Dublin Docklands

Background
The drainage network in the Docklands currently operates at full capacity. There is flooding in the North Docklands area for a 1 in 2 year rainfall event and this is caused by two main network deficiencies, the hydraulic capacity of the sewers to convey flows to pumping stations and capacity of the pumping stations themselves to transfer flows to the Ringsend Waste Water Treatment Works.

In the current situation the pumping stations quickly begin to pump at peak rates and flows discharge from the Combined Sewer Overflows (CSOs) and emergency overflows to nearby watercourses. Any increase in development in the North Docklands area will add demand to the drainage network and will serve to increase the frequency and volume of flooding and the number and volume of spills to watercourses.

The Drainage Area Plan produced in July 2002 confirmed that the only viable solution available is a new sewerage pumping station at Spencer Dock and two new foul rising mains going from this pumping station through the new Liffey Services Tunnel to the Main Lift Pumping Station in Ringsend.

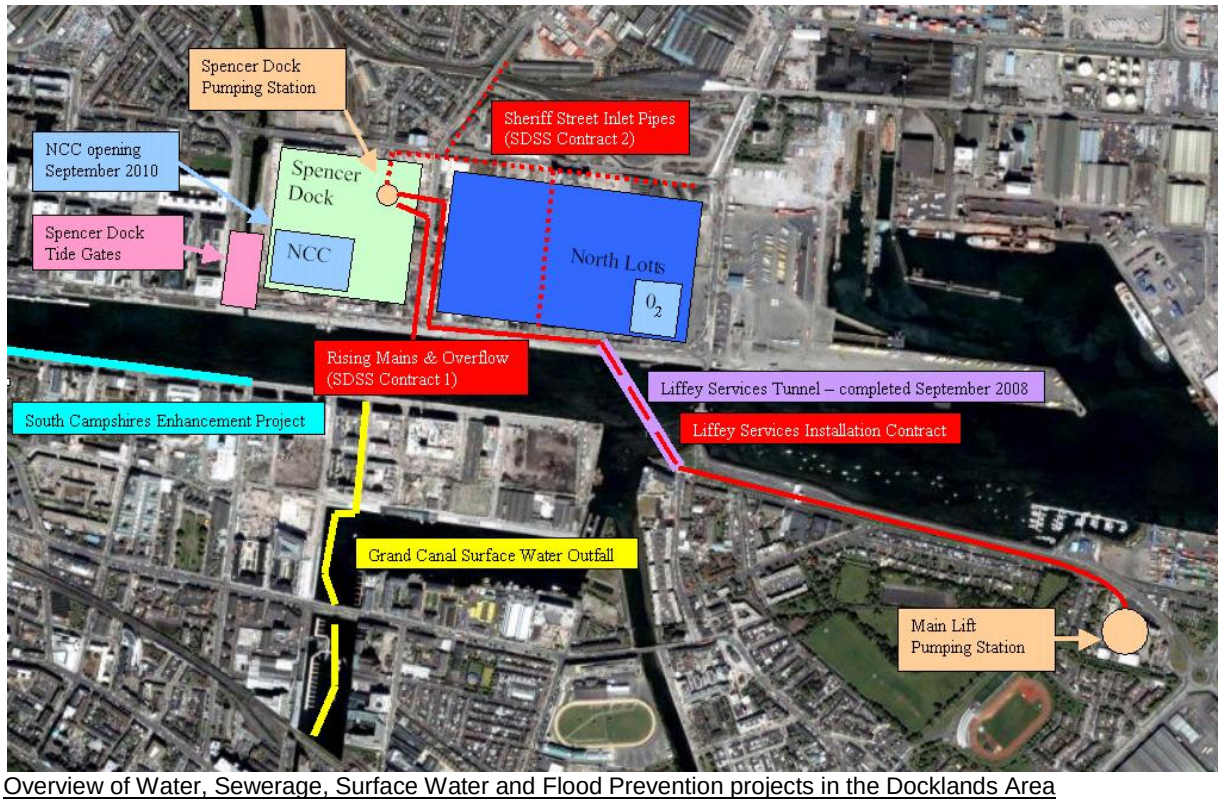
The Docklands Water and Sewerage Scheme is part of the Department of Environment, Heritage and Local Government's Water Services Investment Programme 2007-2009. The scheme is to provide essential water and sewerage services to the areas being developed in the area under the remit of the Dublin Docklands Development Authority and contiguous areas.

