



Comhairle Contae Fhine Gall

Fingal County Council



WATER SERVICES ASSESSMENT OF NEEDS

2005 - 2012

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WATER SERVICES ASSESSMENT OF NEEDS

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1. WATER SERVICES ASSESSMENT OF NEEDS

Introduction

The Department of the Environment Heritage and Local Government (DEHLG) requires local authorities to prepare an updated assessment of needs for water services capital works in their areas every five years. The main purpose of the assessment is to enable a local authority to develop an overall Strategic Investment Plan for the medium to long term and to set out a programme of works to meet the identified water services needs. The Assessment of Needs provides the basis for scheme approval and scheduling for implementation in the Water Services Investment Programmes, which are updated by the DEHLG on an annual basis. In this context water services include:

- drinking water treatment and distribution
- wastewater collection and disposal
- stormwater management, including collection and disposal.

Fingal County Council prepared an Assessment of Needs in November 2003 for the period 2003 – 2012. Two very significant processes have recently been completed which now require the Assessment of Needs to be updated.

- The Greater Dublin Strategic Drainage Study (GSDSDS) was commissioned in 2001 to develop environmentally sustainable drainage policies and strategies for the region for the 30 year period up to 2031;
- The Fingal Development Plan 2005 – 2011 sets out Fingal County Council's policies and objectives for the development of the County and seeks to develop and improve in a sustainable manner the environmental, social, economic and cultural assets of Fingal. The Development Plan has fully incorporated the policies and strategies identified in the GSDSDS.

This update of the Assessment of Needs outlines:

- The regional drainage policies and strategy adopted in the GSDSDS and the programme of works identified for the Fingal area.
- The achievements of the Water Services Investment Programme in Fingal from the 1999 Assessment of Needs to date
- The specific Water Services needs for the period 2005 – 2007
- An examination, from a strategic perspective, of the main requirements for water services for the period 2007 – 2012
- A costed programme of works, in order of priority, of water, wastewater and surface water schemes.

Public Consultation

The process for the adoption of this review of the Water Services Assessment of Needs is:

- Presentation of a draft document to the Environment Strategic Policy Committee
- Public advertisement of the draft document allowing a period of one month for submissions

- Presentation of the draft document together with public submissions, and responses thereto, to a meeting of Fingal County Council.
- Submission of the Assessment of Needs, as approved by the Council, including submissions received on the published draft, and responses thereto, to the DEHLG.

Background

Fingal's Water Services Department is responsible for delivering the full range of water services to the Fingal administrative area. This includes abstraction, treatment and distribution of drinking water; collection, treatment and disposal of wastewater; collection and disposal of surface water in urban areas and monitoring and control of water pollution. In addition, as Fingal lies within the Greater Dublin Area, it shares a number of strategic water services with other local authorities in the Region. e.g.

Water supply - Fingal operates a major water treatment plant at Leixlip, which abstracts water from the River Liffey. Drinking water from Leixlip is distributed to Fingal and the Northeast of Dublin City, via Ballycoolen reservoir, and also to South Dublin, north Kildare and parts of south Meath. The Sutton, Baldoyle and Howth areas of Fingal are supplied from Dublin City.

Wastewater - the southern part of the county from Blanchardstown/Mulhuddart to the Airport and the coastal area from Portmarnock to Howth discharges to Dublin City Council's main drainage system and is treated at Ringsend wastewater treatment plant. In addition, wastewater from the Clonee/Dunboyne and Ratoath/Ashbourne areas of County Meath are discharged to Fingal's collection system for treatment at Ringsend.

Strategic Studies

A number of strategic studies have been carried out in recent years to assist in planning for the Region's development. These studies include:-

The Regional Planning Guidelines (RPG) for the Greater Dublin Area, which set a statutory framework for sustainable development in the Region up to 2011.

