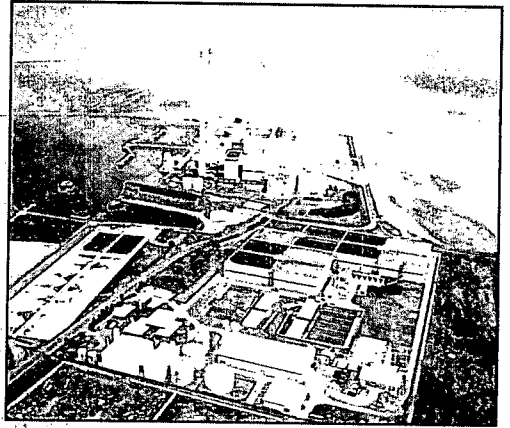
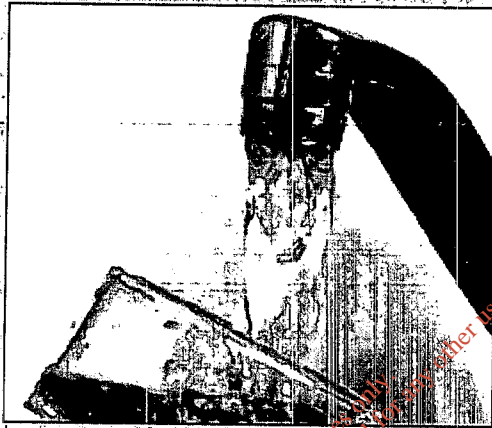
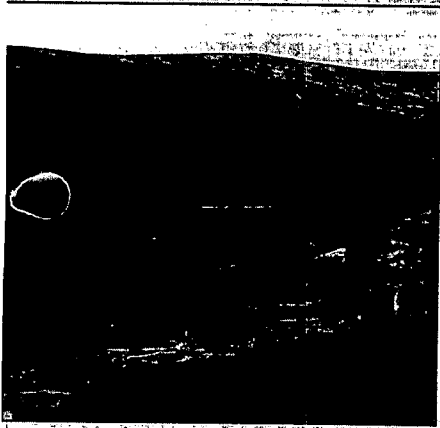


**Water Services
Investment Programme
2007 - 2009**



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Cork City*

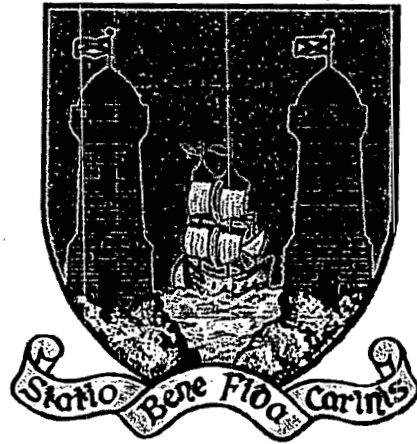
Water Services Investment Programme 2007 - 2009

Schemes to start 2008	W/S	Est. Cost
Cork City Sewerage Scheme (Telemetry)	S	1,051,000
Cork City Water Supply Scheme (Tivoli)	W	2,101,000
Cork City Water Supply Scheme (Shanakiel Reservoir)	W	4,265,000
Cork City Water Supply Scheme (Shanakiel Rising Main)	W	1,782,000
		9,199,000
Schemes to start 2009		
Lee Road Water Supply Scheme	S	15,300,000
		15,300,000
Serviced Land Initiative		
Blackrock Sewerage Scheme (Improvement in Services)	S	166,000
Mid Glanmire Road Sewerage Scheme (Improvement in Services)	S	167,000
		333,000
Schemes to Advance through Planning		
Cork City Water Supply Scheme (Reservoir Improvement Intermediate Level)	W	5,253,000
Docklands Sewerage Scheme	S	5,253,000
Docklands Water Supply Scheme	W	5,356,000
Wilton/Lee Road Water Supply Scheme (Trunk Main)	W	2,750,000
		18,612,000
Water Conservation Allocation		13,030,000
Asset Management Study		100,000
Programme Total		56,574,000

* All Cork City schemes have Gateway status as described in the National Spatial Strategy

Comhairle Cathrach Chorcaí

Cork City Council



**WATER SERVICES INVESTMENT
PROGRAMME**
Assessment of Needs

2007-2014

August 2006

Water Services Section
Environment Directorate
City Hall
Cork

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Detailed Programme of Work for Period 2010 to 2014.

