‘CHAPTER 5: THE AIRPORT

5.1 Introduction

Dublin Airport dominates the study area physically and economically. Its future is at the heart of the South Fingal remit from the County Development Plan, the study brief, and the choices about the area. The Airport is a key element of the national and regional infrastructure, and prudent planning in relation to its needs is a vital national interest. This has been recognised over the past decades, and it has been reflected in the close working between the study team, Aer Rianta and the County Council.

This chapter looks at the longer-term future of the airport and organisational implications of its growth. It reviews the key elements of the airport including terminal, runways, cargo and car parking. Finally, the chapter looks at the land use implications of airport growth, and sets out preferred policy scenarios.

5.2 Long-term perspective

5.2.1 Passenger growth

At the core of the planning requirement is the remorseless and very long-term upward trend in aviation activity, reflected primarily in growth rates for air travel which regularly outpace economic growth. Figure 5.1 shows Aer Rianta’s forecast growth in passenger throughput at Dublin, in million passengers per annum (mppa) over the period 2000-2020. This shows a steady increase from 13.8 mppa in 2000 to 3~~1.5~~ mppa in 2020. The Aer Rianta forecast is in line with forecasts produced in the recent COFAR (Common Options for Airport Regions) study. The team believe that, although year-on-year growth fluctuates around this average, it nonetheless offers a sound basis for planning purposes; indeed it is broadly in line with the assumptions in the recent report by the Commission for Aviation Regulation on determination of charges at the Airport.

Figure 5.1: Aer Rianta passenger forecasts as at July 2004 (mppa)

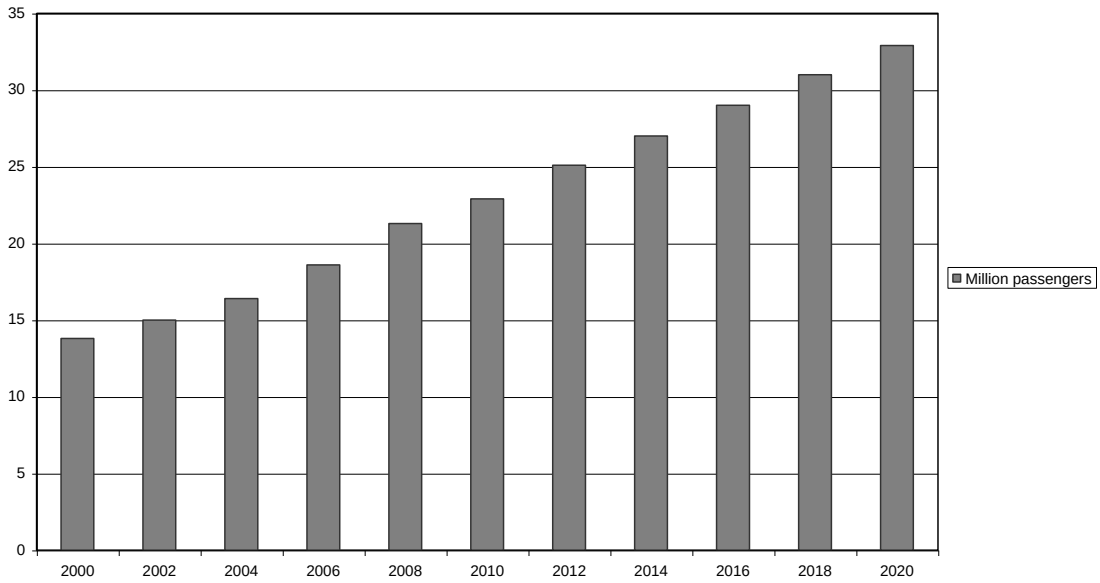

Table 5.1 compares Dublin's current passenger throughput with a selection of European airports. The benchmarking of airports is a useful tool and can give reasonable results if used in an appropriate manner. However it should be noted that each airport is different, satisfying different market sectors, having different impacts on the local and national communities, and offering different runway configurations.

