant legal and performance requirements will be complied with for all resulting infrastructure.

Mitigation will be recommended to address any likely adverse effects from the preferred option.

3 Key Purpose of the GDSDS

3.1 INTRODUCTION AND BACKGROUND

As noted in *Section 1.1* above, the purpose of the Greater Dublin Strategic Drainage Study was to carry out a strategic analysis of the existing foul and surface water systems in the seven Local Authority areas.

The Greater Dublin Strategic Drainage Strategy objectives can be summarised as follows:

1. To develop an environmentally sustainable drainage strategy for the Region consistent with the EU Water Framework Directive. This strategy should outline the requirements for foul and storm water drainage capable of meeting the demands of the Region in the context of current Development Plans, the Regional Planning Guidelines and the longer term development potential of the region;
2. To provide a consistent policy framework and standards which will apply throughout the Region, and promote the requirements of environmental legislation and the recommendations of the Greater Dublin Strategic Drainage Strategy;
3. To develop tools for the effective management of the drainage systems including Geographical Information Systems (GIS), network models and digital mapping; and
4. To develop the optimum drainage solution from a range of alternative scenarios having regard to whole-life cost and environmental performance, the solution to be broken down into a set of implementation projects which can be prioritised and put in place.

In addition to proposing a drainage strategy for the Greater Dublin Area, extensive asset surveys, data collection, flow monitoring and modelling and baseline data collection was undertaken as part of the Greater Dublin Drainage Study. Such exercises were undertaken to highlight current deficiencies in the existing drainage system and also to estimate the future wastewater treatment loads and flows which are predicted to arise by 2031.

Various policies were also developed as part of the GDSDS. These policies were summarised in five policy documents as specified below:

- New Development Regional Drainage Policy;
- Environmental Management Drainage Policy;
- Climate Change Regional Drainage Policy;
- Inflow/Infiltration and Exfiltration Regional Drainage Policy; and
- Basements Regional Drainage Policy.

These policies were developed to serve as practical tools at local level to ensure implementation of the key assumptions made to determine the future loads thus giving confidence in the predictions. Essentially these policies will result in environmental improvements in the future wastewater management practices in the Greater Dublin Area. Examples of such improvements include:

- Emphasising that sustainable drainage management systems are mandatory as a corner-stone for achieving environmental improvement of the region's watercourses;
- Ensuring that planning approvals will only be given to sustainable developments, avoiding floodplains;

- Improving the quality of the construction of drainage systems, thus reducing the occurrence of illegitimate flows in the drainage system;
- To minimise the impact of development on watercourses and on floodplains;
- To seek continued improvement of water quality, bathing facilities and other recreational opportunities in coastal, estuarine and surface waters in the Region;
- To promote access, walkways and other recreational uses of open spaces associated with watercourses, subject to a defined strategy of nature conservation and flood protection;
- To minimise inflow, infiltration and ex-filtration to reduce non-legitimate flows in the most cost effective manner, including strengthening of the current misconnections programme;
- Incorporation of basement protection requirements into the Building Regulations; and
- The use of the Planning and Development Act to condition developers to provide protection against basement and underground car park flooding in all new developments.

3.2 MAIN STRATEGY OBJECTIVES

One of the major objectives of the GSDSDS is the drainage strategy for the Study Area up to 2031 and beyond. In general terms, creation of this strategy involves (p. 12, GSDSDS, Final Strategy Report):

- defining, to an appropriate level of accuracy, the future development scenarios for the area;
- comparing the drainage requirements to service these scenarios with existing and currently planned drainage infrastructure;
- identifying the feasible options for optimising known drainage infrastructure and future drainage requirements to meet any shortfalls in service; and
- selecting the preferred option and identifying how it will be implemented, in terms of projects, programmes, financing and procurement.

3.3 INTERACTION WITH OTHER PLANS AND PROGRAMMES

A number of National and European policies and legal instruments arising from same influenced the composition of the strategy for the Greater Dublin Area. Such documents referenced in the GSDSDS Final Strategy Report include:

- Water Framework Directive;
- Urban Wastewater Treatment Directive;
- National Climate Change Strategy;
- National Development Plan (1999-2006);
- DTO Transportation Plan;
- Strategic Planning Guidelines for the Greater Dublin Area;
- Various County Development Plans;
- Various Local Area Plans;
- Planning and Development Act (2000); and
- Existing drainage regulations.

The GSDSDS Strategy can be thought of as a drainage strategy document for the Greater Dublin Area. It will be considered in the preparation of the various Greater Dublin Area development plans (e.g. City or

County Development Plans, Local Area Plans, Assessment of Needs, etc.) in each of the constituent seven Local Authorities for which the GDSDS has been prepared.

4 Preliminary List of Options

4.1 INTRODUCTION

The key elements of the GSDS comprise of various drainage strategy options, regional policy recommendations and various data gathering and catchment modelling exercises.

The ultimate drainage strategy to address the Greater Dublin Area drainage requirements will result in the development of a range of drainage infrastructure projects, some aspects of which are likely to require assessment under the EIA Directive. On this basis, the drainage options (and those additional options developed - see *Section 4.3* below) in the GSDS Strategy will be assessed in the Environmental Report.

The regional policy recommendations (which comprised an overall policy document; new development policy document; environmental management policy document; inflow, infiltration and exfiltration policy document; climate change policy document; and basement policy document) are not considered to be appropriate to be included within the scope of the SEA of the GSDS Strategy on three grounds. Firstly, the policies were developed with the objective of meeting current legal requirements and good international practice in drainage management. Secondly, the policies have been developed with a view to minimising load on the current drainage infrastructure and consequently reducing environmental impact through their implementation. Thirdly, the implementation of the policies is considered unlikely to give rise to applications for development consent for projects which are likely to be subject to the requirements of the EIA Directive or are likely to have significant effects on a European site.

The data gathering and catchment modelling tasks are not considered to be within the scope of the SEA of the GSDS Strategy as they were tasks completed to obtain baseline technical information from which the strategic options were developed. The reports arising from these specific tasks do not in themselves represent a plan or a programme within the scope of the SEA Regulations.

Sections 4.2 and 4.3 outline the preliminary list of drainage options which will be considered in the Environmental Report.

4.2 EXISTING STRATEGY OPTIONS IN THE GSDS STRATEGY

4.2.1 Overview

In developing the integrated drainage strategy for the Greater Dublin Area, three broad approaches were carried forward within which various scenarios were considered. The purpose of these descriptions is to broadly inform the reader of the nature and extent of the development associated with the proposed strategies. Each strategy requires significant infrastructural development to support same which have not been described in full detail below.

4.2.2 Options

- **STRATEGY APPROACH 1**
Maximise conveyance of flows and loads to Ringsend Wastewater Treatment Works (WwTP) on the assumption that treatment capacity will be provided

This strategy approach is based on retaining Ringsend as the terminus for all flows from an extended Ringsend catchment including all future development in South Dublin, West Fingal, East Meath and ultimately even embracing North Kildare (Leixlip Catchment). In such a strategy there would be no constraint on flow and loads to Ringsend. Ringsend would therefore need to treat up to 2.40 million population equivalent by 2011 and 2.80 million population equivalent by 2031. It was considered that two scenarios existed to realise this strategy approach:

Scenario 1A – Swap Grand Canal Trunk Sewer Storm and Foul Cells

The key approach in this strategy was to swap the foul and storm cells in the Grand Canal Trunk Sewer, converting the larger storm cell for foul flows, thus allowing significant additional foul flows to be discharged to the Grand Canal Trunk Sewer, with the smaller cell converted to receive storm flows.