Appendix

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1.0 INTRODUCTION

Cork City Council prepared an Assessment of Needs for Water Services Capital Works in January 2004 on foot of Circular L11/03. While assessments of water services needs have been updated at 5 year intervals, Sanitary Authorities are being requested to carry out new assessments in 2006 on foot of circular L2/06 (See Appendix 1).

The new assessments will review our needs in the period 2007 to 2013 and are necessary as an input to the next National Development Plan that will cover this period. These assessments are used by the Department of Environment, Heritage and Local Government, to optimise project selection in further phases of the Water Service Investment Programme.

2.0 OBJECTIVES

The main purpose of the assessment is to develop an overall strategic investment plan for the City for the medium to long term and to set out a programme of works to meet the identified water services needs.

The principal objectives of the Water Services Programmes are:

- to provide an adequate supply of potable water of suitable quality, for domestic, industrial and other non-domestic uses.
- to provide a safe and adequate system for disposal of sewerage and other waterborne waste.

3.0 INTERNAL AND PUBLIC CONSULTATION

As required by Circular L2/06, the Strategic Policy Committee within the Local Authority considered the draft assessment of needs at a meeting on 19th June 2006. Cork City Council has also given regard to the views of the public and allowed one month for public consultation based on a published draft document before submitting the assessment to the Department. An account of comments received on the published draft and, where appropriate the authority's response to the comments have been sent to the Department as part of this submission.

The draft assessment was made available for public inspection. All submissions or observations were to be made in writing. The public consultation period was from the 26th June 2006 to the 24th July 2006 (See Appendix 2)

4.0 MATTERS TO BE CONSIDERED IN PREPARING THE ASSESSMENT OF NEEDS

In accordance with the above mentioned Circular Letter, the following matters must be considered in preparing the Assessment of Needs.

The main purpose of the assessment is 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 by Cork City Council has, in particular, taken into account the following:

- Relevant National and E.U. environmental public health and drinking water quality statutory requirements and standards.
- The Development Plan and any strategic regional planning guidelines.
- The National Spatial Strategy.
- Cork Area Strategic Plan 2001 - 2020
- Cork Strategic Water Study

- The National Water Study, the National Urban Waste Water Study and any similar studies/reports commissioned locally.
- The relevant reports produced by the EPA in relation to the quality of Drinking Water.
- The requirements of the Urban Wastewater Treatment Regulations, 2001.
- The adequacy of existing collection networks and treatment plants.
- Support for economic activity through the Serviced Land Initiative.
- Annex 12 of the EU Commission's application to the European Court of Justice in respect of Ireland's implementation of the Drinking Water Directive (80/778/EEC).
- Developments in River Basin Management in relation to ongoing monitoring and management regimes in place and that came to light in the Characterisation Reports completed in 2005.

5.0 INFORMATION TO BE INCLUDED IN THE ASSESSMENT OF NEEDS

The following information is required for the Assessment of Needs:

- Summary of Achievements of the Water Services Investment Programme since the last assessment was undertaken in 2004.
- An Outline of the approach to meeting the identified water services needs over the period 2007 to 2009
- An examination from a strategic perspective of the main requirements for water services investment over the period 2010 to 2014.
- Details of the Work Programme – projects costing greater than €635,000 - required to meet the identified water services needs.
- Estimate of the overall cost of the programme of works.
- A description of the objectives of the investment in terms of outcomes sought and specific outputs required.

6.0 WATER SUPPLY IN CORK CITY – BRIEF HISTORY

The origin of the City of Cork public water supply dates back to 1768 when the Cork Piped Water Company began pumping water from near the present Turbine House into an adjacent reservoir known as the City Basin. The Cork Corporation took over the interests of the company in 1856 and the works were updated and augmented with a steam plant. Various additions to the steam plant were added up until 1905. In 1876 an infiltration gallery was constructed adjacent to the river and this was the first time that filtered water rather than river water was used for supply. This was in use until 2001. In 1928 the first buildings of the current treatment works were constructed. As the city and its demand grew, the raw water supply was augmented by direct abstraction from the River Lee and the treatment works underwent various up-grades, the last being in the 1970's.

