

CHAPTER 8: ENVIRONMENTAL ISSUES

This chapter covers four environmental issues: noise, air quality, ground conditions and contamination, how they relate to the study area and sets out recommendations for each.

8.1 Noise

8.1.1 The issue

Noise is a particularly important issue for this study, given the scale of the planned expansion of the airport. This section assesses the issue of noise and its impact on the planning choices. It draws on the 2000 study undertaken by Hyder Consulting, described more fully in Appendix 4, and on the more recent work by the Parkman consultancy for Aer Rianta.

The appendix also gives the legislative background and timetable, where the most significant change will be the bringing into force of the European Union Directive 2002/49/EC "Assessment and Management of Environmental Noise". This will require member states to submit noise limit values, and to develop and publicise noise mapping and action plans, over the next 4 years. The Draft Fingal Development Plan recognises therefore that the future operation of airport noise zones (see 8.1.4 below) "will be subject to ongoing review in the light of the forthcoming EU Directive on Environmental Noise, the ongoing programme of noise monitoring in the vicinity of the airport flight paths, and the availability of improved noise forecasts." (DFDP p.45). Accordingly, the Plan states an explicit policy in this regard:

- DAO8: to review the operation of the Noise Zones on an ongoing basis in the light of the forthcoming EU directive on Environmental Noise, the ongoing programme of noise monitoring in the vicinity of the airport flight paths, and the availability of improved noise forecasts.

8.1.2 Noise sources within the study area

The dominant focus of the study area is obviously Dublin Airport, and the noise impact created by the airport due to aircraft movements is the principal contributor to the noise levels within the study area. Airport-generated noise must be a critical consideration as part of the creation of development plans for the study area. Such consideration must not only take into account the current baseline noise levels, but also the predicted future noise increases due to the expected airport expansion.

As well as the airport, development plans must also take into account the current and predicted road network, which will also have potentially significant noise impacts. The M50, M1 and N2 highways must be considered due to their current and predicted traffic loads. It is a standard requirement that all planning applications should address this issue even where an Environmental Statement is not required.

8.1.3 Baseline data

(a) Airport

The Fingal County Council Development Plan 1999 included an airport noise zone based upon a 57 dB LAeq (originally equivalent to 35 NNI). Subsequently, as noted, Hyder Consulting carried out a study of Dublin Airport Noise Contours (July 2000) on behalf of Aer Rianta. The noise impact of existing and future airport operations were based on the 16-hour LAeq index which is now widely used in Europe. The values selected for the noise contours were based upon the advice contained in 'Planning Policy Guidance: Planning and Noise' (PPG 24) produced by the UK Department of the Environment (now Office of the Deputy Prime Minister ODPM). PPG 24 introduces Noise Exposure Categories (NECs), taking account of daytime (07.00 to 23.00) and night-time (23.00 to 07.00) noise levels, and advises how proposals for residential development should be considered. A recommended range of noise levels is given for each NEC for dwellings exposed to noise from various sources, which are based on research carried out at major airports such as London Heathrow. The NEC levels and the recommended advice are summarised in Appendix 4. Contours were generated for five scenarios for both day and night-time, and the results of these are tabulated in the Appendix.

Aer Rianta operates a Noise and Flight track monitoring system at Dublin Airport, which they believe gives accurate and reliable noise data, and which they see as a critical element in their noise management programme. Their four point strategy on minimising the impact of noise, summarised in their Environmental Policy, covers:

- Assessing airport operations
- Developing preferred aircraft routes
- Monitoring performance
- Working with local authorities to control noise-sensitive developments.

(b) Roads

It is understood that no baseline studies or contour modelling have yet been undertaken for the principal highways running through the study area.

8.1.4 Assessment of forecast noise impacts within the study area

Airport

The recent (early 2004) Parkman analysis shows (see Figure 8.1 = Parkman Figure 37 "Option 1b Daytime annoyance") three contours, which will be subject to further refinement:

- The original 35NNI contour in the approved Development Plan (ref. 8.1.3 above); this is the outermost, thin blue line on the figure.
- The 57dB contour (grey line): a predictive contour to show the area within which that noise level would apply or be exceeded in a timeframe of approximately 2009-10, with new runway 10/28R operational and handling the same number of flights as the existing main runway, and the cross-wind runway 16/34 used by about 2-3% of flights.