Scenario 1B – New Liffey Interceptor Sewer (Lucan to Ringsend)

The key differentiating element of this scenario involved the construction of a major new interceptor sewer along the River Liffey valley, largely in tunnel to convey flows to Ringsend, in parallel with the Grand Canal Trunk Sewer.

- **STRATEGY APPROACH 2**

Recognise the constraints on the maximum achievable treatment capacity of Ringsend WwTP and limit flows to the treatment works by the provision of upstream treatment with priority being given to the needs of existing catchments

This strategy approach recognises the constraint on the maximum achievable treatment capacity at the Ringsend WwTP of 2.16 million population equivalent and proposes to limit flows and loads to the works accordingly, with priority being given to existing catchment needs, particularly the City Centre and high level Rathmines and Pembroke catchment including the Dodder Valley and Dun Laoghaire catchments. In limiting loads to Ringsend, this strategy approach recognises that additional treatment capacity, in the approximate value of 850,000 population equivalent must be provided elsewhere, either at a single or multiple locations. In addition to the above, this strategy approach also includes significant expansion of WwTPs in Shanganagh/Bray, Osberstown, Leixlip, Portrane, Malahide, Balbriggan/Skerries and Swords.

Scenario 2A – High Level Treatment and Discharge to River Liffey upstream of Islandbridge

This scenario involves the construction of a new state of the art WwTP (350,000 population equivalent) to produce a high quality effluent suitable for discharge to the River Liffey upstream of Islandbridge. This approach also included the construction of a 450,000 population equivalent WwTP on the North Fingal coastline (Portrane) in addition to extending the Ringsend plant to the maximum achievable treatment capacity of 2.16 million population equivalent. In addition to the above, this strategy approach also includes significant expansion of WwTPs in Shanganagh/Bray, Osberstown, Leixlip, Portrane, Malahide, Balbriggan/Skerries and Swords.

Scenario 2B – Medium Level Treatment and Discharge to Liffey Estuary Grand Canal Storm Cell and Grand Canal Dock by-pass culvert

This approach envisages that flows from new developments in South Dublin and Kildare would be treated at a new WwTP (350,000 population equivalent) to an appropriate standard for discharge via designated sewer to the Grand Canal Storm Cell and Grand Canal Dock bypass culvert for ultimate discharge to the River Liffey estuary. This approach also included the construction of a 450,000 population equivalent WwTP on the North Fingal coastline (Portrane) in addition to extending the Ringsend plant to the maximum achievable treatment capacity of 2.16 million population equivalent in conjunction with significant expansion of WwTPs in Shanganagh/Bray, Osberstown, Leixlip, Portrane, Malahide, Balbriggan/Skerries and Swords.

Scenario 2C – Orbital Sewer to Treatment at Portrane

This scenario envisages that foul flows are intercepted in a new orbital sewer connecting the development areas in the west and north-west of the Greater Dublin Area (including Lucan, Clondalkin, Blanchardstown, Mulhuddart, East Meath and Kildare) and transferred to a new WwTP (850,000 population equivalent) on the North Dublin coastline (Portrane). This would involve the construction of a major sewer, constructed predominantly in tunnel, with a number of pumping interfaces. This strategic approach also includes extending the Ringsend plant to the maximum

achievable treatment capacity of 2.16 million in conjunction with significant expansion of WwTPs in Shanganagh/Bray, Osberstown, Leixlip, Portrane, Malahide, Balbriggan/Skerries and Swords.

- **STRATEGY APPROACH 3**

Maximise conveyance of flows and loads from the western development environs to Ringsend, but overcome capacity constraints at the Ringsend WwTP by transferring existing flows and loads from Ringsend to a new treatment facility.

In this strategic approach all flows and loads from an extended Ringsend catchment, including all future development in South Dublin, West Fingal, East Meath and ultimately an element of the Leixlip catchment in North Kildare would be transferred to Ringsend. This strategy acknowledges that the maximum future capacity of the Ringsend plant is limited to 2.16 million population equivalent and seeks to avoid exceeding this capacity by:

1. Diversion of Flows from North Dublin away from Ringsend to a new regional WwTP located on the North Dublin coastline (Portrane); and
2. Transfer of excess flows and loads from Ringsend across Dublin Bay to Sutton by reversing flows in the existing submarine pipeline and allowing for onward transfer to a regional WwTP on the North Dublin coastline (Portrane).

Scenario 3A – Swap Grand Canal Trunk Sewer Storm and Foul Cells

This scenario (as is the case with scenario 1A) involves the use of the significant residual capacity of the Grand Canal Trunk Sewer storm cell for foul flows. Ringsend would be extended to its maximum future capacity of 2.16 million population equivalent with additional flows pumped through a reversal of the Sutton submarine pipeline facilitating pumping forward to a regional WwTP (850,000 population equivalent) on the North Dublin coastline (Portrane). This strategy also includes the significant expansion of WwTPs in Shanganagh/Bray, Osberstown, Leixlip, Portrane, Malahide, Balbriggan/Skerries and Swords.

Scenario 3B – New Liffey City Interceptor Sewer

This approach would involve the construction of a new City Interceptor along the Liffey Quays in addition to extending Ringsend to its maximum future capacity (2.16 million population equivalent), with additional flows pumped through a reversal of the Sutton submarine pipeline facilitating pumping forward to a regional WwTP (850,000 population equivalent) on the North Dublin coastline (Portrane). This strategy also includes the significant expansion of WwTPs in Shanganagh/Bray, Osberstown, Leixlip, Portrane, Malahide, Balbriggan/Skerries and Swords.

Scenario 3C – New Foul Cell in the Grand Canal Trunk Sewer

This scenario would involve the construction of a new foul cell within the storm section of the Grand Canal Trunk Sewer in addition to extending Ringsend to its maximum future capacity (2.16 million population equivalent), with additional flows pumped through a reversal of the Sutton submarine pipeline facilitating pumping forward to a regional WwTP (850,000 population equivalent) on the North Dublin coastline (Portrane). This strategy also includes the significant expansion of WwTPs in Shanganagh/Bray, Osberstown, Leixlip, Portrane, Malahide, Balbriggan/Skerries and Swords.

4.3 ADDITIONAL STRATEGY OPTIONS TO BE CONSIDERED

In addition to the existing Strategy options, and having regard to the input received in written submissions and during the consultation exercises completed to date, 8 additional strategies will be considered. These are:

- **STRATEGY APPROACH 4 – REGIONAL WASTEWATER TREATMENT**

Scenario 4 - Single Regional Wastewater Treatment Works in the North Dublin Region discharging to the Irish Sea off the North Dublin coastline via Orbital Treated Effluent Pipeline.

This scenario envisages that foul flows be intercepted and provided with treatment in a single regional WwTP (850,000 population equivalent) located at a suitable site in the North Dublin Area. The treated effluent from this WwTP would be discharged via treated effluent pipeline with the ultimate receiving waters being the Irish Sea off the North Dublin coastline. This could involve the construction of a major treated effluent pipeline constructed predominantly in tunnel, with a number of pumping interfaces. This strategic approach also includes extending the Ringsend plant to the maximum achievable treatment capacity of 2.16 million population equivalent in addition to the significant expansion of WwTPs in Shanganagh/Bray, Osberstown, Leixlip, Portrane, Malahide, Balbriggan/Skerries and Swords.