In 1981 the Cork City and Harbour Water Supply Scheme was commissioned, providing an additional source of treated water from Inniscarra Lake (Lee upstream of hydro-electric dam).

Thus at present the north, island and central southern areas of the City are served by the Lee Road treatment works, whilst imported water from the county serves the south west and south-east of the City. Network hydraulic restrictions limit the extension of area served by county water. Extension of 600mm connection from County at Wilton roundabout to Western Road and Lee Road would enable greater access and security of supply.

The City distribution network comprises 10 trunk main supply areas, served by 650 km of pipework and reservoirs at Churchfield, Hollyhill and Shanakiel.

The Lee Road Waterworks has a design capacity of 36,000 m³/day but generally provides 49,600 m³/day with peaks of 53,600 m³/day. Imports from the Cork Harbour and City Water Supply at Inniscarra averaging 20,200 m³/day in 2005 are taken at four metered connection points, Bandon Road, Mahon, and Sarsfield Road and the Lough via Chetwynd Reservoir.

A preliminary report has been prepared for the Lee Road Waterworks and this has recommended upgrading and modernising the existing plant to cater for a design throughput of 57,500 m³/day. A new procurement options report is currently being prepared by Consultants in accordance with current guidelines, circulars and agreements issued by the Central PPP Unit of the Department of Finance.

A preliminary report has also been prepared and approved by the DoEHLG for the rising mains to Shanakiel and this report has recommended renewing the mains as far as Shanakiel for both the Low Level Reservoir at Shanakiel and the Intermediate Level reservoir at Harbour View Road.

Consultants are to be appointed to prepare a preliminary report on the storage requirements of both the Shanakiel and Harbour View Road reservoirs as 24 hour a day pumping is often required to ensure adequate storage at both of these locations.

In 1999 a Strategic Operational Management and Investment Plan was prepared for the city water network under an E.U./DoEHLG funded Cork Water Conservation Scheme.

The key objectives, all of which have been achieved, were as follows:

- Development of a detailed understanding of the existing water system.
- Computerisation of the water mains records in digital form (GIS).
- Construction of a calibrated hydraulic model of the water network and use of the model to design leakage control zones and pressure reduction schemes.
- Implementation of a water loss reduction and leakage control programme.
- Pressure zone management.
- Development of a Strategic Operational Management and Investment Plan for the water distribution section.

In June 2002 the DOEHLG approved the appointment of consultants to prepare a Preliminary Report for the Cork Water Conservation Phase 2 – Water Replacement and Rehabilitation. The Preliminary Report on the City Network Rehabilitation Phase 2 was prepared by Consulting Engineers Ryan Hanley/Carl Bro Ireland in accordance with a DOEHLG approved brief. The Preliminary Report was submitted to the City Council in November 2003. The Preliminary Report outlines an integrated approach to water main rehabilitation involving a number of factors such as water quality, structural condition of the pipes and hydraulic performance and sets out proposals for the way forward for the rehabilitation of the water network.

The purpose of this report was to examine the findings of the investigations into the City's water supply distribution network and to recommend the extent and scope of the rehabilitation work required to address leakage, structural and water quality issues identified during the investigations. This work builds on the extensive knowledge and understanding established in Phase 1 of the Water Conservation Programme.

In 2003, Cork County Council in association with Cork City Council commissioned R.P.S. Consulting Engineers to carry out a Strategic Water Study for the Cork County (Southern Division) and Cork City. The study area comprises the Southern Division of Cork County Council (Youghal to Ballvourney), Cork City and the areas of the Northern Division of Cork County included in the CASP report i.e. Fermoy and Mallow.

The study encompassed:

- Demand assessment within a 25 year timescale
- Assessment of water reserves and treatment requirements
- Assessment of current network capacity, condition and future needs
- Security of supply

- Develop asset management tools
- Review of water conservation and operational management
- Assess financing requirements.

The final report is due for publication shortly.

7.0 DRAINAGE IN CORK CITY – BRIEF OVERVIEW

• Background

Cork City's drainage system had its origins in the development of the City's central island as a walled settlement and subsequent arching over of the many channels of the Lee estuary. Development beyond the walled City led to further creation of culverts conveying raw sewage, industrial wastewater and storm water to numerous points on the North and South channels of the Lee. Development to north and south required further culverted and piped infrastructure, again discharging into the main waterways.