The 1996 - 2016 Greater Dublin Water Supply Strategic Study (GDWSSS) Report, published in 1996. This report was revised in part in the year 2000 to ensure compliance with the RPGs and to take into account the rapid growth in the Dublin Region. The report outlines a strategic investment framework over a 20-year period to 2016. The overall investment programme recommended for the Dublin region amounted to €98m. Initial investment has focussed on a Regional Water Conservation Project (WCP) including water management systems, leakage reduction and also on upgrading Leixlip Water Treatment Plant. The WCP has been very successful leading to a reduction in Regional leakage levels from 42.5% to 30%.

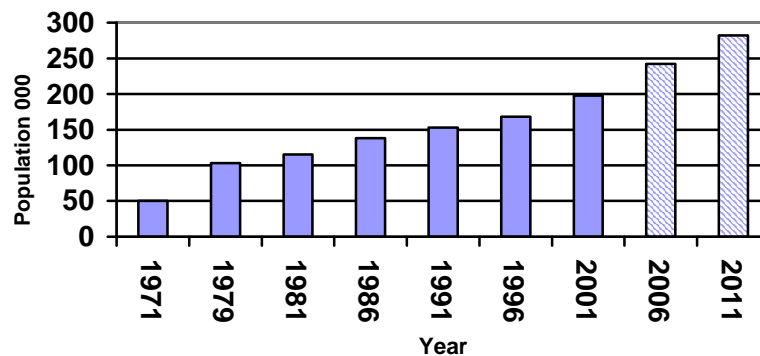
The Greater Dublin Strategic Drainage Study (GSDSDS) commissioned by the Dublin Region Local Authorities (including Fingal County Council) in year 2001 to provide a sustainable strategy for the investment in and management of the Region's foul sewerage and storm water systems up to 2031. The Study was completed in April 2005.

Rapid Growth

There have been significant changes in the operating environment in which water services are provided since the 1999 Fingal County Development Plan was adopted. The main drivers of change include:

- Rapid population growth in Fingal (See Figure 1.1 Fingal Population 1970-2011)
- Increased environmental standards imposed by European and National Legislation
- Improving levels of service where these are deficient
- The Government's framework for water pricing
- New project management and service procurement approaches.

Figure 1.1 Population Fingal 1971 - 2011



The extent of investment in public infrastructure in Fingal has been very pronounced in recent years. Between 1999 and 2005 over €150 million has been invested in water and drainage infrastructure in Fingal. The availability of a high quality infrastructure, as a result of this investment, and the existence of a high quality environment make Fingal an attractive place in which to invest, reside, work or to enjoy leisure activities.

However, the rapid population and economic growth in Fingal also puts additional pressures on our environment. The Council has adopted a proactive approach to dealing with these pressures by carrying out strategic planning to ensure that water supply and drainage services keep pace with future demand. The long-term economic, social and environmental well being of Fingal is dependent on maintaining the highest possible standards of environmental quality.

This document sets out the achievements of the Council in relation to the previous programme of investment and outlines the plans and needs of the Council in relation to future programmes of investment in new infrastructure for water, wastewater and surface water drainage.

Reference Documents

The documents listed below provided background reference for preparation of the updated Assessment of Needs:

- Circular L11/03 from the Department of the Environment Heritage and Local Government
- The Regional Strategic Planning Guidelines for the Greater Dublin Area
- Fingal County Council Development Plan 2005 - 2011

- Local Area Plans
- Water Framework Directive as applied to the Eastern River Basin District.
- The Greater Dublin Water Supply Strategic Study
- County Sludge Management Plan
- Phosphorus Regulation Measures Report
- The Fingal Water Services Business Plan 2005 – 2009

2. GREATER DUBLIN STRATEGIC DRAINAGE STUDY

The economic success of the greater Dublin Region since the 1990s has led to very significant growth in Dublin City and the surrounding counties. The foul and storm water drainage infrastructure is stretched to keep pace with the increased demand for new serviced land for housing, commercial developments and industry.

Overloading of the existing systems is evident from marked deterioration in water quality, increased risks of flooding and concerns that the drainage system and wastewater treatment plants have insufficient capacity to cater for future development.