- The 63dB contour (innermost, blue line): also a predictive contour, for that higher noise level, on the same basis of assumptions.

Parkman advise that people living in the band between the 63dB (innermost) contour and the 57dB contour would be aware of aircraft movement, but that operation is unlikely to cause significant annoyance to a large number of residents. In contrast, they advise that no residential development should be permitted within the 63dB contour; and that where development does take place, special noise insulation measures should be provided.

The new draft Development Plan 2005-2011 (p.45) follows much of this reasoning, and takes a precautionary view of the implications for development that could lead to environmental impact and conflict. It defines an “inner” and an “Outer” Noise Zone, shown on the Maps, with the following explicit requirements:

- Outer Noise Zone: to strictly control inappropriate development and to require noise insulation where appropriate
- Inner Noise Zone: to resist new provision for residential development and other noise-sensitive uses.

The draft Plan also proposes preparation of a baseline noise study with a long time horizon, in keeping with one of the recommendations of this study (see 8.1.5 below).

Road Traffic

In the absence of baseline data, it is difficult to predict the potential noise impacts from the principal highways passing through the study area. However using the road traffic predictions for each road, it will be possible to calculate and model the likely noise contours associated with the highways and hence their likely level of impact, in each case, at the appropriate time. As noted above (8.1.2), the development control process will require assessment and, of necessary, mitigation where new proposals would otherwise be affected by road traffic noise. Again, the requirements of the EU Noise Directive will apply to the effects of major roads; Appendix 4 gives the timetable and thresholds.

8.1.5 Recommendations

General

In order to enable the potential noise nuisance effects of the airport and the highways to be inputted and accounted for, it is important that appropriate noise contours are established. These can then be used as an input to determining land use over the long term (20 to 30 years). The critical element of this work is to ensure that the short and medium term planning issues and developments are not compromised in the long term by a lack of consideration of noise predictions (e.g. the development of a housing estate which falls within a 57 dB contour in the long term as the airport develops and grows). In the absence of existing Irish national guidelines, it is recommended that a brief for the determination of noise nuisance is established, with Fingal County Council taking due regard of the requirements of the proposed EU Directive (see Appendix 4). Of most importance will be the determination of a long term equivalent contour conforming to the existing 57 dB Laeq. The following specific studies are therefore recommended in order

to inform planning policy evolution and development control, and to allow appropriate consideration of noise.