The first formal drainage scheme for Cork City was submitted in 1867 and supplemented in 1879, proposing the laying of sewers along the quays to collect drainage from the city and its suburbs and discharge it downstream of the Custom House. As the City grew and expanded the need to rationalise the foul drainage system grew. In the early 60's a report was produced which recommended the interception of all foul flows, which were discharging directly into the Lee. Six interceptor sewers were proposed to deal with particular drainage areas and convey all wastewater via a main trunk sewer to a central pumping station to be located at the Atlantic Pond. From there foul sewage, up to 6 times the Dry Weather Flow (DWF) would be pumped to an outfall which would finally discharge after screening and comminution into the lower harbour near Passage. Flows in excess of 6 DWF would be pumped into the adjacent Lee.

Construction of the interceptor sewers commenced in the late 60's and has progressed in various phases over the decades, to be completed in the past year. The introduction of the EU Urban Wastewater Directive in 1991 requiring that secondary treatment be implemented for all wastewater discharges to estuarine waters from a population equivalent of 2,000 or more occasioned a further review. A report was prepared and submitted in late 1992.

This reviewed various permutations of treatment options, treatment plant locations, catchment areas, outfall locations, collection systems and treatment processes. The final recommendation consisted of :

- Combination of four catchment areas i.e. City, Tramore Valley, Glanmire/Riverstown, Glounthane/Little Island - serving a total area of 8652 hectares
- Construction of a single treatment plant located at Carrigrennan, Little Island to provide primary and secondary treatment with sludge treatment and drying
- Discharge of treated effluent to a point downstream of the dredged channel in the vicinity of Marino Point.

The main part of the City and north to the ridge line is served via interceptors and drained to the Atlantic Pond Pumping Station thence via rising mains along the old Passage railway line to a Header Chamber at Ballinure. The south eastern portion of the City and the Tramore Valley within the County is served by the Tramore valley scheme installed in the 80's, draining to Ronayne's Court, Rochestown and pumped via rising mains on the old Passage Railway line to the Header Chamber in Ballinure. From this the combined flows go via siphon under Loughmahon to the treatment plant at Carrigrennan. The existing networks serving Glanmire /Riverstown and Little Island / Glounthane are separately collected and pumped to the Treatment Plant.

The implementation of these proposals has seen the major Cork Main Drainage Project underway for the past 5 years culminating in the commissioning of the Wastewater Treatment Plant currently in progress.

This infrastructure was designed to meet the current and foreseeable need for the City and contiguous areas within the gravity catchment. This entails consolidation of population within the city and population growth in the County area of 2.56% p.a. up to 2020. Provision is made for current commercial and industrial demand. Additional growth in this area would require further infrastructure.

- **Current Drainage Network**

The majority of the City is served by a combined sewer network i.e. both foul and surface water discharge to a single pipe network. The adoption of a policy of separated systems in the 60's has led to approximately 15% of the network being made up of separate foul and surface water sewers. A total pipe network of approx 530 km is in place. When connecting the combined sewers to the interceptor sewers, storm overflow chambers are installed in order to limit the flows. When storm conditions occur, the hydraulic capacity of the outflow from the chamber is limited and the remainder is overflowed to the most convenient waterway. 57 storm overflows are installed in the network. In addition a total of 28 pumping stations varying in capacity from 2 litres/second to 2450 litres/second provide for transfer of sewage from various low lying areas.

- **New Sewers**

No specific proposals are in place for expansion of trunk sewer network. However arising from review of local network capacity assessment it is envisaged that a programme of local sewer renewal and upgrading will be necessary. Infill and higher density development requires augmentation of existing local network and facilitates continued progress towards foul surface water separation.

- **Rehabilitation**

As part of the Cork Main Drainage Project some culverts in the City Centre have been rehabilitated or replaced. However a further programme of assessment and rehabilitation and strengthening will need to be carried forward over the next decade.

- **Infiltration, inflow.**

Infiltration and inflow both cause increases in the legitimate flows in the sewerage system. Infiltration is where the increased flows are due to groundwater entering the foul system through faults in the pipework, manholes and chambers. Inflow is where surface water enters the foul sewerage system directly. Additional inappropriate flow increases unnecessarily the demands on trunk main, pumping and treatment capacity. Since the changeover to full pumping and treatment of effluent in the City, it is evident that there is considerably more than expected infiltration/inflow occurring.