Infrastructure
Infrastructure to be delivered in order to fulfil the essential water sewerage services include:

- Spencer Dock Pumping Station
- Dublin Docklands Rising Mains (Spencer Dock Sewerage Scheme - Contract 1)
- Liffey Service Tunnel
- Liffey Services Installation Contract
- Sheriff Street Inlet Pipes (Spencer Dock Sewerage Scheme - Contract 2)

Other infrastructure elements being delivered in the Docklands area include:

- Spencer Dock Tide Gates
- South Campshires Enhancement Project
- Grand Canal Surface Water Outfall



Overview of Water, Sewerage, Surface Water and Flood Prevention projects in the Docklands Area

Spencer Dock Pumping Station
The Spencer Dock Development Company, in accordance with the planning conditions for the Spencer Dock Development, is delivering the Spencer Dock Pumping Station.

The Pumping Station is designed to pump sewerage from the Spencer Dock Development (including the National Conference Centre) and the surrounding North Docklands area, through the Dublin Docklands Rising Mains, to the Main Lift Pumping Station in Ringsend.

The Pumping Station has a design capacity to pump 600 litres per second through the two Dublin Docklands Rising Mains and has 2,000 cubic metres of offline storage.

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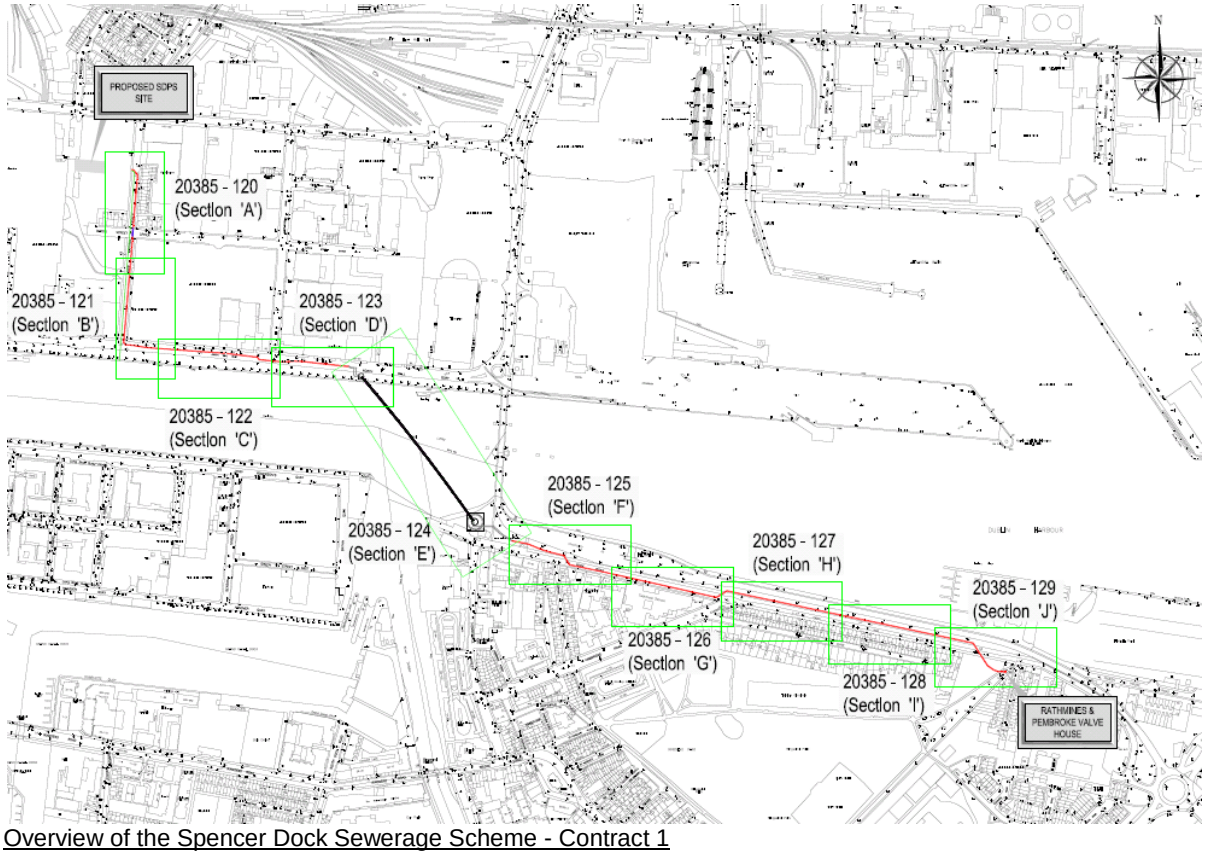
Dublin Docklands Rising Mains
This project involves delivery of the Dublin Docklands Rising Mains, incorporating the Spencer Dock Pumping Station overflow pipe. Together these are referred to as the Spencer Dock Sewerage Scheme - Contract 1.