- **STRATEGY APPROACH 5 – SUB-REGIONAL WASTEWATER TREATMENT**

Scenario 5A - Multiple Sub-Regional Wastewater Treatment Works discharging locally either to Surface or Groundwater

This scenario envisages that a number of smaller scale sub-regional wastewater treatment plants would provide treatment to foul flows from specific catchments on a foul catchment by foul catchment basis (located within these defined areas). The treated effluent from these plants would be discharged to the most proximal surface water or groundwater bodies. This strategic approach also includes extending the Ringsend plant to the maximum achievable treatment capacity of 2.16 million population equivalent. An additional treatment capacity of approximately 850,000 population equivalent would be required to be delivered with a number of treatment plants (e.g. 6 no. 140,000 population equivalent) located predominantly in/or in proximity to the foul catchment areas of Blanchardstown, Lucan/Clondalkin, East Meath and Kildare. This strategy also includes the significant expansion of WwTPs in Shanganagh/Bray, Osberstown, Leixlip, Portrane, Malahide, Balbriggan/Skerries and Swords.

Scenario 5B - Multiple Sub-Regional Wastewater Treatment Works discharging via an Orbital Treated Effluent Pipeline to the Irish Sea on the North Dublin Coastline

This scenario envisages that a number of smaller scale sub-regional wastewater treatment plants would provide treatment to foul flows from specific catchments in the development areas (located within these areas). The treated effluent from these plants would be discharged to an orbital treated effluent pipeline which would ultimately discharge to the Irish Sea on the North Dublin coastline. This would involve the construction of a major treated effluent pipeline constructed predominantly in tunnel, with a number of pumping interfaces. This strategic approach also includes extending the Ringsend plant to the maximum achievable treatment capacity of 2.16 million population equivalent. An additional treatment capacity of approximately 850,000 population equivalent would be required to be delivered with a number of treatment plants (e.g. 6 no. 140,000 population equivalent) located predominantly in/or in proximity to the foul catchment areas of Blanchardstown, Lucan/Clondalkin, East Meath and Kildare. This strategy also includes the significant expansion of WwTPs in Shanganagh/Bray, Osberstown, Leixlip, Portrane, Malahide, Balbriggan/Skerries and Swords.

- **STRATEGY APPROACH 6 – COMMUNITY WASTEWATER TREATMENT**

Scenario 6A - Community Based Wastewater Treatment Plants discharging either to Surface or Groundwater

This scenario considers the development of a network of community waste water treatment plants [e.g. 850 1,000 (approx.) population equivalent] each discharging to the most proximal surface water or groundwater bodies. As with the other strategies, this approach also includes extending the Ringsend plant to the maximum achievable treatment capacity of 2.16 million population equivalent

and the significant expansion of WwTPs in Shanganagh/Bray, Osberstown, Leixlip, Portrane, Malahide, Balbriggan/Skerries and Swords. It should be noted that, based on technology likely to be utilised on this scale of application, a centralised sludge processing facility(ies) would be required to support same (e.g. one to six large plants).

Scenario 6B - Community Based Wastewater Treatment Plants piped via Treated Effluent Orbital Pipeline to a Coastal Discharge

This scenario considers the development of a network of community waste water treatment plants [e.g. 850 no. 1,000 (approx.) population equivalent] each discharging via common treated effluent orbital pipeline ultimately discharging to the Irish Sea on the North Dublin coastline. This would involve the construction of a major treated effluent pipeline constructed predominantly in tunnel, with a number of pumping interfaces. As with the other strategies, this approach also includes extending the Ringsend plant to the maximum achievable treatment capacity of 2.16 million population equivalent and the significant expansion of WwTPs in Shanganagh/Bray, Osberstown, Leixlip, Portrane, Malahide, Balbriggan/Skerries and Swords. It should be noted that, based on the technology likely to be utilised on this scale of application, a centralised sludge processing facility(ies) would be required to support same (e.g. one to six large plants).

- **STRATEGY APPROACH 7 – LOCALISED WASTEWATER TREATMENT**

Scenario 7A - Multiple Local Wastewater Treatment Works discharging locally either to Surface or Groundwater

This scenario envisages that a number of smaller scale local treatment plants would provide treatment to foul flows on a foul catchment by foul catchment basis. The treated effluent from these local plants would be discharged to the most proximal surface water or groundwater bodies. An additional treatment capacity of approximately 850,000 population equivalent would be required to be delivered with a number of treatment plants [e.g. approximately 15-20 no. with a range of capacities depending on local needs whilst maximising usage of existing drainage assets] located within or in close proximity to foul catchments where significant deficiencies in wastewater treatment capacity are anticipated based on the data presented in the GSDSDS, e.g. Blanchardstown, Lucan/Clondalkin, East Meath and Kildare.

Scenario 7B - Multiple Local Wastewater Treatment Works discharging via an Orbital Treated Effluent Pipeline to the Irish Sea on the North Dublin Coastline

This scenario envisages that a number of smaller scale local treatment plants would provide treatment to foul flows on a foul catchment by foul catchment basis. The treated effluent from these plants would be discharged to an orbital treated effluent pipeline which would ultimately discharge to the Irish Sea on the North Dublin coastline. This would involve the construction of a major treated effluent pipeline constructed predominantly in tunnel, with a number of pumping interfaces. An additional treatment capacity of approximately 850,000 population equivalent would be required to be delivered with a number of treatment plants [e.g. approximately 15-20 no. with a range of capacities depending on local needs maximising usage of existing drainage assets] located within or in close proximity to foul catchments where significant deficiencies in wastewater treatment capacity are anticipated based on the data presented in the GSDSDS, e.g. Blanchardstown, Lucan/Clondalkin, East Meath and Kildare.

- **STRATEGY APPROACH 8 – ‘DO NOTHING/MINIMUM’ SCENARIO**

Scenario 8 – ‘Do Nothing/Minimum’ Scenario

This scenario considers the lack of implementation of new or strategic drainage infrastructure and relies on a strategy of maintenance and limited upgrading on an application by application basis.

4.4 SUMMARY OF DEVELOPMENT SCENARIOS

Scenarios 1A and 1B assumed the expansion of the Ringsend WwTP to 2.8m PE.

Scenarios 2A and 2B assumed the capacity of Ringsend WwTP would be capped at 2.16M PE and that new treatment facilities would be developed in South Dublin (350,000 PE) and in Fingal at Portrane (450,000 PE). The first phase of the South Dublin plant would be required close to the 2011 horizon with the timing considered to be dependent on the level of success in the load management strategy. Ultimately this plant would also cater for the projected exceedance of design at Osberstown and Leixlip WwTPs of 75,000 PE. The expansion of Portrane WwTP would be required closer to the 2031 horizon and would take additional loads from Swords WwTP (20,000 PE) and possibly Malahide WwTP which, in terms of exceeding design, would be marginal at that stage.