- **EU Water Framework Directive**

The implementation of the Water Framework Directive by Cork City Council, in conjunction with Cork County Council, is being carried out on a catchment basis to put in place a management infrastructure for the Lee which will ensure meeting good quality status by 2013. This preparation of a new catchment based management system will involve extensive public consultation.

- **Stormwater**

Flooding from a variety of sources has been a problem over the last number of years. Difficulties have resulted from tidal flooding and also from river flooding. With significant changes in climatic conditions and the possible advent of climate change scenarios, new strategies need to be put in place to effectively manage the flooding risk. This will involve consideration, identification and installation of appropriate defence and mitigation works associated with the estuarine and river situations. Specific works will be required on the Glasheen, Bride and Lee rivers. No clear indication of detail and costs is as yet available. The OPW are currently commissioning a study on flood risk assessment and management in the Lee catchment including these tributaries.

The existing arrangement, whereby stormwater is conveyed as quickly as possible to a pipeline, which was built as big as possible to convey the stormwater quickly to an appropriate waterway, is no longer sufficiently robust to deal with the type of climate change conditions which have prevailed in recent years. Alternative containment strategies, which have to involve among other things, attenuation of stormwater and where possible disposal at source are necessary. A new stormwater policy encompassing sustainable urban drainage techniques and procedures will need be developed.

- **Docklands Development**

The Docklands area is in effect an urban polder i.e. ground level is below normal tide level. It was developed, by isolating the area from the river, by means of a continuous embankment and draining protected area to a low point, providing storage (Atlantic Pond) and discharging to the river on low tide. This system has worked effectively over the past century. However development of the area for high quality mixed use has required a review of the system. This review has reinforced the validity of general methodology but has highlighted the need for renewal and enhancement of the surface water collection system and augmentation of the storage capacity in order to meet the demands of nature, of the development and climate change. In order to carry out this work taking account of best practice major investment is required.

- **Waterways**

Within the city there are a number of waterways most notably the Glen, Bride, Kiln, Glasheen, Curraheen, Trabeg, Tramore and above all the Lee. All to varying extents have been used as conveyors of wastewater. The implementation of an improved drainage network and in particular the Main Drainage Project have reduced and almost eliminated the volume of foul discharges to waterways. However, a programme of investigation of illicit connections and cross connections between foul and storm sewers is needed to eliminate pollution. Further to this, remedial programmes to repair the impact of prolonged foul discharges will be needed, in particular in the Lee. This issue will require further investigation to quantify needs.

- **Combined Sewer Overflows**

When storm conditions take place, the hydraulic capacity of the drainage system can be exceeded and overflows into rivers and watercourses take place. In addition, unless carefully managed, accidental overflows due to blockages can occur. This is now generally accepted as being undesirable and a programme of reducing and minimising such overflows is an essential part of improving water quality in rivers and estuaries. Such measures are required as part of the implementation of the EU Water Framework Directive. Within the stormwater management programme it is proposed to formulate details of necessary projects.

- **Network Management**

The move from, a largely gravity collection network discharging untreated at multiple points to waterways, to a fully pumped, treated, single discharge point system will greatly increase running costs, and require a change in the management and maintenance philosophy and procedures. The current response based reactive maintenance approach will have to be replaced by a higher level of proactive management of the system and greater emphasis on preventative maintenance and flow and quality monitoring and environmental and energy management. An initial element of this approach is the putting in place of telemetry links with all the pumping and plant location and combined sewer overflows to enable close monitoring and quick response to problems. A contract in this regard is in preparation.

8.0 ASSESSMENT OF NEEDS

8.1 SUMMARY OF ACHIEVEMENTS

Summary of Achievements since the last assessment was undertaken in 2004.