The Dublin Docklands Rising Mains run from the Spencer Dock Development, along New Wapping Street and along North Wall Quay to the north shaft of the Liffey Services Tunnel. They then continue from the south shaft of the Liffey Services Tunnel, along York Road, the Eastlink Toll Road and Pigeonhouse Road to the Main Lift Pumping Station in Ringsend. The section of the Dublin Docklands Rising Mains between the north and south shafts of the Liffey Services Tunnel is being delivered under a separate contract, the Liffey Services Installation Contract.

The Dublin Docklands Rising Mains are twin 500mm diameter pipes. The design is complete and construction is anticipated to commence in late 2009.



Overview of the Spencer Dock Sewerage Scheme - Contract 1

Consultant:
Nicholas O'Dwyer Ltd.

Contractor:
Not yet appointed.

Contact:
Paul Baggeridge
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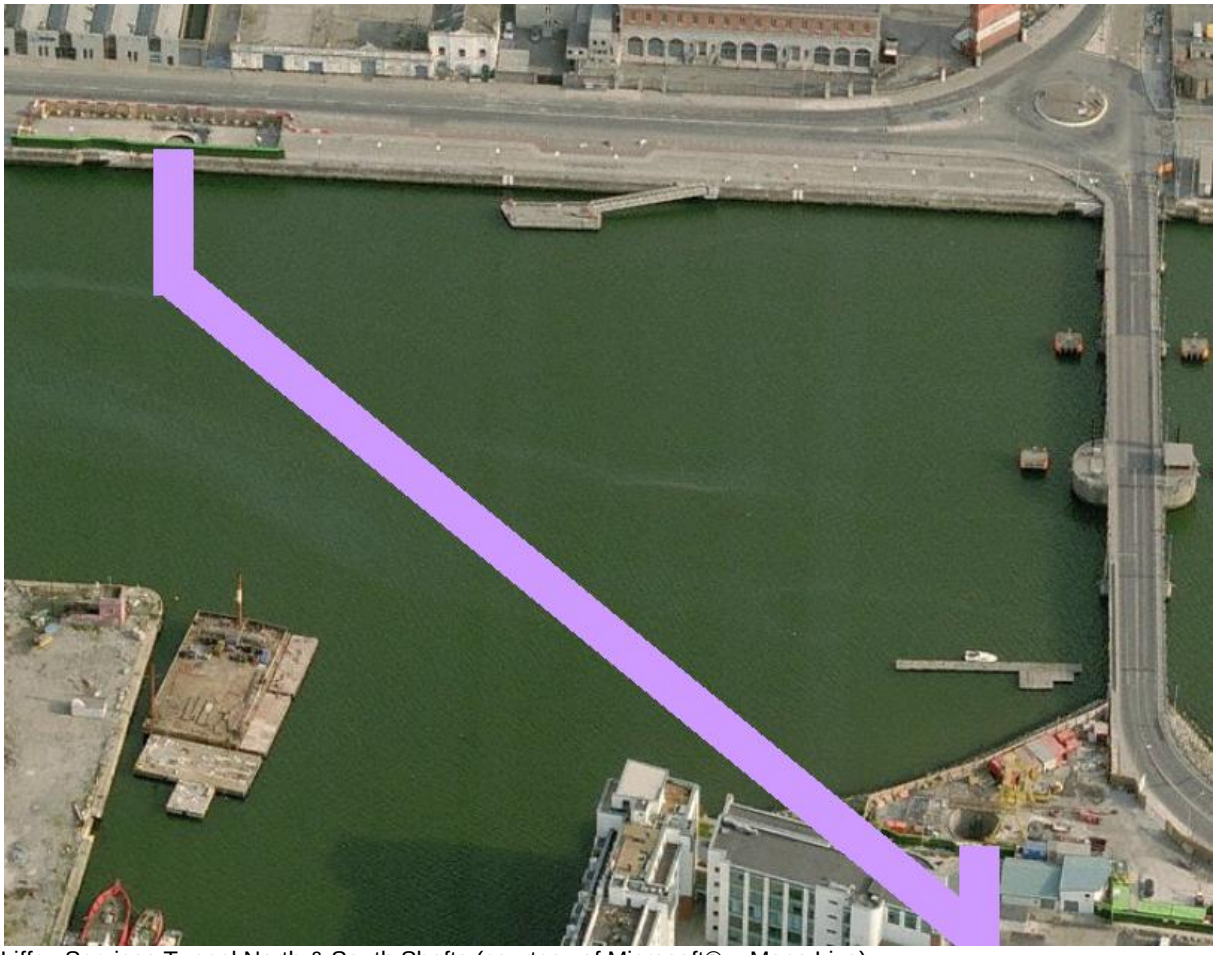
Liffey Services Tunnel
Dublin City Council completed delivery of the Liffey Services Tunnel in September 2008. The contract comprised refurbishment of the existing south shaft, construction of the new north shaft in the campshire adjacent to North Wall Quay and the construction of a tunnel between the two shafts.

The Liffey Services Tunnel is a conduit into which a water main, the twin Dublin Docklands Rising Mains, district heating pipes and ESB and telecoms cables will be routed under the River Liffey. The installation of these services within the Liffey Services Tunnel is being delivered under a separate contract, the Liffey Services Installation Contract.

The Liffey Services Tunnel is approximately 260 metres long and has a 2.5 metre internal diameter. The north and south shafts are approximately 20 metres and 17 metres deep respectively. The north and south shafts are approximately 5.5 metres and 8.7 metres in diameter respectively.



Liffey Services Tunnel North & South Shafts (courtesy of Microsoft® – Maps Live)

Inside the South Shaft – Jacking of Precast Concrete Tunnel Segments


Inside the Liffey Services Tunnel

Consultant:
Atkins Ireland.

Contractor:
Zublin – Cleary Doyle JV.