In 2000, the Department of the Environment, Heritage and Local Government supported the proposal by the Dublin Region Local Authorities to proceed with the Greater Dublin Strategic Drainage Study (GSDSDS) to examine these issues and to identify solutions. The Study was funded under the National Development Plan 2000 – 2006 and Dublin City Council was appointed as the contracting authority for the Study.

The GSDSDS was commissioned in June 2001 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 in Counties Meath, Kildare and Wicklow.

The objectives of the Study were to identify policies, strategies and projects for the development of a sustainable drainage system for the Greater Dublin Region.

Study Objectives

The Study objectives were:

- 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 stormwater 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;
- 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 GSDSDS itself;
- To develop tools for the effective management of the drainage systems including Geographical Information Systems (GIS), network models and digital mapping;
- 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.

Regional Drainage Policies

The study undertook a review of local authority drainage practices in five key areas:

- New Development
- Environmental Management

- Climate Change
- Inflow/Infiltration and Exfiltration
- Basements

New policies have been drawn up in all of these areas and incorporated into the Development Plans of the local authorities. A set of detailed technical documents has been prepared to support the implementation of these policies. The policies seek to optimise the performance of drainage assets and to mitigate drainage impacts on the environment. Implementation of the policies is vital to ensuring the ongoing sustainable development of the Greater Dublin Region.

Population and Land Use

In defining the existing and future drainage requirements of the Region, the Study used three planning scenarios: years 2002, 2011 and 2031. The 2002 scenario represented the existing situation, incorporating the 2002 Census results. The 2011 scenario corresponds to the planning horizon of the Regional Planning Guidelines, which have been reflected by local authorities in their current Development Plans. The 2031 scenario is a long-term horizon reflecting regional planning policy and drivers. This latter scenario is appropriate for the planning of major long lead-time strategic infrastructure and has regard to likely demands for the foreseeable future. The development intentions for the Region are challenging as demonstrated by Table 2.1 for residential population.

	2002	2011	2031
Population	1,225,545	1,489,962	2,054,401
Compared with 2002		+22%	+68%
Household Size	2.92	2.46	2.18
Compared with 2002		-16%	-25%
Housing Units	420,130	605,667	943,627
Compared with 2002		+44%	+125%

Table 2.1 Residential Population Statistics (GDSDS Study Area)

Criteria, Standards and Influences on Strategy

The strategy is based on appropriate (best practice) criteria, standards and influences which can be summarised as follows.

- Standards relating to continuous discharges to receiving waters would be based on detailed studies of the receiving waters in the context of all relevant statutory requirements including the Water Framework Directive.

- Load management to reduce non-domestic loads at source would be undertaken in conjunction with the extension of the treatment works at Ringsend to meet the short-term needs.
- Operational standards of intermittent discharges from Combined Sewer Outfalls (CSO's) would be based on best practise environmental standards, retention of "first flush" and controlled spill frequency.
- The wastewater treatment strategy would be based on the optimisation and maximisation of the existing facilities to meet identified needs. Developments beyond those currently zoned will require additional capacity.
- The foul sewer strategy would allow the capacity of the existing systems, principally the Grand Canal system to be consolidated for existing development.
- Stormwater drainage strategy would be developed on a catchment-by-catchment basis taking account of flood risk, the impact of climate change and the systematic use of Sustainable Drainage Systems (SuDs) for new developments.

Recommended Strategy

The recommended strategy for the long-term drainage requirements for the Greater Dublin Region has been determined in the Study:

- New Regional Wastewater Treatment Plant in Fingal
- Orbital sewer to Blanchardstown
- Pumped connection from South Dublin to orbital sewer
- Pumped connection from Leixlip to orbital sewer
- Pumped connection from Meath to orbital sewer
- Redirecting excess flows from Swords and Malahide
- Maintain Ringsend Wastewater Treatment Plant for existing catchments
- Upgrade existing treatment works to their ultimate design capacity
- Upgrade local sewerage networks

The recommended strategy purports to offers:

- The least environmental risk in the context of receiving water standards and community impacts, and
- The most robust and secure operational regime, relying largely on proven technologies and with lower community impact where the bulk of the works can be constructed outside of existing developed areas,
- A future proofing of the strategy for growth beyond the 2031 horizon

The capital costs of the recommended strategy total €3,361 million, which when combined with whole-life operational costs of €24 million, results in an overall total cost of €3,385 million.