Project	Type	Details
Link Main: Little Island to Tivoli	W	At Contract Document Stage
Lee Road Waterworks Refurbishment	W	Currently negotiating with the Consultant to restart the Stakeholder Consultation Process in accordance with the latest procedures.
Low level rising mains	W	Preliminary Report approved
Water Supply to Docklands Development	W	Documents being prepared inviting Expressions of Interest from Engineering Consultancy companies to prepare Preliminary Report.
Cork Water Conservation Phase 11	W	Preliminary Report completed for Water Conservation Phase 11 – Water Replacement and Rehabilitation. Short/Medium term Rehabilitation Proposals identified.
Extend 600 mm main at Wilton to Lee Road Waterworks	W	See Assessment of Needs 2007 to 2009
Telemetry/Scada	W	Part of Lee Road Refurbishment Project
Increase Low Level Storage	W	Brief for the Appointment of Consulting Engineer currently being prepared.
Increase Intermediate Level Storage	W	Brief for the Appointment of Consulting Engineer currently being prepared.
Provide link from Cork Harbour and City W.S.S. to serve Mahon	W	Not provided and no longer part of WSIP
Surface water Drainage works Docklands Development Area	D	Feasibility study carried out. Preliminary report to be procured
Telemetry/Scada Drainage	D	Contract documents prepared.

8.2 WATER SERVICES NEEDS - PERIOD 2007 to 2009

8.2.1 Outline of the approach to meeting the water services needs over the period 2007 to 2009.

The approach to meeting the water services needs over the period 2007 to 2009. was based on the following reports:

a) The Cork City Strategic Operational Management and Investment Plan (1999) prepared for the City water network under an E.U./DoEHLG funded Cork Water Conservation Scheme.

Main Recommendations of the Strategic Plan:

-The City Council should adopt a pro-active and integrated water network management approach. Clear level of service targets should be set for the water services department, effectively defining the department's 'mission' and providing the basis for monitoring, evaluating and reporting. In order that the department can realistically achieve the targets, all elements of the Strategic Plan, capital investment, operational budgets, manpower, information systems and other resources must be available. Restructuring of the water services department will also be required to facilitate the changes in operational priorities and practices.

-The reduction of leakage, to an extent that is considered realistically achievable, down from 2.4 to 1.4 m³/km.hr average specific loss for the whole city, is a cornerstone of the Strategic Plan, being viable economically both as regards savings in water production cost and in reducing the capital cost of reconstruction at the Lee Road works. Leakage should be reduced by a combination of active leakage control and pressure reduction.

-A major programme of rehabilitation of the water distribution network should be implemented over a 15 year period to deal with water quality, structural and hydraulic deficiencies, including the replacement (or possibly relining) of lead services to comply with Directive 98/83/EC. As well as improving the quality of service to consumers, the rehabilitation will achieve a significant reduction in operating cost by virtue of the fewer repairs that will be required.

-For fully effective water accounting, conservation and cost recovery, there should be meters on all non-domestic premises. A first phase of 600 no. should be followed by progressive elimination of all un-metered non-domestic premises over a 5 year period. It is also recommended that there should be a planned consumer meter replacement programme to keep under-measurement and revenue loss to a minimum.

-Whilst non-domestic premises remain un-metered, fixed charge tariffs should be revised to provide greater equity in charging and to take consumer leakage and waste into account.

-In the sphere of demand (consumption) reduction, the City Council should take a lead by metering and monitoring its own premises to determine whether water saving measures can be cost-effectively introduced. Consideration should also be given to the issue of WC cistern volume reducing devices to consumers (domestic households) in a trial area of, say 5,000 properties.

b) Preliminary Report for Cork Water Conservation Phase 2 – Water Replacement and Rehabilitation – November 2003.

The purpose of this report was to examine the findings of the investigations into the City's water supply distribution network and to recommend the extent and scope of the rehabilitation work required to address leakage, structural and water quality issues identified during the investigations.

The Preliminary Report outlines an integrated approach to water main rehabilitation involving a number of factors such as water quality, structural condition of the pipes and hydraulic performance and also sets out proposals for the way forward for the rehabilitation of the water network.

The proposed rehabilitation was undertaken using the principles of District Meter Area (DMA) prioritization. Rehabilitation is proposed on a DMA basis for the most part.

c) Docklands Development Strategy, 2001.

The Docklands Development Strategy proposes a programme for the development of the docks area that extends from 2001-2025. It sets out the City Council's broad strategy for the renewal of the docklands area of the city.

The City Council will pursue a role as a catalyst for the redevelopment of the docklands in order to provide greater capacity and confidence to key stakeholders and progress regeneration.

