APPENDIX 8: OTHER INFRASTRUCTURE

8.1 Water supply

8.1.1 Structure of the Water Supply Industry

Traditionally the provision of water supply infrastructure has been directed at a national level by the Department of the Environment (DoE, now DoEHLG) and regionally by Fingal County Council and Dublin City Council. Local overlap between the provision of water supply to Fingal means that many programmes are shared by Dublin Corporation as well as other surrounding authorities. Fingal County Council are however generally responsible for the supply of water and the planning of infrastructure, depending on capital funding from DoE in the Fingal area.

Aid from various EU directives (from the EU Cohesion Fund) has assisted the investment in water supply infrastructure in Ireland and has supplemented state funding. This funding has been managed by the DoE and Local Government.

Regionally, a number of Public Private Partnerships have been developed to supplement the delivery of the water supply, although there are none in Fingal for the supply of water.

The 'polluter pays' principle has been extended to infrastructure development policy and is used as a method of retrieving costs; non- domestic users are required to meet the cost of public water services provided to them (as noted in the 'Water Services Annual Report '- DoE, 2000). Domestic users costs however are met with state funding (with no cross-subsidy by non-domestic users). The charges levied for infrastructure development are based on actual usage and the real cost of providing services.

8.1.2 National and local background

A 'National Water Study' commissioned in 1998 by the DoE comprehensively reviewed all large water schemes outside of the Greater Dublin area. This was prepared in conjunction with a report on the strategic development of the water supply to the Greater Dublin area ('Greater Dublin Water Supply Strategic Study' (GDWSSS), January 1996 by Generale des Eaux & M C O'Sullivan) which covered all aspects of the supply and set out a blueprint for its development over 20 years to 2016.

The GDWSSS study included detailed assessments of conditions and forecasts of demand in the supply insofar as they could be assessed in 1996.

Since 1995, the most dramatic economic growth in Ireland and particularly the Dublin Metropolitan Area has resulted in parallel growth in water demand. For these reasons the DoE and Local Government requested that the Greater Dublin Water Supply be re-examined.

A review ('Greater Dublin Water Supply Strategic Study - Year 2000 Review' - by M C O' Sullivan) brought the study up to date and confirmed that the original recommendations of the 1996 report (as listed below) remained valid and should be implemented:

1. Implementation of an intensive water conservation project (Dublin Region Water Conversation Project (DRWCP)

2. Development of increased resources from outside the Dublin area (including the increase of the expansion of the Lexlip pumping station to provide 170Ml/day to the network)

3. Upgrading of distribution of storage systems

8.1.3 Description of the existing water supply and distribution

The existing supply network was extensively reviewed in the GDWSSS study in 1996, and in a following 'GDWSSS Year 2000 Review'.

The water supply is predominantly derived from the River Liffey via a treatment plant at Leixlip to the south west of the study area. This is a pumped source with storage at Ballycoolin. The Leixlip treatment plant has recently been upgraded to a sustainable capacity of 148 ml/day to a peak capacity of 170 ml/day.

The site area is covered by a distribution network that includes Dublin and the Greater Dublin area and as a consequence regional demand will influence local supply, for instance 30% of the upgraded Leixlip water source is provided to the Dublin Corporation area.

Groundwaters are not locally important for the supply of water. However a small supply has been developed in an area in north Fingal; the 'Bog of the Ring' source to supply the Balbriggan area. In addition to water supply, the distribution of water may prove problematic as certain parts of the study area lacks sufficient water distribution. There is notably a need for a water main to augment the main supplying the airport and other areas outside of the study area.

8.1.4 Improvement proposals

The following water schemes involving **Fingal Country Council,** funded under the 'Water & Sewerage Services Investment Programme' (DoE) 2000-2002 relate to the study area;

Ongoing schemes

- Leixlip Water [Phase II] - Contracts 4, 5, 6, 7 & 9 (due to complete 2003)

Proposed schemes (under review and development)

- Ballycoolin Storage Reservoir: capacity to be doubled
- Leixlip / Ballycoolin 3rd Rising Main

In addition to the above various projects, the projects below, under the control of **Dublin Corporation,** relate to the study area;

Ongoing schemes

- Dublin water conservation (reducing leakage from 40% to an objective of 20%)

Proposed schemes (under review and development)

- Dublin Water Supplies Studies*
- Dublin North Fringe Water Main

*Consultants have been commissioned by Dublin Corporation to examine the feasibility of new supply in the Dublin region as well examine the effects of reduced supply.

