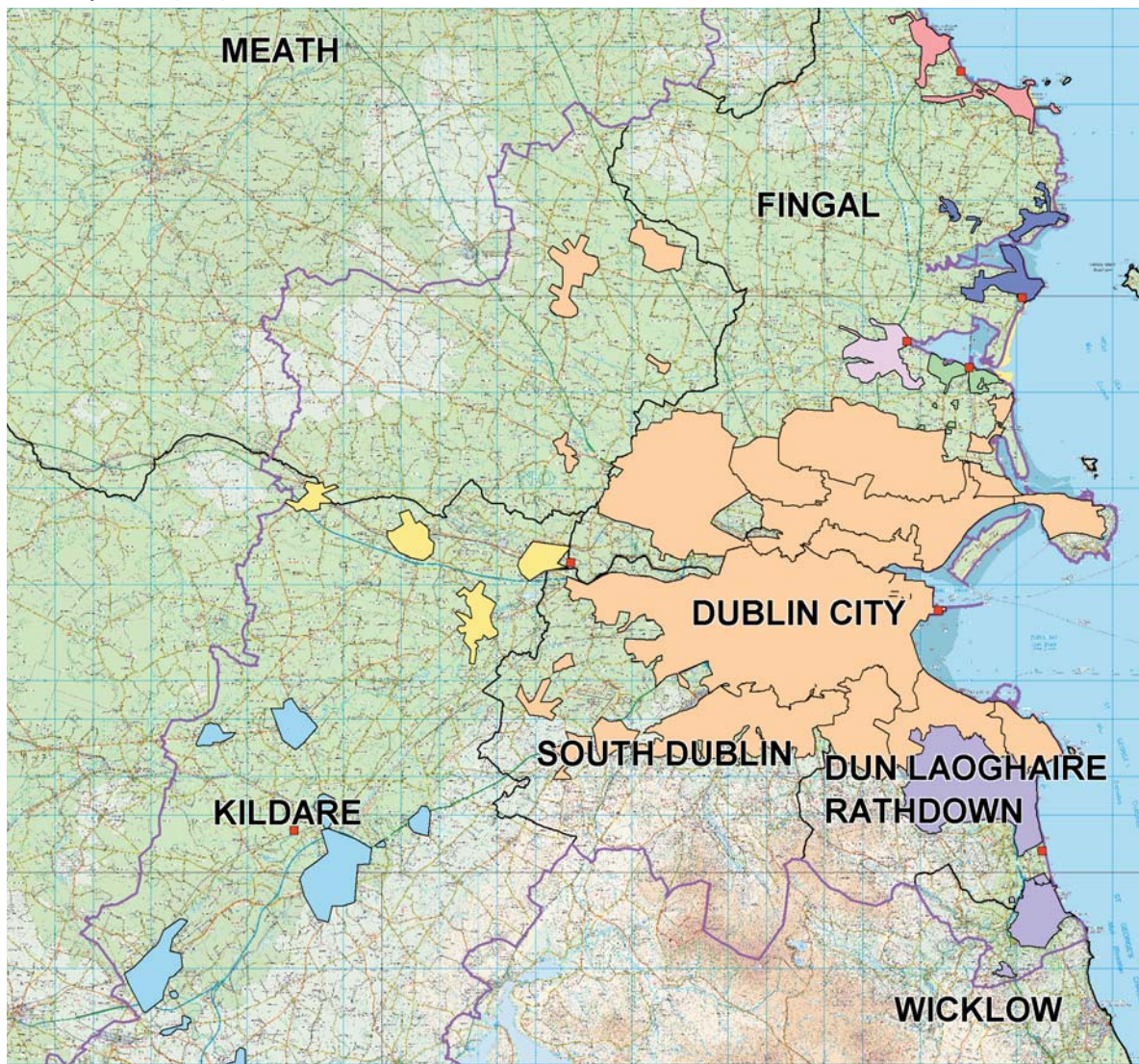


# The Greater Dublin Strategic Drainage Study

## major planning study for sustainable drainage infrastructure

**T**he Greater Dublin Strategic Drainage Study is to provide planning for the future drainage, sewerage and sewage treatment infrastructure for Ireland's capital city up to the middle of the 21st century. The project covers the seven local authorities that make up the Greater Dublin Area and is being led by Dublin City Council. The €8.6 million funding, provided under the National Development Plan, covers consultancy fees and sewer surveys by specialist third party contractors. As well as strategic infrastructure planning, the Study includes drainage management aspects such as recommendations for regional policies and regional drainage Geographical Information Systems (GIS).