Airport

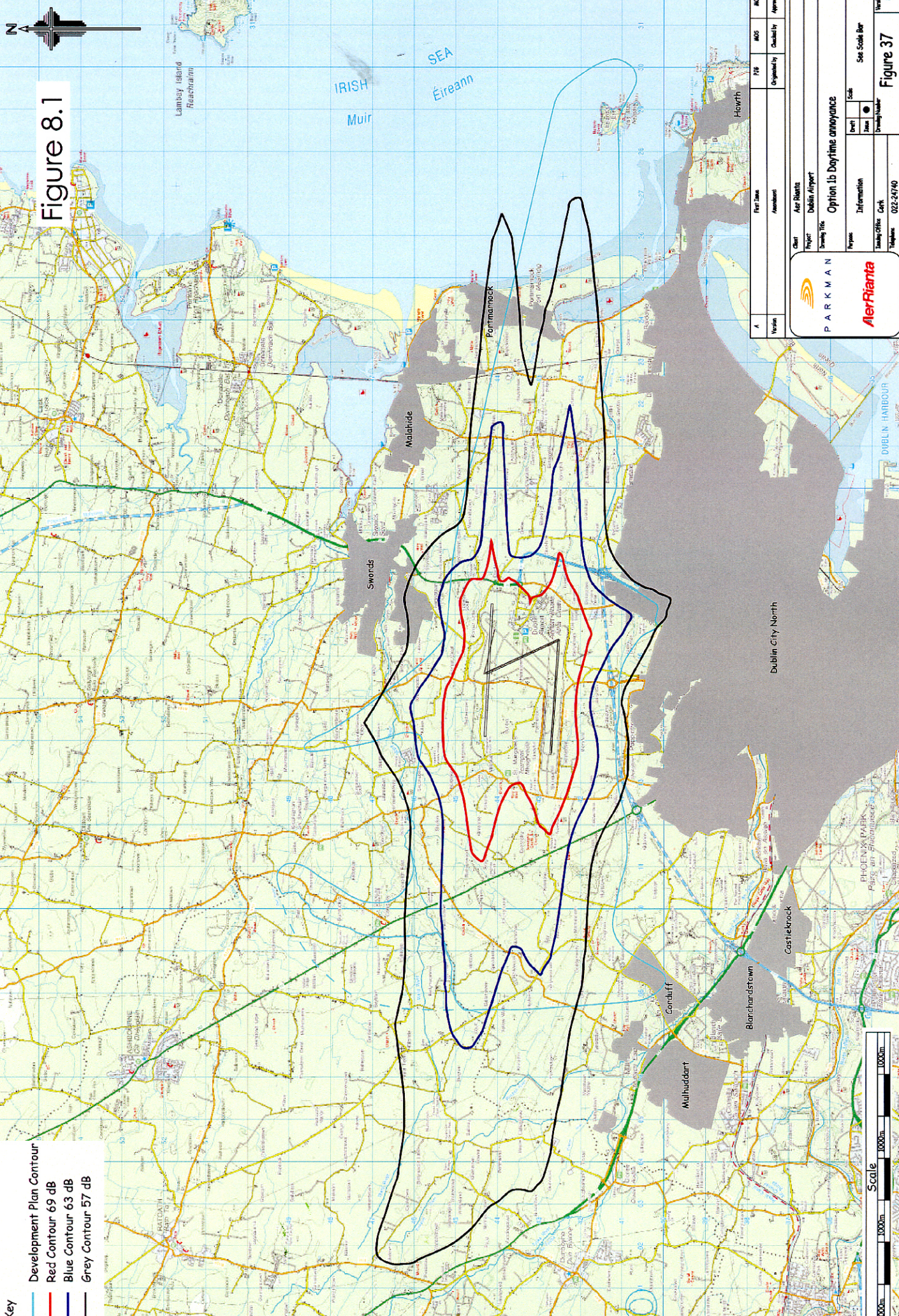
It is recommended that a baseline noise study be undertaken for the airport and its environs in order to establish the current noise situation. Parkman's work for Aer Rianta is understood to contain some work of this kind. Using this baseline data, a series of noise contour predictions should be simulated (expanding upon the Parkman and earlier Hyder work) utilising the short, medium and long term airport predictions. The predictions should not just include aircraft movements, but also the types of aircraft, proposed existing and new runway usage, and meteorological effects.

Roads

As noted above, noise generated by roads should be dealt with at the planning application stage, as part of the standard application protocol, irrespective of whether an Environmental Impact Statement is required. Where an Environmental Impact Statement is to be prepared, it will require both baseline assessment and predictive analysis, in order to provide guidance on any mitigation measures needed.



Figure 8.1



- Key**
- Development Plan Contour
 - Red Contour 69 dB
 - Blue Contour 63 dB
 - Grey Contour 57 dB

Version	A	First Issue	Approved by	AM5	AM5	AM5
		Authorised by	Checked by	Organised by	PIB	PIB
Client		Project		Scale		
Aer Rianta		Dublin Airport		Site Scale Bar		
Drawing Title		Information		Level		
Option 1b Daytime annoyance		City		Area		
Drawing Number		Telephone		Version		
022-24740		022-24740		B		



Figure 37

8.2 Air Quality

Air pollutants are principally of concern because of the human health effects they can cause or contribute to, although emitted pollutants can also give rise to a range of other environmental problems including acidification of soils and surface waters through acid rain, damage to structures and buildings and increased levels of ground-level ozone.

This section therefore appraises the issue of air quality and its potential impact on the South Fingal Planning Study. Some further background information is provided in Appendix 4.