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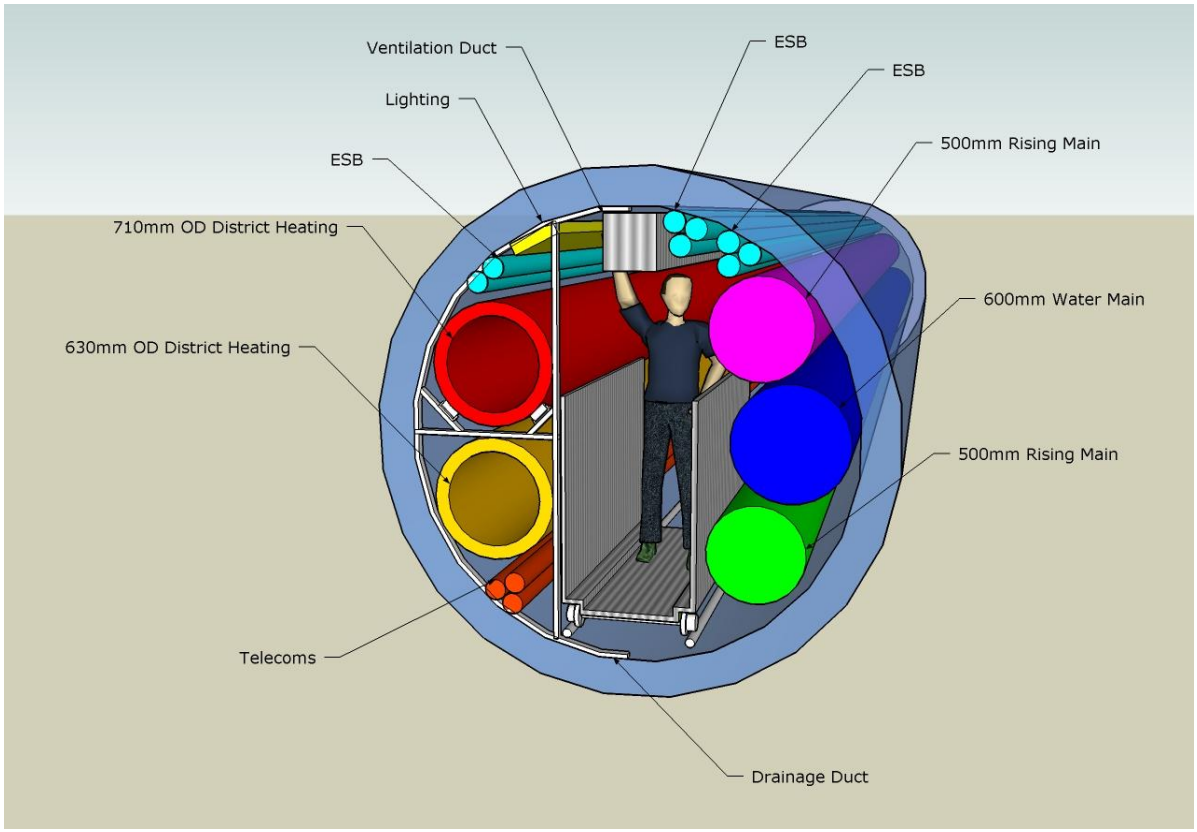
Liffey Services Installation Contract
This project involves the delivery of services into the Liffey Services Tunnel, north shaft and south shaft that were completed in September 2008.

The services to be installed include a water main, the twin Dublin Docklands Rising Mains, district heating pipes and ESB and telecoms cables.

The design is complete and construction is anticipated to commence in late 2009.



Schematic Cross Section of Services to be installed in the Liffey Services Tunnel

Consultant:
Nicholas O'Dwyer Ltd.

Contractor:
Not yet appointed.