8.1.5 Future demand

The following table provides an indicative illustration of the likely difference in demand from the zones in the NFWS and this planning study.

Table 1

NFWS Zoning	Size (ha)	NFWS Zone Categories	Zoning as South Fingal Fringe Planning Study (SFFPS)	Indicative relative difference in water demand considering SFFPS zoning
MU1- 1(B)	509.7	MIXED USE	SPECIAL LANDSCAPE POLICY AREA & AREA OF SEARCH FOR PUBLIC TRANSPORT	SIMILAR
MU1- 6(B)	296.3	MIXED USE	AREA WITH ENHANCED GREENBELT / RURAL STATUS	LESS
RA - 1(B)	128.8	AIRPORT RED APPROACH AREA	AREA WITH ENHANCED GREENBELT / RURAL STATUS	LESS
RA - 8 (B)	10.6	AIRPORT RED APPROACH AREA	AREA WITH ENHANCED GREENBELT / RURAL STATUS	LESS
RA - 4 (B)	3.5	AIRPORT RED APPROACH AREA	EXISTING APPROACH AREA	SIMILAR
RA - 2 (B)	31.2	AIRPORT RED APPROACH AREA	AREA WITH ENHANCED GREENBELT / RURAL STATUS	LESS
E - 5	40.4	INDUSTRIAL	INDUSTRIAL WITHIN SPECIAL LANDSCAPE POLICY AREA	SIMILAR
E - 8	3.4	INDUSTRIAL	INDUSTRIAL	SIMILAR
ST - 2	22.6	SCIENCE AND TECHNOLOGY	SCIENCE AND TECHNOLOGY	SIMILAR
E - 14	50.5	INDUSTRIAL	INDUSTRIAL	SIMILAR
AU - 49	29.7	RESIDENTIAL	GENERAL INDUSTRY	LESS
MU1 - 4(B)	31.4	MIXED USE	DESIGNATED AIRPORT AREA	LESS
E - 9	9.5	INDUSTRIAL	GENERAL INDUSTRY WITHIN DESIGNATED AIRPORT AREA	SIMILAR
AZ - 1(B)	131.7	AIRPORT ZONE	DESIGNATED AIRPORT AREA	SIMILAR
RA - 10 (B)	65	AIRPORT RED APPROACH AREA	EXISTING APPROACH AREA AND SPECIAL LANDSCAPE POLICY AREA	SIMILAR
AZ -2(B)	414.3	AIRPORT ZONE	DESIGNATED AIRPORT AREA	SIMILAR
RA - 3(B)	9.3	AIRPORT RED APPROACH AREA	DESIGNATED AIRPORT AREA	SIMILAR
RA - 11(B)	30	AIRPORT RED APPROACH AREA	DESIGNATED AIRPORT AREA	SIMILAR
AZ - 3 (B)	93.3	AIRPORT ZONE	DESIGNATED AIRPORT AREA	SIMILAR

MU1 - 3(B)	287.7	MIXED USE	DESIGNATED AIRPORT AREA (EXCLUDING ST MARGARETS)	LESS
E - 6	287.7	INDUSTRIAL	INDUSTRIAL & SPECIAL LANDSCAPE POLICY AREA	SIMILAR
E - 7	287.7	INDUSTRIAL	INDUSTRIAL & SPECIAL LANDSCAPE POLICY AREA	SIMILAR
E - 10	287.7	INDUSTRIAL	INDUSTRIAL & SPECIAL LANDSCAPE POLICY AREA	SIMILAR

Figure 1 mains water

8.2 Surface water drainage

8.2.1 Drainage responsibilities

In acting as the planning authority Fingal County Council manage development so as to reduce its impact on surface water discharge and each development scheme within the site area should make provision for the cost implications of measures to attenuate flow.

The Council has specific development objectives that relate to flooding and generally relate to measures to reduce the areas of flooding risk and restrict development on lands that are liable to flooding and detailed in section 4.

8.2.2 Background

The relatively low levels of existing development within the study area have resulted in a low level of surface water provision (and foul sewer, see section 8.3). A low level of existing surface water drainage capacity represents a significant consideration for development as some areas to the east of the study area that lie on the lower reaches of catchments have experienced flooding.