8.2.1 Air pollution sources within the study area

Consistent with the noise assessment, the dominant focus for potential air quality deterioration of the study area is Dublin Airport, with potential sources being aircraft engine emissions, fuel vapour escape during re-fuelling and from vehicles using the airport including the car park areas. It is important that the local effects on air quality due to airport operations are taken into account. Such consideration must not only take into account the current baseline air quality concentrations, but also the predicted future air quality deterioration (if this is the case) due to the expected airport expansion.

As well as the airport, future development plans must also take into account the current and predicted road network, which will also have potentially significant impacts on air quality. The M50, M1 and N2 highways must be considered due to their current and predicted traffic loads. As with traffic noise, this should be addressed as part of the protocol for addressing individual planning applications.

8.2.2 Baseline data

Airport

Aer Rianta commissioned Bord na Móna (A Report on the Sampling, Analysis and Characteristics of Ambient Air Quality at Dublin Airport, dated 26 February 2001, ref. L714-A) to carry out an ambient air quality programme for a range of pollutants at four locations at the airport (Pier B, Runway 10/28, Northern Airport Lands and Short Term Car Park). Sampling and analysis was undertaken during the periods of 11 September to 5 November 2000 and 17 January to 31 January 2001. The findings of the monitoring surveys have been summarised by Bord na Móna as follows:

'The results from the monitoring survey to date has shown that levels of sulphur dioxide, PM10, lead, nitrogen dioxide and carbon monoxide were within their respective pending or proposed Council Directive limits. Levels of benzene detected at Pier B during the second 15 day monitoring period (26-9-00 to 12-10-00), (5.9µg/m³) exceed the proposed ambient air limit value (5.9µg/m³). However, levels of benzene detected at Pier B averaged over the total monitoring period (11-09-00 to 12-10-00), (3.5µg/m³) are within the limit value.

'The levels of benzene and nitrogen dioxide (diffusion tube results) determined at each location have increased marginally when compared to the previous sampling event in May/June 2000 [report not available for review]. No definite trend was observed in levels of sulphur dioxide monitored during the sampling event. The average levels of PM10, carbon dioxide and nitrogen dioxide have decreased when compared to the previous sampling event. This may be due, in part to the slight decrease in the number

of average daily aircraft movements during this monitoring period and to the seasonal weather conditions.'

Roads

It is understood that no baseline air quality studies or data exist for the principal highways running through the study area.

Study area environs

The air quality monitoring network established by the Dublin Region Air Quality Management Plan (DRAQMP) covers the three council areas of Fingal, South Dublin and Dún Laoghaire / Rathdown. The monitoring network includes a total of 10 monitoring stations which monitor smoke and sulphur dioxide. Monitoring of other pollutants is also undertaken, including nitrogen dioxide and benzene. Based upon the results of this monitoring, the Dublin County Air Quality and Noise Report (April 2000) reported that "Air quality remains good throughout the three counties and all standards set by the EU have been met. Trends suggest that we will comply with current and future EU standards."

Specific to the airport and study area environs, a network of 6 monitoring stations (for nitrogen dioxide, PM10 or sulphur dioxide) exists from Blanchardstown in the west, Santry to the south, Swords to the north and Malahide to the east. Monitoring stations exist near the airport at Cloghran and at Gate 12 of the airport. The results for these individual stations mirror the regional picture and do not demonstrate any obvious air quality problems with respect to the air quality target values adopted by the DRAQMP.

Assessment of Air Quality Impacts within the Study Area

Increased passenger demand, and hence increased air traffic movements to, from and within the airport would be expected to contribute to a local deterioration of the air quality. Ambient air quality data obtained for the airport (Bord na Móna study) does not indicate air pollutant concentrations to exceed the respective guidance values and this picture is reiterated by the baseline monitoring data being collected under the DRAQMP.

Direct comparison between the DRAQMP and Bord na Móna derived data sets is not possible due to the difference in monitoring dates, potential differences in equipment used and the local effects due to point and diffuse sources. However, the important aspect of the data set is the currently compliant air quality levels.