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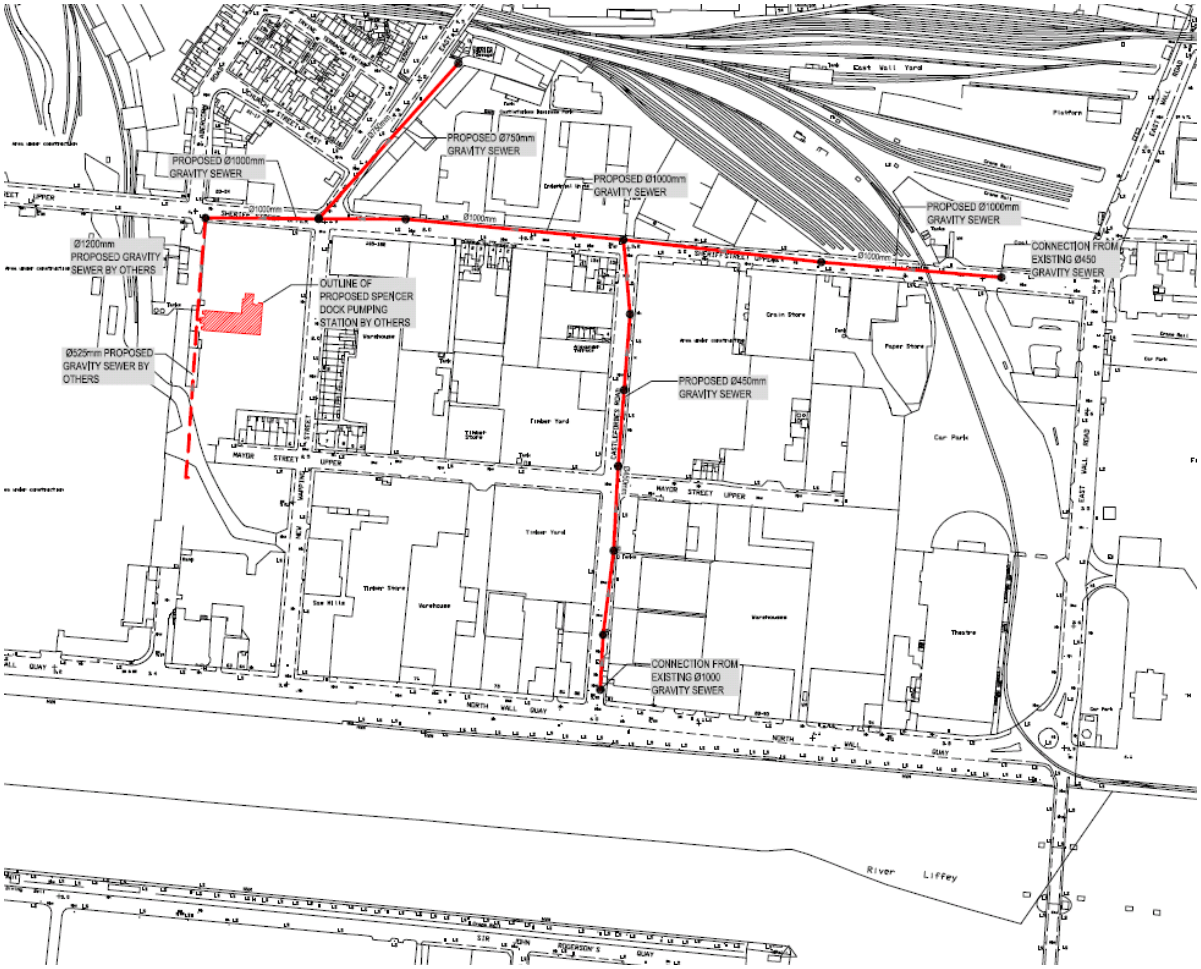
Sheriff Street Inlet Pipes
This project involves delivery of the large diameter gravity sewer along Sheriff Street and two connecting branches from East Road and Castleforbes Road. Together these are referred to as the Spencer Dock Sewerage Scheme - Contract 2.

The design process is ongoing and construction is anticipated to commence in 2010.



Overview of the Spencer Dock Sewerage Scheme - Contract 2

Consultant:
Nicholas O'Dwyer Ltd.

Contractor:
Not yet appointed.

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Spencer Dock Tide Gates

This restoration project, involving the combination of new flood gates and mitre gates in the one complex, is unique in Ireland. This work is being completed as part of the *SAFER project, the aim of which is to provide integrated Dublin coastal flooding protection from Portmarnock to Bootherstown, including the Liffey; Tolka & Dodder estuaries. The SAFER project also provides the only operational tidal flood warning system for a coastal city in Ireland.

Overview of the Spencer Dock Tide Gates site

Overview of the Spencer Dock Tide Gates site

Overview of the Spencer Dock Tide Gates site

Overview of the Spencer Dock Tide Gates site

Consultant:
Royal Haskoning Ltd.

Contractor:
Pierse Contracting Ltd.

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South Campshires Enhancement Project
Leah

Consultant:
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Contractor:
Not yet appointed.