Scenarios, 2C, 3A, 3B and 3C assume that Portrane would become the new regional WwTP. It would require staged development up to 850,000 PE. The first stage of development was considered to be required close to the 2011 horizon. Ultimately it was considered that the Portrane plant would also cater for the projected design exceedance at Leixlip WwTP (50,000 PE), Osberstown WwTP (25,000 PE) and Swords WwTP (20,000 PE). It was also considered that this plant would cater for Malahide, which in terms of exceeding design would be marginal at that stage.

Scenario 4 involves the construction of a new regional WwTP (850,000 PE) in the North Dublin Area. The treated effluent would then be piped via a treated effluent pipeline to an ultimate discharge point in the Irish Sea, adjacent to the North Dublin coastline.

Scenario 5 involves the construction of a number of sub-regional WwTPs at locations in proximity or within the foul catchments within which the treatment requirement arises. The treated effluent would then be discharged via a treated effluent orbital pipeline to an ultimate discharge point in the Irish Sea adjacent to the North Dublin coastline (5B) or locally to surface water courses or groundwater bodies (5A).

Scenario 6 focuses on the use of small scale community based WwTPs discharging either via a treated effluent orbital pipeline to an ultimate discharge point in the Irish Sea adjacent to the North Dublin coastline (6B) or locally to surface water courses or groundwater bodies (6A).

Scenario 7 involves the construction of a number of local WwTPs at locations in proximity or within the foul catchments within which the treatment requirement arises. The treated effluent would then be discharged via a treated effluent orbital pipeline to an ultimate discharge point in the Irish Sea adjacent to the North Dublin coastline (7B) or locally to surface water courses or groundwater bodies (7A).

Scenario 8 considers the lack of implementation of new or strategic drainage infrastructure and relies on a strategy of maintenance and limited upgrading of drainage infrastructure.

5 Key Environmental Baseline and Constraints Issues

5.1 INTRODUCTION

This section summarises the key relevant environmental issues within the Greater Dublin Area. This section does not intend to provide baseline data as this will be provided in the Environmental Report. In addition, the baseline data (and indeed, the Environmental Report and whole SEA Process) will focus on relevant strategic and significant environmental issues rather than site-specific issues.

5.2 KEY ENVIRONMENTAL ISSUES

5.2.1 Drainage Capacity

It is noted in the GSDSDS that many of the various sewerage systems in the Greater Dublin Area have insufficient capacity to adequately manage the current and predicted wastewater volumes. For example, in relation to the City Centre/Docklands Sewage system, the GSDSDS Final Strategy Report notes (p.56) that *"there are many areas with insufficient capacity. Frequent and widespread flooding occurs and many combined storm overflows fail to pass forward sufficient flow"*.

Regarding the 9C Trunk Sewer (which feeds into the Grand Canal System), the GSDSDS Final Strategy Report noted that the sewage collection and forwarding system could not cater for the future predicted development in Ashbourne and Ratoath. The Final Strategy Report goes on to note that many other sewage collection systems in the Greater Dublin Area are at capacity and require upgrading.

5.2.2 Wastewater Treatment Works

There is adequate treatment capacity at seven of the eight, existing and proposed wastewater treatment facilities in the Greater Dublin Area at the 2011 design horizon. However, an assessment of predicted flows for 2031 reveals that most of these facilities will be unable to cope with future loads. To address these capacity issues, the design and planning of the expansion of the Greater Dublin Area's population must be considered now. Leaving such issues until future years may result in the inability of the drainage and treatment system to cope with future loads, ultimately requiring expensive and urgent remedial measures, which may be vastly more expensive in comparison to measures which may be considered now.

It is important to note that the issues identified in Sections 5.2.1 and 5.2.2 may limit the ability of the Greater Dublin Area to facilitate population growth and expansion in future years. It is essential that adequate drainage and wastewater treatment capacity is available to cater for future population and employment growth.

Currently, the population of the Greater Dublin Area is increasing due to various factors, the key factor of which is the continued growth of Ireland's economy. This has led to high levels of in-migration from many sources within Ireland, Europe and the world at large. This trend is predicted to continue in future years. The GSDSDS (Table 4.3 in the final Strategy Report) notes that by 2011 the population of the region is estimated to be approximately 1,489,962 persons (up from a population estimate of 1,225,545 in 2002; an predicted increase of over 21.5%). By 2031, the population within the GSDSDS area is estimated to be approximately 2,054,401; an increase of almost 38% over the 2011 population estimates. A national population census was undertaken in 2006 and provisional results of this confirm the population trends identified and discussed in the GSDSDS. These population estimates illustrate the extent of population (and thus wastewater loads) in the Greater Dublin Area and the need to consider such future demands now. Circular SP1/07, produced by the Department of environment, Heritage and Local Government in February 2007, addresses revised National and Regional Population Targets for Ireland. This Circular indicates that the GSDSDS population estimates for 2031 are likely to be reached sooner, possibly as early as 2020.