Implementation of the Strategic Plan

The timetable for implementation of an agreed strategic plan would be spread over the period 2005 to 2031. However, a significant proportion of the plan needs to be implemented over the period 2006 – 2011 to ensure that capacity is available for planned development.

3. WATER SERVICES INVESTMENT PROGRAMME 1999-2005

Water Supply

Fingal County Council produces an average of 165 million litres of water daily (ML/d) from its water treatment plants at Leixlip and Bog of the Ring to supply approximately 80,000 households and over 5,500 non-domestic water service customers, in the Fingal area. In addition Leixlip supplies parts of the neighbouring local authorities of Dublin City, South Dublin, Kildare and Meath.

A major upgrading and expansion programme has increased Leixlip's sustainable production capacity to 148 million litres per day (peak 168 ML/d). Fingal has recently commissioned a small groundwater source at the Bog of the Ring in the North of the County, which is producing approximately 4 ML/d.

Further expansion at Leixlip to achieve a sustainable production of 225 ML/d is at the planning stage, as are additional storage capacity at Ballycoolen and additional rising mains between Leixlip and Ballycoolen. A series of extensions and improvements to the water supply network across Fingal have been advanced to provide for new development areas and to improve security of supply.

In addition to the schemes carried out with central government funding, Fingal County Council also carried out works under its minor works programme to facilitate new developments, which have been financed from development contributions. Developers have also carried out major improvements to the drainage and water supply network.

Drainage Services - Wastewater and Surface Water

The Council is responsible for the collection, treatment and disposal of all wastewater originating in urban and village areas and for dealing with surface water collection and disposal in urban areas. With the rapid urban expansion in Fingal, and the various national and E.U. regulations as well as the continuing need to improve our environment Fingal is faced with a growing need to improve foul and surface water infrastructure.

Wastewater

The Malahide and Swords Wastewater treatment plants have been expanded to 20,000 PE and 60,000 PE respectively. Construction is in progress on the Balbriggan/Skerries plant at Barnagheara (30,000 PE) and a new plant is planned at Portrane (65,000 PE) for Portrane, Donabate, Rush and Lusk. Network improvements are in progress in Swords and are planned for Blanchardstown. A sludge hub centre for the county, which will be located at Kilshane, is at planning stage.

The Baldoyle Flood Alleviation scheme, covering an area subject to a combination of surface water and tidal flooding over many years, was completed in 2004. Following the 2002 flooding events, the Tolka Flood Study was commissioned and recommended measures to minimise flood risk in the Tolka catchment in Meath, Fingal and Dublin City which are currently being advanced with financial support from the Office of Public Works. The Dublin Coastal Flooding Protection Project, which will provide an overview of flood protection measures in Fingal together with an early flood warning system and recommendations on flood protection measures needed to minimise the risk of future flooding of property is at draft stage.