A separate report undertaken by Bord na Móna (A Report on the Health and Safety Issues Relating to Air Quality at Dublin Airport, dated 26 February 2001, ref. L714-B), using the same monitoring period as detailed above, compared the air pollutant concentrations with levels presented in the 1999 Code of Practice for the Health, Safety and Welfare at Work (Chemical Reagents) regulations 1994. The report concluded that:

'The concentrations of all pollutants determined (Benzene, Nitrogen Dioxide (NO₂), Sulphur Dioxide (SO₂), Carbon Monoxide (CO), particulate Matter (PM₁₀) and Lead) demonstrate levels well below the 1999 Code of Practice for the Health, Safety and Welfare at Work (Chemical Reagents) regulations 1994.

'The concentrations measured at each location at the Dublin Airport site for all pollutants will not cause any adverse health effects to persons working thereabouts over the 8 hour or 15 minute reference periods.'

8.2.3 Recommendations

The continued implementation of the DRAQMP will continue to generate a useful baseline data set for the general study area. It is recommended that as the airport expands to meet the predicted number of passenger movements, the objectives of the DRAQMP and its monitoring network are reviewed in order to ensure appropriate coverage of the airport and major highway areas. In particular, longer term commitment to airport and major roadside air quality monitoring is recommended, including an increase in monitoring points and an increased range of compounds monitored for (to include benzene and PM10).

Continued monitoring and regulation by Aer Rianta should be encouraged so as to enable supplementing of the 'regional' database by specific airport-related monitoring.

The baseline air quality monitoring study should also be supplemented during each planning proposal by the need for developments to take into account current and predicted aircraft movements and types, current and predicted traffic movements and meteorological conditions. Environmental impact assessment monitoring and modelling exercises should support applications using a methodology approved by Fingal County Council.

8.3 Ground conditions

This section aims to review the ground conditions across the site area and assess any possible constraint to future development. The focus is on the geology, hydrogeology and hydrology and is based on consultations and documents made available to the study team from the Geological Survey of Ireland (GSI), Fingal County Council and the Environmental Protection Agency.

The 'factual' description of the ground conditions provides the necessary elements of a '**conceptual ground model**' found in Appendix 4 and as illustrated in Figure 8.2. The conceptual ground model is a representation of the understanding of the ground conditions and assumptions, so that future development proposals can take account of:

- foundation considerations,
- groundwater and sensitivity, surface water sensitivity, to any potential contamination, and
- mineral resource potential.

8.3.1 Groundwater sensitivity

The ground model (see Appendix 4) shows that there are no significant constraints, with regards to groundwaters, to the type of development that may be permitted in the site area, as the groundwaters are essentially of a low sensitivity.

It is noted that the classification of the underlying aquifer could change in the case that it was developed as a groundwater resource.

The conceptual model has indicated that there is some scope for such groundwater resource development in proximity to the site area, especially if there is limited capacity in the local water supply that would benefit from augmentation.

8.3.2 Hydrology & surface water sensitivity

The site covers a number of catchment areas which represents a significant issue for development due to high groundwater levels as well as low permeability till soils and in some cases limited capacity of the draining watercourses (easterly drainage from the study area occurs from generally six stream/river catchments) to the east of the study area. The drainage capacity of the catchments and site area is further discussed within Chapter 12.

The water catchments are open and it is assumed that most new development will be in proximity to a watercourse. These watercourses are considered to be sensitive to any form of contamination that may arise from development.

In order to preserve and ultimately improve the surface water quality, planning control should ensure that new developments proposing to discharge to surface waters in the site area incorporate facilities to attenuate any potential pollutants that may arise from on-site activities, typically with the use of regularly maintained petrol interceptors from car parking, roads and other 'hard development'.

8.4 Contamination issues

The potential presence of contamination can pose a significant risk to any proposed development. The real risk to the end use should be determined prior to development and will depend on the source of contamination, the potential for a pathway between the source and a receptor, and the sensitivity of the receptor to the received contaminants dose. These factors are normally determined by risk assessment based on an appropriate amount of information. The types of sources can be spills or leaks from a given activity or a dump of hazardous materials that create groundwater pollution or ground gas that may migrate to surrounding areas.

This section provides a review of the general base line potential for contamination to arise from past and present use of the study area giving an assessment of features significant to planning conditions.