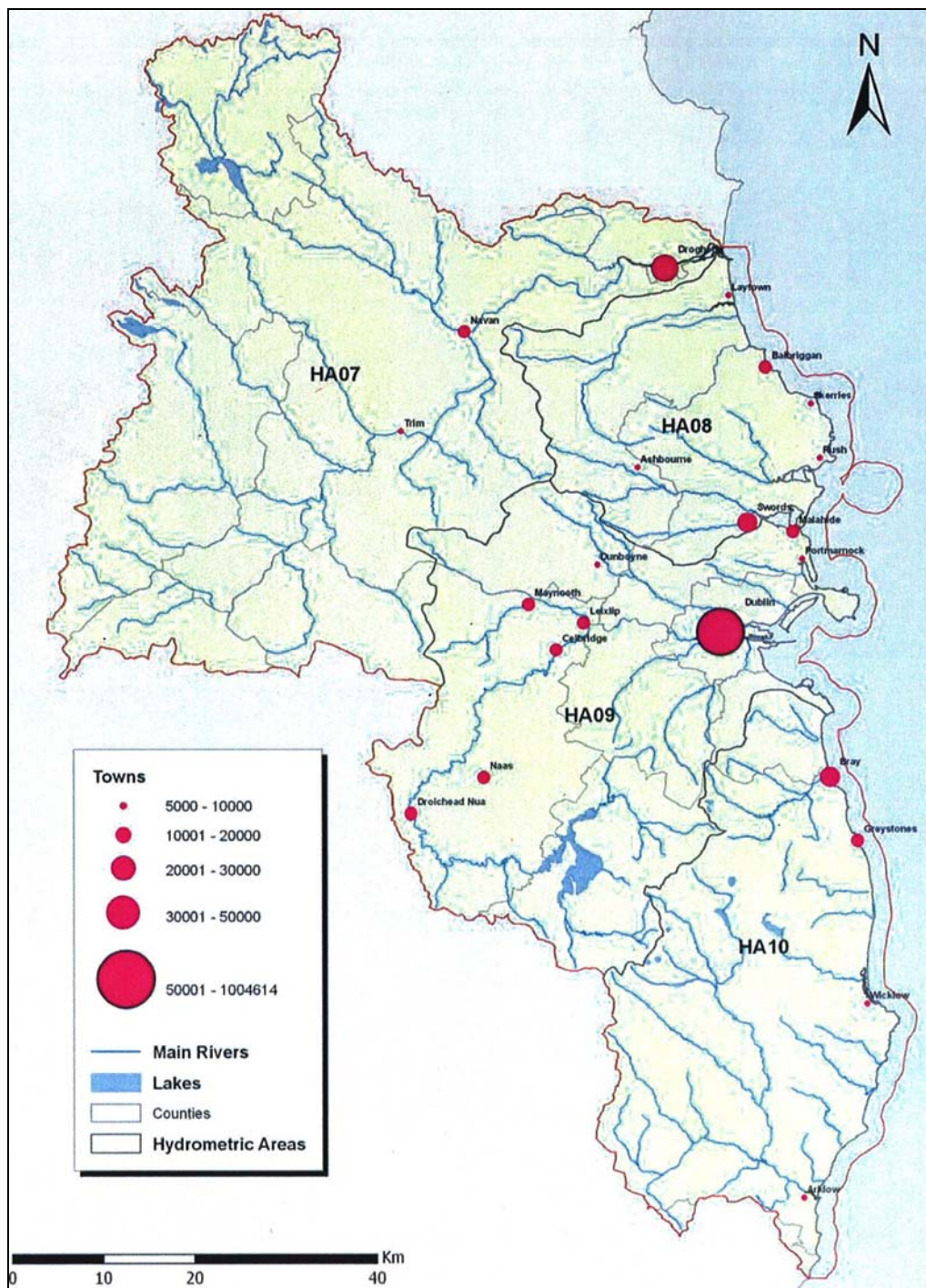
5.2.3 Surface and River Water Quality

The data in this section has been obtained from *Eastern River Basin District Project: Characterisation Report (2005)*, prepared to meet Ireland's requirements under the Water Framework Directive. The preparation of the Characterisation Report involved the preparation of risk assessments for each of the identified water bodies. The GSDS Study area is covered by three hydrometric areas (HA) within the Eastern River Basin District under the Water Framework Directive.

The three HAs are listed below and shown in *Figure 5.1*:

- HA 08 - Nanny/Delvin Catchment Area;
- HA 09 - Liffey Catchment Area; and
- HA 10 - Avoca/Varty Catchment Area.

Figure 5.1 HA boundaries for HA 08, 09 and 10



Map sourced from Eastern River Basin District Project: Characterisation Report (2005).

A total of 55 river water bodies have been identified within HA 08. 98% of the lengths of these rivers are classified as being "At Risk" with the final 2% classified as "Probably At Risk". None of the river lengths are classified as "Not At Risk" or "Probably Not At Risk".

HA 09 has had 104 river water bodies identified within same. Of these, 39% are classified as being "At Risk", 40% "Probably At Risk", 15% "Probably Not At Risk" and 10% "Not At Risk".

A total of 78 river water bodies have been identified in HA 10. 39% of these water bodies are classes as being "At Risk", 19% "Probably at Risk", 16% Probably Not At Risk" and 4% "Not At Risk".

The above data shows that the majority of water river bodies in the study are classified as being "At Risk". Further details, and data, on this topic will be provided in the baseline section of the Environmental Report.

5.2.4 Groundwater Quality

75 no. groundwater bodies (GWB) have been identified as part of the preparation of the groundwater risk assessment for the Eastern River Basin District Project: Characterisation Report (2005). The largest numbers of GWBs are to be found in the counties of Meath, Fingal and Kildare.

2.67% of GWBs are classified as being "At Risk", 64% are classified as being "Probably At Risk", 24% are "Probably Not At Risk" and 9.3% are classed as being "Not At Risk". The Final Characterisation Report notes (p.9.9) that the "Probably At Risk" (64%) and the "Probably Not At Risk" (24%) represents a "grey area definitive assignment of risk is not possible at this point". The Report elaborates that "available data and knowledge regarding pressure impacts are either insufficient or inconclusive" and that "a low confidence factor exists in available data/knowledge".

5.2.5 Pressures on European Sites within the GSDSDS Area and Non-Compliance with EU Water Standards

There are a number of European Sites (SACs and SPAs) within the study area. Of particular importance are the aquatic sites - as these are the sites with the greatest potential to be impacted upon due to the need for treated effluent and storm overflows to be discharged into receiving waters.

The key EU legislation regarding the Greater Dublin Strategic Drainage Strategy is the EU Urban Waste Water Treatment (91/271/EEC). *S.I. No. 254 of 2001 Urban Waste Water Treatment Regulations, 2001* as amended, transposes the EU Directive into Irish Law and prescribes requirements for provision of collection and treatment systems, monitoring and performance standards.

Other relevant EU legislation includes, e.g.

- Nitrates Directive (91/676/EEC);
- Bathing Water Directive (2006/7/EC);
- Directive relating to the quality of water intended for human consumption (80/778/EEC);
- Directive on Surface Water for Drinking Water Abstraction (75/440/EEC as amended by Directives 79/869/EEC and 91/692/EEC);
- Shellfish Water Directive (79/923/EEC as amended by Directive 91/692/EEC);
- Ground Water Directive (80/68/EEC as amended by Directive 91/692/EEC);
- Birds Directive (79/409/EEC); and
- Habitats Directive (92/43/EEC).

The GSDSDS Final Strategy Report notes (p.78) that the existing treatment facility at Ringsend will need to be expanded as, otherwise, *"it will be unable to meet its statutory requirements"*.

Page 80 of the Final Strategy Report further notes that *"there is a real risk that currently acceptable discharge standards based on the assimilative capacity of the River Liffey and Liffey Estuary will become more stringent in the future following the advent of the Water Framework Directive and the envisaged adverse impact of climate change on low flows in the river"*.

Page 82 of the Final Strategy Report states that *"the constraint on the further development (on a 2031 horizon) of the Osberstown, Leixlip and Swords treatment facilities is the assimilative capacity of the receiving waters"*.

The above data illustrates that a key factor in the selection of the preferred drainage strategy in the Environmental Report will be ensuring that any treated effluent outfall will not impact on designated or sensitive receiving waters and sites.

5.3 BASELINE DATA GAPS AND INFORMATION REQUIREMENTS

5.2.1 General

At this stage in the project it is considered that there is sufficient information available to prepare the Environmental Report. However, the preparation of the Environmental Report may reveal unforeseen data gaps. These will be discussed, if relevant, in the Environmental Report.

6 Environmental Objectives

6.1 INTRODUCTION

This Section outlines the environmental objectives for the Environmental Report. These objectives will be used to assess the likely significant effects on the environment for each of the drainage options.

6.2 OBJECTIVES

As noted in *Section 2.2*, there are three sources for the Environmental Objectives, the environmental headings in Annex 2(f) of S.I. of 435 of 2004; relevant EU and national environmental policies and the objectives of the GSDS Strategy. *Table 6.1* below outlines the proposed environmental objectives.

Against each objective, an assessment will be made regarding the nature (positive or negative) and significance (minor or major) of the impact. Where no impact is envisaged, a neutral classification will apply.

It is important to note that it is not possible to consider site-specific effects (such as cultural heritage) at this strategic assessment stage, as such effects are more appropriately considered during the consideration of alternative sites as part of the preparation of a planning application. It must also be noted that all of the environmental topics listed below will be examined in detail via the planning process.

Table 6.2 outlines the proposed indicators and targets for each of the specific objectives. Indicators are what will be used to track and assess the nature and significance of an impact. Targets present a transparent tool to facilitate the assessment of the likely significant effects.