8.2.3 Local surface water system

The site area is situated on approximately 6 catchments, some of which merge downstream:

- The St Margaret's Stream originating southwest of St Margaret's is responsible for draining much of the eastern part of the study area. St Margaret's Stream is a tributary to the Ward River, which it converges with northwest of the study area (near Owens Bridge). The Ward River runs in an easterly direction and also receives discharge from streams that drain the northern part of the study area, around the location of the proposed new runway. The Ward River passes through Swords before joining the Broad Meadow River, which discharges to the estuary at Seatown West.
- The majority of the streams have their source in the vicinity of the south and eastern parts of the study area and flow broadly in an easterly direction.
- To the northeast, the Gaybrook Stream, with its source about Nevinstown, flows northeast and discharges to the estuary at Barrack Bridge (Yellow Walls).
- The next catchment comprises the Forest Little Stream, the Wad Stream and Kelly's Stream that are part of the Sluice River Catchment. This flows eastwards from a source in the eastern part of the site area to discharge at Portmarnock Bridge.
- The Cuckoo Stream and Mayne Stream later converge to form the Mayne River. This stream receives drainage from the southern runway of Dublin airport and southeast part of the site and flows toward the Portmarnock Estuary (the drainage of the Mayne River catchment and an area of development land to the north of Baldoyle has been extensively studied and is discussed shortly).
- Quinn's River is a tributary of the Santry River. Its catchment encompasses part of the southwestern part of the site area. The Santry River flows southeastwards through northwestern Dublin and discharges at St Anne's Park.

The ground conditions revealed in this study highlight low permeability glacial till soils, a relatively high water table and relatively high levels of groundwater recharge. These combine to result in a tendency for overland flow rather than infiltration. This

is evident in the occurrence of localised flooding and ponding about the study area, see Figure 2 Surface Water.

8.2.4 Drainage improvement proposals

1. Greater Dublin Strategic Drainage Study

The issues of drainage (foul and surface water) on a regional scale are to be addressed in a 'Greater Dublin Strategic Drainage Study' commissioned by the seven Local Authorities across the Dublin area. The final deliverable/report is to be available within two years (2003).

This report will identify policies, strategies and projects for developing a sustainable drainage system for the Greater Dublin area and, in due course, will be of great significance to the development of the study area.

This report will also provide a surface water management plan as well as water quality management plans for catchments in the County in line with the requirements of the Phosphorus Regulations (application of the incoming EU 'Water Framework Directive').

2. Baldoyle Surface Water Project

There are no public surface water infrastructure schemes planned in the study area, however some adjacent lands are part of a scheme receiving EU and State funding via the DoE and Fingal County Council. An area north of Baldoyle, east of the study area and downstream of Dublin airport is located in the Mayne River catchment. The development area is situated on a natural floodplain. A Flood Management scheme, with an approximate 13ha retention pond designed to accommodate flood storage at the downstream end of the Mayne River, which can become tidelocked, was constructed in 2000-2002.

3. Dublin Airport - Study of Surface Water Catchments

Atkins McCarthy have currently undertaken a study of the impact of the Airport on discharges to two watercourses (Sluice and Cuckoo rivers), on behalf of Aer Rianta, looking at options to provide full attenuation of their existing surface water discharges as well as many as a result of any proposed development. It is unlikely that open storage ponds will be used given their attraction to wildfowl and consequent increase in the risk of bird strikes.

Figure 2 surface water drainage

8.3 Foul water drainage

8.3.1 Foul water drainage responsibility

The provision of foul water drainage has been directed at a national level by the DoE and regionally by Fingal County Council. Local overlap between the provision of foul drainage to Fingal means that some programmes are shared by Dublin Corporation as well as other surrounding authorities.

Aid from various EU directives (from the EU Cohesion Fund) has assisted the investment in foul drainage infrastructure in Ireland and has supplemented state funding.

8.3.2 Existing foul water provision

The existing setting is shown in drawing in Figure 3. Examination of the recent planning history for the study area (from Fingal County Council) reveals that many proposals over the last three years include on site cesspits or 'biocycle facilities' indicating a significant lack of existing foul drainage capacity. The foul drainage infrastructure for the study area is due to be significantly augmented (refer to section 8.3.3, below).

8.3.3 Improvement proposals, planned and under construction

Greater Dublin Strategic Drainage Study

The issue of drainage (foul and surface water) on a regional scale is to be addressed in a 'Greater Dublin Strategic Drainage Study' (GDSDS) commissioned by the seven Local Authorities across the Dublin area. The final deliverable/report was to be available within two years (2003).

The GDSDS report will identify policies, strategies and projects for developing a sustainable drainage system for the Greater Dublin area and, in due course, will be of significance to the development of the study area.