To this end the Council will:

- undertake Local Area Plans for the north and south docks
- bid for Strategic Planning Zone status if considered beneficial for the development of the area.
- use its powers to assemble sites by compulsorily purchasing land in the public interest.
- identify timescales for redevelopment.
- commission studies to facilitate redevelopment of the area.
- establish a forum for stakeholders.

d) Feasibility Report on the Water Supply to the Docklands Area - dated December 2003.

Carl Bro/ Ryan Hanley, Consulting Engineer's, were appointed by the City Council to undertake a Feasibility Study for the water supply to the Docklands area in July 2003.

The main recommendations for water supply to the Docklands area were divided into long- term supply to the whole docklands area and short term recommendations for supply to the North Docklands and South Docklands.

The long term solution proposed that the whole of the Docklands Development should be supplied from the Glashaboy Reservoir to the east of the city with additional security of supply required from the City and Harbour Scheme at Mahon.

The short -term solution for north and south docks involves rehabilitation of existing pipework.

e) Preliminary Report on the Lee Road Waterworks Improvement Scheme dated January 1993.

Fehily Timoney were appointed by the City Council to carry out a Preliminary Report on the Waterworks in 1993. This was followed by an Addendum report in 1999 by the same company and by an Inception Report in April 2001 by Halcrow, Barry and Fehilly

Timoney. A procurement options report was also carried out by the same consortium in June 2001.

A new procurement options report is currently being prepared in accordance with current guidelines, circulars and agreements issued by the Central PPP Unit of the Department of Finance.

f) Preliminary Report on Adequacy of Pumping Mains and Telemetry for the Low level Distribution System.

This report examined the rising mains to both the Shanakiel and Intermediate Level Reservoirs and recommended the replacement of both as far as Shanakiel.

g) Cork Docklands Surface Water Drainage Study

PJ Tobin Co. completed in August 2005 a study on surface water drainage for Cork Docklands. This study was commissioned to establish a methodology for control of surface water levels in the area. The existing drainage system was mapped and surveyed. Requirements set down in the Master Plan provided the basis for modelling using specialist software and rainfall profiles with a return period of 100 years. Various scenarios were tested and a preferred solution selected on the basis of effectiveness, feasibility, durability, operational management and water quality needs. This involves renewal and enhancement of aspects of the existing system supplemented by additional open water channel and storage provision.

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8.2.2 Detailed Programme of Work Period 2007 to 2009

Detailed Work Programme for the Assessment of Needs Period 2007 to 2009

Scheme/Area	W/S	Type	Details	Est. Cost	Priority	Outcome
Lee Road Waterworks Refurbishment	W	Up-Grade	Modernise/Refurbish Water Treatment Works incl. Sludge Treatment	€17M	1	To improve water quality and security of supply
Low Level Rising Mains	W	Up Grade	Rationalise multiple rising mains to low level reservoirs	€ 0.88M	1	To secure supply
Increase Low Level Storage	W	New Works	Construct New Reservoir	€4.2M	1	To secure supply
Increase Intermediate / Level Storage	W	New Works	Construct new storage level reservoir.	€5M	1	To secure supply
Provide link main from Glashaboy W.T.P. at Little Island to Cork City at Tivoli	W	New Works	2 Km. Of 600 mm diameter watermain	€2.75M	1	To secure supply to eastern area of the network.
Water Supply to Docklands Development Area	W	New Mains	Provision of new mains into the development area	€ 5.2M	1	To provide adequate flows and pressure for this major development area.
a) Extend the 600mm main at Wilton to Lee Road Waterworks and provide a link with the existing Low level Trunk mains in the Mardyke.	W	New Works	To provide security of supply in the event of major pollution of river source or failure/break-down of waterworks (Lee Road)	€ 1.79M	1	For security of supply
Cork Water Conservation Phase 11	W	New Works	Rehabilitation of Water mains in the short to medium term	€10.44M	1	To improve the water network. To improve pressures and improve water quality
Surface water drainage provision for Cork Docklands Development Area	D	New Works	Replace, expand existing surface water drainage system with added storage and control	€5.2	1	To meet the needs of new development.
Network refurbishment/renewal	D	Up-grade	Sewer rehabilitation, renewal and enhancement	€2.0	2	To impact on infiltration inflow effect on capacity.

8.3 WATER SERVICES NEEDS 2010 to 2014

8.3.1 Examination from a strategic perspective of the main requirements for water services investment over the period 2010 to 2014.