Table 6.1 Proposed Environmental Objectives for the GSDS SEA Environmental Report

Objective Title	Specific Objective	Comment
Biodiversity, flora and fauna	The Strategy should not significantly impact on European Designated Sites (SACs and SPAs), other Designated Sites (e.g. sensitive waters, bathing waters) or local sites (NHAs).	European conservation sites have a high level of protection, based on their importance in terms of nature conservation. Generally, development which will significantly impact on such a site will not be permitted.
Population and human health	The Strategy should seek to avoid locating major wastewater treatment plants close to large centres of population. The Strategy must not result in significant impacts on human health, either from the operation of the various pieces of infrastructure or from effluent discharges.	<p>While modern design standards and legislation minimise off-site impacts from wastewater treatment plants, it is generally preferable to locate such facilities close to small centres of population. Other preferable locations include existing wastewater treatment sites and industrial areas.</p> <p>The inadequate treatment of raw sewage can result in human-health impacts if pollution of groundwater, surface waters and marine waters arises. The size and scale of the population in the Greater Dublin Area is such that it is essential that all wastewater arisings are treated to appropriate standards, over and beyond the 2031 timeframe of the GSDS Strategy.</p>

Objective Title	Specific Objective	Comment
Water	The Strategy should not result in significant adverse effects on groundwaters, estuarine waters, coastal waters and riverine water systems and should also not impact on Water Framework Directive (WFD) objectives and measures. The strategy must comply with all water and fisheries-based legislation, such as the Urban Waste Water Treatment Directive (91/271/EEC), Freshwater Fish Directive (78/659/EC), etc.	The WFD is an EU Directive which has been transposed into Irish law, and thus must be complied with. Water-based legislation must be complied with at all times and at all stages of the development process.
Air	The Strategy must not result in non compliance with the <i>European Communities (Odour and Noise) (Waste Water Treatment) Regulations, 2005</i> .	Odour nuisance is one of the key issues for local populations adjacent to WwTP and sludge treatment facilities.
Climatic Factors	The Strategy should minimise energy consumption and thus greenhouse gas (GHG) production, which contributes to climate change. The Strategy should also maximise renewable energy sources, as appropriate.	GHG contribute to climate change, one of the key current global issues.
Material Assets	Material assets refers to public and private assets, and areas of economic, public and recreational importance. The Strategy should not impact on important material assets.	Material assets considers the non-environmental aspects of public and private assets (e.g. parks, public buildings and facilities, residential assets etc.).
Cultural Heritage	The Strategy must not impact on designated cultural heritage sites (e.g. National Monuments), areas of known potentially high archaeological importance, conservation areas and Protected Structures.	Cultural heritage is an important aspect of the environment. Development has the potential to impact on both known and unknown cultural heritage resources.
Landscape	The Strategy should minimise impacts on designed, sensitive and protected landscapes. Outside such landscapes, the Strategy should minimise both immediate and distant impacts on the surrounding landscape.	The nature of WwTPs is that their appearance may impact negatively on the immediate landscape. Thus, proposed infrastructure should preferably be located within existing facilities, within industrial areas or sites of poor landscape value.
Inter-relationships between the above factors and cumulative impacts	The Strategy should not have significant impacts through interrelationships or cumulative impacts between the individual environmental topics.	The consideration of interrelationships and cumulative impacts is required under the SEA Regulations. Individual impacts, which may be insignificant on their own, cumulatively, may be significant.

Objective Title	Specific Objective	Comment
Engineering	The Strategy should be reliable over the duration, and beyond, the 2031 design horizon. The Strategy should comply with industry best practice.	This criterion examines the reliability and technical feasibility of each of the Strategies. It is essential that the chosen Strategy is capable of reliably delivering the required level of wastewater treatment in the short and long term.
Economic Factors	There is no explicit objective for economic factors. Rather, the relative economic cost of each Strategy Option will be considered.	Economic factors are a relevant consideration in the selection of the chosen Strategy as per the EPA's SEA Guidance Document (p.16). Economic factors in this case include development/capital costs and the ongoing maintenance and operation costs.
Flexibility	The Strategy must be capable of responding to unforeseen scenarios during the implementation of the chosen strategy. The strategy must also have the ability to minimise long-term implementation shortfalls and form a basis for long-term drainage needs in the Greater Dublin Area.	The GDSDS has a design horizon of 2031. Both the short and long term situations must be considered to ensure that the benefits of the GDSDS are ongoing. It is also important that the strategy is flexible and can 'react' to more immediate needs during the implementation of the strategy from now until the 2031 horizon.
Deliverability and Planning Risk	There is no explicit objective for deliverability and planning risk. Rather, the relative likely deliverability of each Strategy will be examined.	Site selection and acquisition can delay any infrastructure project. A major risk to any drainage infrastructure is the risk that it will not obtain appropriate development consent. Delays can also arise during the planning system which can delay the overall implementation of the chosen Strategy.

Table 6.2 below outlines the proposed indicators and targets in regards to the environmental objectives in Table 6.1.

Objective Title	Specific Objective	Indicator ¹	Targets/assessment criteria ²
Biodiversity, flora and fauna	The Strategy should not significantly impact on European designated sites (SACs and SPAs) or other Designated Sites (e.g. sensitive waters, bathing waters).	Nature and significance of likely impacts on any Designated Sites.	<p>No likely significant impacts to Designated Sites. Predicted significant adverse impacts to such Sites will be classified as major negative effects.</p> <p>The assessment of potential impacts to any receiving waters will be based on a review of existing data from National Parks and Wildlife Service (NPWS), WFD data, EPA water quality data and reports, and local authority data.</p>
Population and Human Health	The Strategy should seek to avoid locating major wastewater treatment plants close to large centres of population. The Strategy must not result in significant impacts on human health, either from the operation of the various pieces of infrastructure or from effluent discharges.	Potential for human health impacts from the Strategy Option.	<p>No impacts to human health arising from the Strategy.</p> <p>In making this assessment, consideration will be given to the environmental suitability of the required treatment and discharge conditions and the possibility for significant impacts on recreational, bathing and potable water sources.</p>
Water	The Strategy Option should not result in significant adverse effects on groundwaters, estuarine waters, coastal waters and riverine water systems and should also not impact on WFD objectives and measures. The strategy option must also meet all water and fisheries-based legislation, such as the Urban Waste Water Treatment Directive (91/271/EEC), Freshwater Fish Directive (78/659/EC), etc.	Nature and extent of impact on receiving waterbodies and compliance with all water, habitat and fisheries-based legislation.	<p>No likely significant impacts to designated waters. Predicted significant adverse impacts to designated waters will be classified as major negative effects.</p> <p>The assessment of potential significant impacts to receiving waters will be based on a review of existing data from the WFD Eastern River Basin District Project, EPA water quality data and reports, and local authority data.</p>

¹ An Indicator is an aspect of the environment (e.g. impact on designated sites, water quality etc.) which will be examined in applying the Environmental Objectives.

² Targets/assessment criteria provide detail on ways to measure and assess the performance of the options against the individual Environmental Objectives. Note that it may not be possible to have targets for all the Environmental Objectives.