North Dublin Interceptor Sewer

The 'North Fringe / Northern Interceptor Sewer Project (NF/NIS)- Design Review Report' (June 1999) produced by a M C O'Sullivan & Co. Ltd / P H McCarthy & Partners joint venture reviewed the drainage requirements for the North Dublin catchment and includes the study area.

The report initially reviewed a previous study ('North Dublin Drainage Scheme' - 1994) and significantly updated the sewer provision to consider the following;

- The extent of areas designated for development in the available Local Authority development plans.
- Other assumptions of future demand forecasts having regard to the economic growth and that forecasted.

The North Fringe and Northern Interceptor sewers were due to complete in early 2003.

NB - Foul water flows assumed in the NF/NIS analysis are based on a number of situations, notably much of the study area is zoned for mixed use development ('MU1') which was partially in anticipation of a range of possible outcomes as a result of this planning study. Again, this classification is now defunct, and it is included only as a guide to calculating capacity of the system.

8.3.4 Future demand and effect of development

The table below provides an indicative illustration of the likely difference in demand from the zoning in the NF/NIS and this planning study.

Table 2

NF/NIS Zoning	Size (ha)	NF/NIS Zone Categories	Zoning as South Fingal Fringe Planning Study (SFFPS)	Indicative relative difference in water demand considering SFFPS zones
MU1- 1	11	MIXED USE	AREA WITH ENHANCED GREENBELT / RURAL STATUS & EXISTING AIRPORT SAFETY ZONE	LESS
MU1- 2	514	MIXED USE	SPECIAL LANDSCAPE POLICY AREA, AREA OF PUBLIC TRANSPORT SEARCH AND POTENTIAL LONG TERM AIRPORT NODE	SIMILAR
MU1- 3	98.5	MIXED USE	DESIGNATED AIRPORT AREA	LESS
MU1- 4	286.5	MIXED USE	DESIGNATED AIRPORT AREA	LESS
MU1- 5	116	MIXED USE	DESIGNATED AIRPORT AREA	LESS
MU1- 6	257	MIXED USE	DESIGNATED AIRPORT AREA	LESS
MU1- 7	87	MIXED USE	DESIGNATED AIRPORT AREA & ½ AREA WITH ENHANCED GREENBELT/RURAL STATUS	LESS
MU1- 8	29.5	MIXED USE	DESIGNATED AIRPORT AREA	LESS
AZ - 1	135.2	AIRPORT ZONE	DESIGNATED AIRPORT AREA	SIMILAR
MU1- 9	221	MIXED USE	1/3 SPECIAL LANDSCAPE POLICY AREA 2/3 AREA WITH ENHANCED GREENBELT / RURAL STATUS	LESS
MU1- 10	66.8	MIXED USE	CEMETERY, SMALL INDUSTRIAL AREA AND SPECIAL LANDSCAPE POLICY AREA	LESS
MU1- 11	49	MIXED USE	SPECIAL LANDSCAPE POLICY AREA	LESS
MU1- 12	249	MIXED USE	AREA WITH ENHANCED GREENBELT / RURAL STATUS	LESS
ST - 2	22.3	SCIENCE AND TECHNOLOGY	SCIENCE AND TECHNOLOGY	SIMILAR
E - 14	50.2	INDUSTRIAL	INDUSTRIAL	SIMILAR
AU - 49	28.7	RESIDENTIAL	POSSIBLE REZONING TO INDUSTRIAL	LESS
E - 5	39.3	INDUSTRIAL	INDUSTRY AND SPECIAL LANDSCAPE POLICY AREA	SIMILAR
E - 8	5.7	INDUSTRIAL	INDUSTRY	SIMILAR
E - 9	8.9	INDUSTRIAL	INDUSTRY & DESIGNATED AIRPORT AREA	SIMILAR
B - 1	269	'POTENTIAL' [INDUSTRIAL?]	AREA WITH ENHANCED GREENBELT / RURAL STATUS	LESS

Figure 3 foul water drainage

8.4 Gas

8.4.1 Background national / Regional

Bord Gais Eireann is a statutory body established under the 1976 Gas Act. The company is responsible for the supply transmission and distribution of Natural Gas in Ireland. Bord Gais provides and operates Natural Gas transmission lines bringing gas from the Kinsale Head, off the coast of Cork, and from the North Sea gas fields through its sub sea interconnector pipeline at Loughshinny in North County Dublin.