Map shows extent of Dublin Strategic Drainage Study (courtesy Hyder Consulting)

The Greater Dublin Area has experienced unprecedented growth in recent years, which has placed huge burdens on the city's infrastructure. The pressure of such widespread development has particularly strained the foul and storm drainage systems serving the city and surrounding towns. The extent of the study area is around 173,000 hectares with some 1.4 million residents, living in 40,000 hectares developed area. The study will need to consider this development increasing substantially, with corresponding high demand for serviced land to accommodate the additional households.

In May 2001, the Dublin Drainage Consultancy was awarded the 18 month study to identify policies, strategies and projects for developing a sustainable drainage system for the Greater Dublin Area. The consultancy is a joint venture between *Hyder Consulting* and Dublin based firms, *PH McCarthy and Partners* and *MC O'Sullivan* (in association with *HR Wallingford*). The consultancy includes specialists from *Wallingford Software* for GIS advice, *University of East Anglia* for climate change aspects, *University College Dublin* for coastal water quality modelling and town planners, Brady, Shipman Martin.

The consultancy has made substantial progress on the analysis of planning information at national and local level for the production of development scenarios for 2011 and 2031 and beyond.

## Understanding

The study, therefore, places great emphasis on the need to understand the capability of the existing drainage and treatment facilities to meet such demands. This understanding is being achieved through the modelling of foul, storm and river systems, using *InfoWorks* software. Incorporating the power and functionality of Geographical Information Systems (GIS) *InfoWorks* has become the industry standard hydraulic modelling software for the UK and Ireland.

The study area comprises over 50 foul and storm catchments, varying from dense city centre developments to rural streams and rivers. As in most cities, foul drainage is a mixture of separate and combined systems with overflows to watercourses. The storm systems include separate drains, watercourses and major rivers. All foul, combined and storm systems are being represented in *InfoWorks* models, the details of the models depending on availability of asset information and their importance to future development.

The topography of the region and configuration of the drainage network dictate that a significant proportion of the drainage flows generated by the city and environs is discharged to the Ringsend treatment plant, mostly through the Grand Canal Tunnel system. For this reason a dedicated team is carrying out the initial study into the Grand Canal system to assess the adequacies of this system in relation to the planned development of the catchment and design capacity of the new treatment plant at Ringsend. This study will then form a major part of the initial strategy review of overall development demands, the general capability of existing facilities and constraints and opportunities for improvement. This initial review will provide guidance for the ongoing modelling work of the main catchments.

## Hydraulic models

The consultancy is building hydraulic models from existing SUS25 databases, with a further 25,000 assets being digitised from record drawings, mostly carried out in-house. Asset surveys by specialist contractors will provide supporting information on ancillary structures and pumping stations. Information on the main rivers is being provided by topographical surveys of the channels, combined with *Lidar* aerial survey of the flood plains.

**Phase 1** reports for each catchment collate and review all available information, and scope the ongoing modelling and survey requirements. **Phase 2** model build and verification represents the extensive hydraulic modelling required to support the Study strategy.

The consultancy has arranged and is supervising the site surveys to the value of Euro3.5 million, involving 12 contracts. The specialist surveys include installation of over 480 flow monitors and 270 rain gauges, survey of over 4100 assets and topographical survey of some 74km of rivers and streams.

All modelling information is held in the Study GIS, which incorporates digital mapping, ortho-rectified aerial photography, digital terrain mapping, and system information. Reporting and drawing production is also based on the GIS using *Mapinfo* software.

The development of strategies for the future drainage and treatment facilities is being supported by hydraulic modelling in assessing the hydraulic feasibility of upgrading schemes. Final strategy proposals include cost estimates and programmes for the schemes for upgrading sewerage and drainage facilities.

## Management support

The Dublin Drainage Consultancy is also providing management support to the Councils in the form of Regional Policies for the operation and maintenance of their drainage assets. The policies involve management of new development, guidance for developers and design, construction and maintenance standards. Environmental policies include management of continuous and intermittent discharges, with Sustainable Urban Drainage Systems (SUDS) as an important element. The policies also cover asset records, sewer rehabilitation and inflow and infiltration. Specific policies are being developed for inclusion of climate change effects, as well as management of the many basements which are a feature of Dublin housing stock.

In recognition of the importance of GIS, the Study is also making recommendations for the extent and format of a new Regional Drainage GIS. This GIS will provide the platform for inclusion of asset records, hydraulic models, development information and asset management, as well as integration with other GIS for the Dublin Region. ■

**Note:** *The Editor & Publishers wish to thank Dublin City Council, McCarthy Hyder Consultants and MC O'Sullivan for providing the above article for publication.*

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