Objective Title	Specific Objective	Indicator ¹	Targets/assessment criteria ²
Air	The Strategy Option must not result in non-compliance with the <i>European Communities (Odour and Noise) Waste Water Treatment Regulations, 2005</i> .	Compliance with European Communities (Odour and Noise) Waste Water Treatment Regulations, 2005.	<p>The target is compliance with the Odour Regulations, as stated in the Environmental Objective.</p> <p>However, it is not possible to undertake an odour assessment (and thus compliance with the Odour Regs.) for each of the Strategies as the required technical details (plant location, technology, specification etc.) are not available at this stage in the development process.</p> <p>The number of wastewater treatment plants will be used as a proxy indicator for this objective. Strategy Options with a relatively low number of WwTP (e.g. 1 - 10) and associated infrastructure will perform better against this objective, as there will be a relatively lower number of potential odour sources and greater economies of scale. Strategies with relatively high numbers of WwTP (e.g. 15/20 +) will not perform as well under this Environmental Objective as there will be a much greater number of potential odour sources.</p>

Objective Title	Specific Objective	Indicator ¹	Targets/assessment criteria ²
Climatic Factors	<p>The Strategy Option should minimise energy consumption and thus greenhouse gas (GHG) production, which contributes to climate change. The strategy option should also maximise renewable energy sources as appropriate.</p>	<p>Relative GHG emissions and potential to utilise renewable energy sources.</p>	<p>The target is the minimisation of energy consumption and thus overall GHG production.</p> <p>While it is not possible to determine the actual energy demand for each Strategy Option at this stage in the development process (due to the lack of detailed information such as plant size, equipment specification, operation practices etc.), the energy intensiveness for each strategy option, in comparison to the other strategy options, will be examined.</p> <p>The relative number of WwTPs will be used as a proxy indicator for this objective. Strategy options with relatively low number of WwTP (e.g. 1 - 10) will perform better against this objective, as there will be a relatively lower number of sites. Strategies with relatively high numbers of WwTP (e.g. 15/20 +) will not perform as well under this Environmental Objective as there will be a much greater number of sites (and thus pieces of individual plant and equipment) resulting in reduced economies of scale in relation to energy consumption.</p>
Material Assets	<p>The Strategy Option should not impact on important material assets. Material assets refers to public and private assets, and areas of economic, public and recreational importance.</p>	<p>Extent and significance of impacts on material assets, both public and private.</p>	<p>This Objective is site-specific and, thus, will be considered in greater detail when alternative site(s) have been identified (not part of the GDSDS SEA). However, strategy options with a relatively large number of sites are likely to perform less well against this Environmental Objective, in comparison to an option with a relatively low number of sites.</p>

Objective Title	Specific Objective	Indicator ¹	Targets/assessment criteria ²
Cultural Heritage	The Strategy Option must not impact on designated cultural heritage sites (e.g. National Monuments), areas of known potentially high archaeological importance, conservation areas and Protected Structures.	Extent and significance of impacts on any cultural heritage designations (e.g. Protected Structures) or on archaeological resources (known and unknown).	This Objective is site-specific and, thus, will be considered in greater detail when alternative site(s) have been identified (not part of the GSDS Strategies SEA). However, strategy options with a relatively large number of sites are likely to perform less well against this Environmental Objective, in comparison to an option with a relatively low number of sites.
Landscape	The Strategy Option should minimise impacts on designed, sensitive and protected landscapes. Outside such landscapes, the strategy option should minimise both immediate and distant impacts on the surrounding landscape.	Extent and significance of impacts on protected and/or designated landscapes.	This Objective is site-specific and, thus, will be considered when alternatives site(s) have been identified (not part of the GSDS Strategy SEA). However, Strategy Options with a relatively large number of sites are likely to perform less well against this Environmental Objective, in comparison to an option with a relatively low number of sites.
Interrelationships between the above factors and cumulative impacts	The Strategy Option should not have significant impacts through interrelationships or cumulative impacts between the individual environmental topics.	There is no measure of Interrelationships between the above factors and cumulative impacts. Instead, an assessment will be made regarding the comparative performance of each of the Strategy Options against each other.	There is no specific target for this objective. A consideration will be given to the relative overall performance of each of the Strategy Options.
Engineering	The Strategy Option should be reliable over the duration, leading up to and beyond, the 2031 design horizon. The selected strategy option should comply with industry best practice.	Technical judgement of the assessment of the relative likely engineering merits of each of the strategy options.	There is no appropriate target or measure of engineering feasibility and/or reliability. Instead, an assessment will be made regarding the comparative engineering performance of each of the Strategy Options against each other.

Objective Title	Specific Objective	Indicator ¹	Targets/assessment criteria ²
Economic Factors	There is no explicit objective for economic factors. Rather, the relative economic cost of each strategy option will be considered in light of each strategy option performance under the other objectives.	Cost estimates will not be presented for each of the strategies. Instead, a consideration will be given to the relative economic cost of each strategy option. Other factors to be considered are the long-term maintenance and operation costs, and land acquisition costs.	There are no explicit economic targets. However, economic factors will not be used as the primary determinant in the selection of the chosen strategy option. Rather, this Objective will be considered in parallel and equally with all other Objectives.
Flexibility	The Strategy Option must be capable of responding to unforeseen scenarios during the implementation of the chosen strategy. The strategy must also have the ability to minimise post-2031 issues and form a basis for both short and long-term drainage needs in the Greater Dublin Area.	There is no measure of flexibility. Instead, an assessment will be made regarding the comparative performance of each of the Strategies flexibility against each other. Issues to be considered under this objective include the ability of a strategy option to respond to the need to increase in treatment capacity and the ability of a strategy option to meet current and future wastewater treatment demands.	There is no specific target for this objective. Strategy options with a large portion of new infrastructure will perform the best under this objective as there is, theoretically, no limit to the sizing of the new infrastructure. Strategy options which use existing infrastructure will be constrained by the limitations of the existing infrastructure, and thus, will be less flexible.
Deliverability and Planning Risk	There is no explicit objective for deliverability and planning risk. Rather, the relative likely deliverability of each Strategy Option will be examined.	There is no direct measure of deliverability and planning risk. Instead, an assessment will be made regarding the comparative performance of each of the overall deliverability of each strategy option.	There is no specific target for this Objective. A key factor under this objective is the number of WwTP sites (inc. sludge processing facilities) which are required under each Strategy Option. Options with a relatively large number of facilities will not perform as well against this Objective in comparison to Options which have a relatively smaller number of sites. The basis for this is that the greater the number of sites, the greater the risk that all of the Strategy will not be delivered and constructed due to potential delays (site selection and acquisition, planning process, procurement, construction, operation etc.) with a few of the sites.

7 SEA Scoping Consultation

7.1 INTRODUCTION

This section briefly describes the consultation which was undertaken on the Draft SEA Scoping Report.

7.2 PURPOSE OF SCOPING CONSULTATION

The main aim of consultation on the Draft SEA Scoping Report is to request submissions from the designated Environmental Authorities, non-designated/other authorities and the general public on the proposed scope of the GDSDS Strategy SEA.

As noted in *Section 1.3*, there are six main objectives of the Draft SEA Scoping Report. It is intended to seek submissions on any or all of these individual objectives.

Upon receipt and consideration of these submissions, amendments may be made to the Scoping Report and a Final SEA Scoping Report will be prepared.