8.4.2 Structure of industry

Bord Gais has developed a major transmission and distribution network which provides more than half a million homes in Ireland. Bord Gais will continue to expand its network to all areas and plans are underway to bring Natural Gas to large parts of Ireland.

8.4.3 Existing source

Bord Gais has developed plans to ensure cost-effective, long term and secure gas supplies. Preliminary engineering was completed on a number of potential future supply routes into and within Ireland during 1999 - 2000. Considerable resources have been allocated to advance detailed engineering on the proposed second interconnector with Scotland and the proposed pipeline to the West and Munster.

The proposed pipeline expansions would:

- Open up the midlands and west of the country to Natural Gas
- Facilitate further expansion of the Natural Gas network.
- Reinforce gas supplies in the South as the Natural gas reserves from Kinsale field continue to deplete.
- Facilitate the development of gas finds off the west coast of Ireland.

8.4.4 Improvement proposals

Increasing gas demands require significant investment in pipeline infrastructure to ensure ongoing capability to meet customer requirements. It should be noted that installation of pipeline capacity is based on end use energy demand. Should there be a significant increase in developments in the South Fingal area, Bord Gais will plan on further construction of transmission pipeline. Current projects are:

- Ring main between Dublin, Galway and Limerick
- Dublin Area Reinforcement

The current gas supply is shown on Figure 4.

Figure 4 Gas supply

8.5 Electricity

8.5.1 Background

The arrival of an open market will mean significant changes and challenges to the electricity industry. Competition for customers will be vigorous and a strong record of delivering inexpensive, reliable and high quality electricity is important. ESB has been at the forefront of providing the vital infrastructure for residential and commercial development in Ireland for seventy years through the Rural Electrification Programme. Open discussions with ESB have indicated that whilst the electricity grid is running close to capacity, developments in infrastructure is continuing and ESB has spent IR£300 million on infrastructure projects to ensure a continued quality network.

8.5.2 Structure of industry

Following the recent reorganisation of ESB, the six regions around Dublin have been reduced to four - Dublin, Northern , Southern and Midwestern. The distribution networks in Dublin supply about 440,000 customers or one third of the ESB total.

8.5.3 Existing supply network

Dublin networks consist of substations, overhead lines and underground cables at high voltage, medium and low voltage with a variety in type and age profile of installed plant.

The present demand is 982 MW and the consumption is approximately 4,860 GWH - Growth projections suggest that the load will more than double in the next 25 years. The current supply is shown on Figure 5.

8.5.4 Improvement proposals

There are several ongoing schemes being pushed through a fast track programme around the Dublin area, with a new sub station at Ballycoolen (2003). Further assessment of ESB's planning within Fingal County can be obtained from a report entitled, 'Dublin Implementation 1998-2008',which shows a 25 year investment plan to cover the required expansion and upgrading of networks as well as refurbishment and replacement of ageing plant. The plan details the development and renewal requirements of the 110 kV and 38 kV networks in the Greater Dublin area.

Figure 5 Electricity Supply

8.6 Communications

8.6.1 Background

The telecommunications industry in Ireland is split up into various companies operating in different regions. Licenses are issued by the Telecommunications Regulations and companies are permitted to lease duct/cable routes from the main telecoms company, Eircom (Figure 6).

8.6.2 Existing sources

Chorus

They mainly cover Malahide and Swords. Recently Chorus were awarded IR£21.5 million structural funds by the Department of Public Enterprise and Chorus will apply this funding as a part of a IR£72.7 million investment, developing 3 broadband projects in the South East, Border Midland West and Kerry regions. Recent discussions have indicated that they are concentrating on infrastructure development in the Malahide area.

The projects are a clear indication of the joint commitment by the Government and Chorus to provide broadband services over an extensive part of the country in both urban and rural areas. A lot of the new works will include construction of new fibre links and the upgrading of existing wireless infrastructure.

NTL

They mainly operate in the area south of Dublin airport and have stated that capacity would not be an issue. Should there be any new developments within their area of coverage, NTL would evaluate the cost of either constructing new fibre links and upgrade their existing cable network or they may choose to lease fibre links from Eircom if they already have a network supplying the area.

NTL have recently acquired Cablelink which has an extensive network serving housing developments and anticipate further growth in this sector of the industry.

Eircom

They have an extensive network covering most of Ireland. Eircom have stated that supplying new developments would not be a problem but overall they are currently experiencing difficulties in supplying new developments because they have been located in sites where there are no existing infrastructure networks.

Figure 6 telecommunications