8.4.1 Background to contamination issues

A range of information has been reviewed in order to prepare this section:

- Consultations with Radiological Protection Institute of Ireland (RPII) regarding the potential for radon gas.
- Consultations and information received from local authorities and a list of current Integrated Pollution Control licences and authorisation in Fingal.
- Site investigations made available by the Geological Survey of Ireland (GSI).
- Historic Mapping covering the site area.

8.4.2 Contaminative sources within the study area

Reference to historic maps available confirms that the study area has predominantly been used as agricultural land. A number of potentially contaminative uses were

identified: airport and associated uses, garages, recycling facilities, quarries, warehouses, light industrial uses and landfill sites.

A study of the list of planning applications made over approximately the last six years revealed that a number of potentially contaminative uses were proposed including:

- Petrol and Diesel tanks associated with filling stations.
- Various light industrial units, industrial warehouses and technology parks.
- Fuel storage, works and service buildings and sewage treatment plants associated with the airport.
- Silage effluent storage tanks for farms.
- Septic tanks (or bio-cycle units) associated with domestic dwellings.
- Development of a quarry (St. Margaret's).
- Development of a dedicated aviation fuel pipeline from Dublin Port to Dublin Airport.
- Various waste transfer sites (recycling facilities).
- A number of types of development exempt from normal planning processes including agricultural use and landfills.

8.4.3 Landfill database

The 1988 'Survey of Waste Contaminated Lands in County Dublin' included a location map and description of suspected or known 'waste contaminated lands' for Dublin County. The information, although limited in extent indicated a number of such features on or in proximity to the study area.

The presence of such a feature does not necessarily preclude any development. However we would expect that further work would be appropriate to clarify the risk and determine any precautions in advance of any proposed development of sites in the study area.

A list of sites is contained in Appendix 4. The waste sites were classified into 'A', 'B' and 'C' category sites (classification not explained). Figure 8.3 illustrates the main sites within and around the study area. Those references that are not shown fall just outside the areas shown on the map.

No active licensed landfills to receive domestic waste operated in the study area. Plans to construct such a landfill in the study area were rejected on the basis that the number of scavenging birds might increase and represent a hazard to the activities of Dublin airport.

8.4.4 Choices relating to contamination issues within the study area

In addition to the above, a common practice in the study area has been the distribution of sewage sludge on fields as a natural fertiliser. This can be associated with concentrations of particular heavy metals such as mercury and cadmium, and may represent a hazard to sensitive activities.

Because the study area has predominantly been used for agricultural purposes, the potential sources of contamination noted above are likely to occur in isolated instances

and would not represent a significant constraint on the overall plan. The potential for contamination to arise, in particular from the waste landfills should be addressed individually, prior to each development, and should take account of the ground conditions (section 8.3 above) as well as ground and surface water sensitivities. Phosphorus Regulations provide the main statutory instrument dealing with contaminated land, based on EU legislation, and designed to safeguard water (ground and surface water) quality from agricultural impacts.

8.4.5 Mineral resources

No active quarries are located within the study area, according to a response to enquiries from the GSI received by Campbell Reith Hill. However, two active quarries are present in close proximity to the boundary, at Huntstown and Feltrim.

Huntstown Quarry, north of Finglas, quarries argillaceous limestones used for the production of aggregate for concrete construction, roads, etc. Feltrim Quarry is located within the Waulsortian carboniferous beds, which is used for building stone and aggregate.

A 'mineral location' was identified by the GSI; 'barytes limestone (in general)' indicated to be just north of the intersection of the M50 and N2 at Baleskin and their records show that the resource has not been developed. The Department of Natural Resources has been consulted in relation to mineral resource potential. However it may be assumed that some potential exists within the study area, although this is likely to be for future development of mineral/natural resources restricted to limestone abstraction and localised to existing resources.

Fingal County Council would seek to;

'ensure that development which would sterilise these resources (aggregate reserves) or prevent their efficient or effective recovery is not facilitated. Such considerations shall be subject to the provisions of the development plan.' (Fingal County Development Plan 1999-2004, p103).