Table 3.1 WATER SERVICES INVESTMENT PROGRAMME ACHIEVEMENTS 1999 – 2005

SCHEME	COST M	STATUS
<u>WATER SCHEMES</u>		
1. Cruiserath Road 800mm Rising Main	1.34	Completed
2. Bog of the Ring (Ground Water Development)	3.48	Completed
3. Leixlip Augmentation Scheme (Contract 1-9)	47.70	Completed
4. Swords Trunk Main Augmentation	10.00	Construction in progress Expected completion Dec 2005
5. Ballycoolen Storage Reservoirs	31.8	Construction in progress. Expected completion December 2007
6. Leixlip/Ballycoolen Rising Mains	24.4	Tenders sought. Expected completion December 2007
7. Balbriggan Water Supply	13.5	Scheme in Progress
8. Swords North Watermain Strengthening (Lissenhall to Jordanstown Reservoir)	9.4	Consultants appointed. Planning in progress
9. Leixlip Water Treatment Plant Extension	26.7	Consultants appointed. Planning in progress
10. Howth Water Supply Network Improvements Phase 2	1.2	Consultants appointed. Planning in progress
<u>WASTEWATER SCHEMES</u>		
11. Malahide Wastewater Treatment Plant	11.4	Completed
12. Swords Wastewater Treatment Plant	26.61	Completed
13. Balbriggan/Skerries Sewerage Scheme	23.9	Construction in progress. Expected completion Oct 06
14. Dublin Bay Project Contract 5	15.9	Consultants appointed. Planning in progress
15. Portrane/Donabate/Rush/Lusk Sewerage	59.4	Consultants appointed. Planning in progress
16. Fingal Sludge Management	8.1	Consultants appointed. Planning in progress
17. Swords Main Drainage Network	8.1	Construction in progress

18. Blanchardstown Foul Sewer Network	20.0	Consultants brief being prepared
<u>SURFACE WATER</u>		
19. Clonsilla Surface Water Scheme	4.78	Completed
20. Baldoyle Flood Alleviation Scheme Phase 2	2.35	Completed

4. WATER SERVICES INVESTMENT PROGRAMME 2005 - 2007

Continued rapid development in Fingal requires that a large number of water services infrastructure schemes be advanced as a matter of priority. The Fingal Development Plan 2005 – 2011 provides for a population growth from 220,000 in 2004 to 260,000 in 2011 and for 42,500 new housing units by 2011.

The GSDS has identified key infrastructure necessary to facilitate sustainable development in the Region. The following are the priority schemes to be advanced in the period 2005 to 2007.

Water Supply

Ward/Garristown Water Supply Upgrading

This scheme is required to improve the deficient level of service to the rural areas of Fingal and to provide for new development in the Rural Villages in support of Fingals Development Plan.

Malahide Reservoir Expansion and High Level Water Supply

The reservoir is required to provide security of supply to the Malahide area and provide an adequate level of service to areas experiencing low pressure.

Ballycoolen/Kingston Trunk Main Duplication

This will complete the duplication of the trunk watermain supplying Swords, Balbriggan and the North Fingal area from Ballycoolen and will provide for security of supply.

Swords Water Supply Network Rehabilitation

This will provide for upgrading the existing distribution system in the Swords area, including rehabilitation of the existing 30" trunk main in order to maintain adequate levels of service.

Rush/Lusk/Skerries Water Supply Upgrading (Extension of Swords North Watermain Strengthening Scheme).

This scheme provides for an extension of the Swords scheme to Lusk, Rush and Skerries. The existing mains are required to be upgraded to provide for new development in these areas.

Orthophosphoric Treatment at Leixlip Water Treatment Plant (To be included in Leixlip Expansion, if required)

In order to comply with the lead parametric value of 10 µg/l by 25 Dec 2113 in may be necessary in install orthophosphoric acid dosing to provide a film of almost insoluble orthoposphate in exposed lead pipes thus reducing the pickup of lead. A joint approach needs to be adopted between Dublin City Council and Fingal County Council in conjunction with the DEHLG.

Wastewater

Balbriggan/Skerries Wastewater Treatment Plant Phase 2

Phase 1 of the Balbriggan Wastewater Treatment Plant will be nearing full capacity when it is commissioned in 2006. Therefore, in order to cater for the growing needs of the Balbriggan area, there is an urgent need to proceed with Phase 2 of the scheme.

Malahide Foul Sewer Network

The existing system is required to be upgraded to provide for existing and new developments. Key elements to be upgraded are identified in the GDSDS Final Report.

Balrothery Sewer Upgrading

The existing system from Balrothery is required to be upgraded to provide for future development in this area.

Rural Wastewater Treatment Plant and Networks Upgrading

The WWTPs and networks at The Naul, Garristown, Ballyboughal and Oldtown are required to be upgraded to cater for proposed additional housing in accordance with approved Local Area Plans.