The following Reports were used to examine and identify the Water Services Needs from a strategic perspective:

a) The Cork Strategic Water Study for the Cork County and Cork City (2006)

The study will provide Cork City and County Councils with a complete assessment of the supply/demand deficit of the current water supply infrastructure and lead to prioritised recommendations forming a master Development Plan for water supply over the next 25 years. This Report is due for publication shortly.

b) The Cork Area Strategic Plan 2001 – 2020 (CASP).

The Cork Area Strategic Plan proposes a settlement strategy to be implemented over a twenty year period. It identifies a phased programme of water and drainage works, which are necessary to support this strategy.

The study area covers an area determined by a journey time of about forty-five minutes that has been defined as the Cork City Region

The Cork Area Strategic Plan provides a framework for integration of land use, transportation, social, economic and environmental elements for the Cork area to 2020.

It takes account of the principles of the European Spatial Development Perspective, which seeks to achieve economic and social cohesion, sustainable development and balanced competitiveness. It also takes account of the National Development Plan, which defines Cork as a gateway city.

The CASP strategy seeks to move towards a more sustainable form of development for the Cork area, promoting a strong sub-regional settlement pattern based on the promotion of urban renewal and an integrated land use/public transport strategy

The strategy is underpinned by the following main concepts:

- Revitalisation of Cork City
- Redefinition of 'Metropolitan' Cork – encompassing both the city and satellite towns around it.
- Reinforcement of ring towns
- Infrastructure-lead development
- Creation of an integrated transport system

c) The Cork City Development Plan 2004 to 2009.

The Plan is set within the strategic framework put forward by the Cork Area strategic Plan.

The Cork City Development Plan 2004 to 2009 sets out Cork City's Council's policies for the development of Cork City to late 2009. It has been developed following a period of intensive consultation on issues to be included in the Plan.

The Plan is set within the strategic framework established by the Cork Area Strategic Plan 2001 – 2020 (CASP).

The plan outlines Cork City Council's policies for improving the social, economic, cultural and environmental health of the city.

The main strategic aims are:

- to promote balanced sustainable economic development and employment within the city.
- to develop an integrated transport strategy.
- the promote high quality built environment.
- to protect and enhance the natural environment.
- to promote the regeneration of the City Centre and docklands area.
- to ensure orderly development of the city.

d) The National Spatial Strategy

The National Spatial Strategy has identified Cork City as a National Gateway City. The National Spatial Strategy provides a spatial plan framework for the country and reinforces Cork's role as a national gateway.

e) The Cork City Strategic Operational Management and Investment Plan

1999) prepared for the City water network under an E.U./DoEHLG funded Cork Water Conservation Scheme.

f) The Preliminary Report for Cork Water Conservation Phase 2 – Water Replacement and Rehabilitation – November 2003.

8.3.2 Detailed Work Programme including, estimates, outcomes sought and specific outputs required, for the Assessment of Needs Period 2010 to 2014

Scheme/Area	W/S	Type	Details	Est. Cost	Priority	Outcome
Cork Water Conservation Phase II	W	Upgrade	Rehabilitation of Water mains Long Term	€121.6M	2	To improve water quality and security of supply.
Proposed 450 Booster Pipe Crossing River Lee near Daly's Bridge	W	New Works	Lay a new pipe across the river Lee in parallel to the existing 450 main.	€ 0.7M	2	To provide security of supply in the event of failure/break of existing 450 mm diameter pipe.
Proposed 350 Bishopstown Ring Main	W	New Works	Lay a new ring main in Bishopstown/ Rossa Ave. / Model Farm Road.	€ 2.95M	1	To improve the water supply to the Bishopstown area
Replacement of old trunk mains from Shanakiel Reservoir as far as the Lee Road	W	Upgrade	Lay a new 750mm delivery main from the Shanakiel Reservoir to a new meter house on the Lee Road	€0.4M	2	To provide security of supply in the event of a pipe failure and to divert one main from under a building.
Sewer Network renewal	D	Upgrade	Programme of sewer renewal relining and enhancement	€3.0	1	To ensure integrity of the network and offset impacts on capacity

Cost Summary

The overall estimate of the programme 2007 to 2009 is: € 54.46

The overall estimate of the programme 2010 to 2014 is: € 128.65

Total overall estimate: € 183.11

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