7.3 SEA SCOPING CONSULTATION PROCESS

The Draft SEA Scoping Report was made publicly available on Fingal County Council's website for a six week period (four weeks initially, and then a subsequent two week extension at the request of some public interest groups). Hard copies of the Draft SEA Scoping Report were made available in the main offices of all seven Local Authorities. Notices were placed in a national newspaper, informing the public both of the original four week consultation period and also of the subsequent two week extension.

The Draft SEA Scoping Report was also sent to the following authorities and bodies listed below. The first three authorities are the only bodies with whom scoping consultation is legally required.

- Environmental Protection Agency;
- Department of Environment, Heritage & Local Government;
- Department of Communications, Marine & Natural Resources;
- Dublin City Council;
- South Dublin County Council;
- Fingal County Council;
- Dun Laoghaire-Rathdown County Council;
- Meath County Council;
- Kildare County Council; and
- Wicklow County Council.

A total of 188 submissions were received during the six week consultation process. A summary of issues raised, and appropriate responses to these issues, can be found in the separate SEA Scoping Consultation Submissions Report.

7.4 ALTERATIONS TO THE DRAFT SEA SCOPING REPORT

The significant alterations to the Draft Scoping report are set out below. Minor amendments such as legislative references, expansion on abbreviations, etc. were completed as a matter of course.

Change #1 – Additional Strategy Option

An additional Strategy Option which considers the wastewater treatment needs on a 'local' basis, will be assessed in the Environmental Report. This will be Strategy Option 7 (and will have two sub-options, 7A

and 7B), with the 'Do-Nothing' Option becoming Strategy Option 8. *This change has been made to Section 4.3 of this Final Scoping Report.*

Change #2 – Inclusions of Reference to Osberstown in Option 2C

Kildare County Council requested that page 15 of the Draft Scoping Report be amended to include reference to Option 2C and the associated contribution of 25,000 p.e. from Osberstown for that scenario as was envisaged in the GSDSDS. *This change has been made to Section 4.3 of this Final Scoping Report.*

Change #3 – Clarification on Objectives and Assessment Criteria

Additional detail and explanatory footnotes have been applied to the Indicators and Targets/assessment criteria of the Environmental Objectives in Table 6.2 of the Draft Scoping Report for clarification purposes. Such additional detail has been drafted to provide greater transparency in relation to the environmental Objectives and to the assessment methodology. *This change has been made to Table 6.2 of this Final Scoping Report.*

Change #4 – Inclusion of Reference to Fisheries Based Legislation in Water Objective

The Water Environmental *Objective* states that the "*strategy must comply with all aquatic-based legislation*", thus including fisheries legislation. However, for clarification, this objective was rephrased to state that the strategy option must also meet all water and fisheries-based legislation, such as the Urban Waste Water Treatment Directive (91/271/EEC), Freshwater Fish Directive (78/659/EC), etc. *This change has been made to Tables 6.1 and 6.2 of this Final Scoping Report.*

Change #5 – Amendment of Climatic Factors Environmental Objective

At the scoping meeting with the EPA in May '07, it was recommended that a slight amendment be made to the Climatic Factors Environmental Objective. The EPA requested that "the strategy option should also maximise renewable energy sources, as appropriate". This amendment has been completed. *This change has been made to Tables 6.1 and 6.2 of this Final Scoping Report.*

8 Environmental Report

8.1 INTRODUCTION

This section presents the provisional contents of the Environmental Report.

8.2 PROVISIONAL CONTENTS

Table 8.1 below outlines the information which must be provided in the Environmental Report.

Table 8.1 Information to be contained in an Environmental Report (from Schedule 2 of S.I. 435 of 2004)

Information requirement
(a) An outline of the contents and main objectives of the plan or programme, or modification to a plan or programme, and relationship with other relevant plans or programmes;
(b) the relevant aspects of the current state of the environment and the likely evolution thereof without implementation of the plan or programme, or modification to a plan or programme;
(c) the environmental characteristics of areas likely to be significantly affected;
(d) any existing environmental problems which are relevant to the plan or programme, or modification to a plan or programme, including, in particular, those relating to any areas of a particular environmental importance, such as areas designated pursuant to the Birds Directive or the Habitats Directive;
(e) the environmental protection objectives, established at international, European Union or national level, which are relevant to the plan or programme, or modification to a plan or programme, and the way those objectives and any environmental considerations have been taken into account during its preparation;
(f) the likely significant effects on the environment, including on issues such as biodiversity, population, human health, fauna, flora, soil, water, air, climatic factors, material assets, cultural heritage including architectural and archaeological heritage, landscape and the interrelationship between the above factors;
(g) the measures envisaged to prevent, reduce and as fully as possible offset any significant adverse effects on the environment of implementing the plan or programme, or modification to a plan or programme;
(h) an outline of the reasons for selecting the alternatives dealt with, and a description of how the assessment was undertaken including any difficulties (such as technical deficiencies or lack of know-how) encountered in compiling the required information;
(i) a description of the measures envisaged concerning monitoring of the significant environmental effects of implementation of the plan or programme, or modification to a plan or programme;
(j) a non-technical summary (NTS) of the information provided under the above headings.

The Environmental Report will contain all of the above information.

9 References & Data Sources

Circular SP1/07: National Population Projections & Regional Population Targets 2006 - 2020. Department of Environment and Local Government (2007).

Development of Strategic Environmental Assessment (SEA) Methodologies for Plans and Programmes in Ireland, Environmental Protection Agency (2003).

Eastern River Basin District Project - Characterisation Report, CDM (2005).

Greater Dublin Strategic Drainage Study - Final Strategy Report, Dublin Drainage Consultancy (2005).

Implementation of SEA Directive (2001/42/EC) - Assessment of the Effects of Certain Plans and Programmes on the Environment. Guidelines for Regional Authorities and Planning Authorities, Department of Environment, Heritage and Local Government (2004).

SEA Scoping Consultation Submissions Report, Mott MacDonald Pettit & ERM Ireland (2007) ¹

¹ The SEA Scoping Consultation submissions are available at Fingal County Council.

10 Conclusions

10.1 Overview

One of the key stages in the SEA Process is the determination of the key issues which are to be addressed in the Environmental Report. Scoping will ensure that the SEA is focused on the relevant issues and also examines issues at the appropriate level of detail.

Key environmental issues include;

- Limited drainage capacity in the Greater Dublin Area;
- Limited wastewater treatment capacity in the Greater Dublin Area;
- Surface water quality;
- Groundwater quality;
- Compliance with European and National Water Quality Standards; and
- Pressure on designated nature conservation sites in the Greater Dublin Area.

Based on the above issues, a set of Environmental Objectives, Indicators (where applicable) and Targets (where applicable) have been developed to ensure these issues are considered during the assessment of Strategy Options.

The SEA Scoping consultation process has included the general public, Local Authorities and the three designated environmental authorities. 188 submissions were received on the Draft SEA Scoping Report. Following consideration of these submissions, amendments were made to the Draft SEA Scoping Report and these are included in this Final SEA Scoping Report. These changes are summarised in Section 7.4 above. Greater details on the nature of the issues raised during the SEA consultation process can be found in the separate SEA Scoping Consultation Submissions Report.

The Environmental Objectives will be used to determine the relative advantages and disadvantages of each of the 16 Strategy Options with a view to selecting a preferred option, for which the likely significant effects on the environment will be described. Mitigation measures will then be recommended to address the identified likely significant effects. All of these assessments will be described in the Environmental Report.