Swords Wastewater Treatment Plant Extension

The new Swords Waste Water Treatment Plant is capable of treating a population equivalent of 60,000. In order to cater for the future needs of the Swords area it is necessary to increase the plant size to 90,000 pe.

Foul Sewer Pumping Stations Upgrading (Small Scheme)

A number of pump stations through the system require upgrading or rehabilitation in order to adequately cater for existing and new development.

Toberburr Pumping Station and Rising Main (Small Scheme)

This scheme will see the replacement of the existing Wastewater Treatment Plant with a Pumping Station and Rising Main connecting into the Swords WWTP System.

Strategic Environmental Assessment

Arising from the Greater Dublin Strategic Drainage Study (GDSDS) it is recommended that a Strategic Environmental Assessment (S.E.A.) of the GDSDS be carried out before finalising proposals on the optimum drainage solution bearing in mind the EU proximity principle.

Surface Water

Donabate Surface Water Scheme

This scheme will provide a surface water drainage strategy, which will address existing problems and cater for future development.

Mayne River Surface Water

Six areas were identified as being at risk of flooding during a 100 yr. ARI critical storm event. This scheme will provide a strategy for reducing flooding risk in these areas.

Broadmeadow River Surface Water

This scheme will aim to provide additional capacity within the catchments to pass forward flows away from flooding locations while taking account of future proposed development.

Tolka Blanchardstown Surface Water

This scheme caters for the areas of increased development draining into the system. The upgrading works comprise upgrading of existing sewers and provision of new sewers to re route flows to the River Tolka and its tributaries.

5. WATER SERVICES INVESTMENT PROGRAMME 2007 - 2012

The growth projections identified in the Fingal Development Plan 2005 – 2011 and the drainage requirements from the GDSDS will continue to be the main drivers for water services infrastructure in the period up to 2012. A number of the schemes to be commenced in the 2005 – 2007 investment programme will be under construction up to 2012 and beyond. The further schemes to be advanced in the 2007 – 2012 period are as follows.

Water Supply

- Howth Water Supply Improvements Phase 3
- Lusk/Skerries Watermain
- Donabate Watermain

Wastewater

- Malahide Wastewater Treatment Plant Extension

6. WATER SERVICES INVESTMENT PROGRAMME 2005 – 2012

SCHEMES IN ORDER OF PRIORITY

SCHEME	COST €M
1. Balbriggan/Skerries Wastewater Treatment Plant, Phase 2	4.0
2. Ward/Garristown Water Supply Upgrading	9.0
3. Malahide Foul Sewer Network	5.0
4. Fingal Optimum Drainage Solution	565.0
5. Malahide Reservoir Expansion and High Level Water Supply	1.5
6. Donabate Surface Water Scheme	1.5
7. Balrothery Sewer Upgrading	1.0
8. Rural Wastewater Treatment Plants and Networks Upgrading	3.0
9. Ballycoolen/Kingstown Trunk Main Duplication	7.4
10. Swords Wastewater Treatment Plant Extension	10.0
11. Mayne River Surface Water	2.9
12. Swords Water Supply Network Rehabilitation	3.5
13. Broadmeadow River Surface Water	27.3
14. Tolka Blanchardstown Surface Water	25.0
15. Howth Water Supply Improvements, Phase 3	0.4
16. Rush/Lusk/Skerries Watermain	4.2
17. Donabate Watermain	0.9
18. Malahide Wastewater Treatment Plant Extension	7.8

* 1-11 excluding 4 are expected to be progressed by the end 2006.

CONCLUSION

The objectives of the proposed investment programme are

- To facilitate the projected increase in population and to support economic development in Fingal
- To facilitate the implementation of Fingal County Council's Development Plan 2005 – 2011
- To remedy deficient services to existing customers
- To provide high standard of environmental protection and to meet statutory environmental objectives as identified in the GDSDS

Fingal County Council in common with the other Dublin Local Authorities faces major challenges in relation to water and drainage infrastructure. The proposed investment programme addresses the issues and infrastructure deficits that currently exist, and is required to facilitate continued population and economic growth in Fingal.