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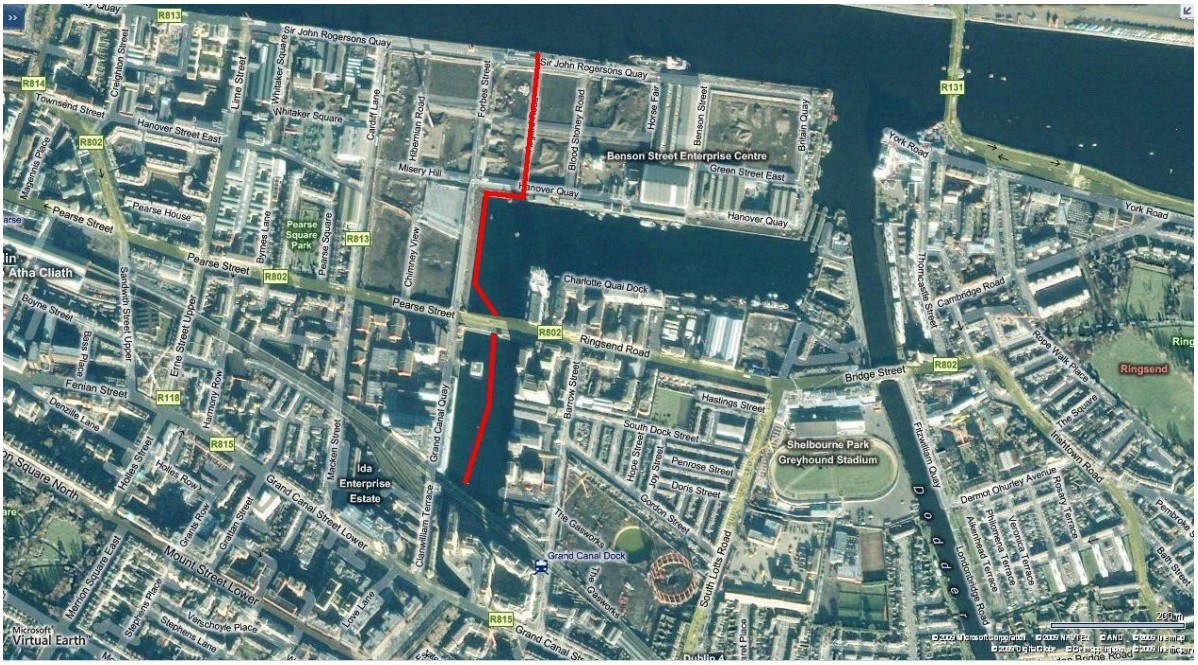
Grand Canal Surface Water Outfall
The Grand Canal Tunnel, completed in 1976, drains the Rathmines & Pembroke, Poddle/ Tymon and Crumlin North & South drainage catchments. The surface water portion of this tunnel discharges to the Grand Canal Dock through a 3.2 meter diameter outfall pipe adjacent to the Grand Canal Dock DART station.

Excessive flows during storm events and overflows of the foul sewer portion of the tunnel can cause flooding and pollution in the dock. The recent development of the docklands area, and the improved amenity value of the dock itself, coupled with increased awareness of the impact pollution can have in the dock have encouraged the development of the project. It is proposed to extend the outfall from its current location to a new outfall to the River Liffey in Sir John Rogerson's Quay to reduce any adverse impacts.

The project comprises extending the existing outfall through a series of pipes from the current outfall location, under General McMahon Bridge, and along Grand Canal Quay. The pipeline will then enter the campshire of Hanover Quay where it will connect to a section of pipeline previously constructed during the development of Asgard Road before discharging to the River Liffey through a new outfall structure constructed in Sir John Rogerson's Quay. Penstock chambers will ensure that flows can be regulated.

The design process is ongoing and construction is anticipated to commence in 2011.



Proposed Route of the Grand Canal Dock Storm Water Outfall to the River Liffey.

Consultant:
JB Barry & Partners Ltd.

Contractor:
Not yet appointed.

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To top