Table 5.1: Comparative airport passenger throughput

Airport	Year	Mppa
Dublin	2003	16
Manchester	2003	19
Brussels	2003	15
Rome Fiumicino	2003	26
Paris Orly	2002	23
Madrid	2003	34
London Gatwick	2003	30
Schiphol	2003	40

Source: Airport operators/authorities

On this basis, Dublin Airport by 2010/11 will be comparable with recent years at Paris Orly (23mppa as the two-terminal second airport of Paris); whilst as early as 2017 it could be handling a similar throughput to that currently being experienced by Gatwick (30mppa as the two-terminal second airport of London, albeit with a single runway). The crucial trend, underlying many of the pressures with which planning must cope, is therefore that passenger numbers are expected to double in the next two decades.

5.2.2 Configuration

To cope with this scale of change, and its expected continuation in the even longer term, the Airport's basic configuration will eventually have to change. From a single terminal, served by one main (east/west) and one minor (cross) runway, accessed by road from the east, it will need to become a 2-terminal, 2-parallel-runway airport, accessed by road from both east and west, and by rail at least from the south (into the eastern part of the airport holding). It should be noted that other options occasionally suggested, such as developing Baldonnel or Gormanston, are not viable alternatives to concentrating capacity at Collinstown.

Figure 5.2 Current and Ultimate Airport Configurations

Now **Ultimate**

The timing of each of these components is a matter for definition, but this conception of the ultimate configuration is one shared by the study team and the Council but not by Aer Rianta who see all the terminal provision being accessed from the east (N1/M1) only.

Recent options for growth prepared by Aer Rianta show the cross runway retained. Whilst it is recognised that the cross runway may be required to be utilised prior to the opening of the new parallel runway the active utilisation of this runway will introduce additional environmental problems – without positive controls and limits, 8% of the movements associated with 15 mppa could grow to 10% (say) of 25 mppa, approaching or taking off over North Dublin. The appendix provides commentary on the strategy for the development of Edinburgh Airport, indicating a comparable logic of closure of cross-wind runway once the new parallel runway opens.

Chapter 8 provides further information with regard to noise impacts and the implications for continued use of the cross runway.

5.3 Organisational change: policy implications

A third element in the long-term perspective is that of organisational change. The current structures are about to start a process of reorganisation, and the policy framework needs to be robust enough to allow Fingal County Council to retain planning control as organisational change occurs. The Irish Government is looking at possible alternative ways of introducing private funding and capital into the development of Dublin Airport. The first move is to separate out the main Airports in Ireland as stand-alone units, and a Dublin Airport Authority will be in place by the end of 2004. In addition, a Government initiated Report has recently confirmed the feasibility of introducing a separately funded and operated Terminal in line with the option favoured in this study. Whilst this is inevitably subject to major public debate, it is likely that over the planning horizon covered by this Study, Dublin Airport will have significant private investment with the attendant requirement to generate the appropriate returns.

The impact of this on Fingal County Council as the planning authority is likely to be very significant indeed. The tendency could be for a private investor to attempt to generate returns on a much shorter timeframe than that normally associated with a public sector operation. The designated airport area policy will need to ensure that the over-development of commercial activities at the terminal, more than that reasonably required by passengers, does not occur. An example of this would be the development of

supermarket facilities at Heathrow; where facilities are developed that rely on attracting people to the airport for non-aviation, commercial transactions. With the transport links to airports being developed as a priority, the policy will need to ensure that the airport commercial activities do not become an out-of-town centre.

Secondary items of commercial interest include:

- any appropriate business activities within speculative office blocks at the airport;
- the over-building of hotel accommodation outside the boundaries of the airport but at the edges of designated area (Bath Road, Heathrow, and many European airports are good examples of this).
- road cargo activities - the cargo does not use the runway, but good transport links provide an excellent transhipment point;
- out-of-town discount stores and supermarkets at the edges with minimum passenger requirements.

Policy should therefore impose restrictions on the growth of commercial activities, possibly as a fixed percentage to match growth in passenger throughput.

With the advent of private investment, the planning authority could need to substantially strengthen its knowledge and understanding of the business and mechanics of airport operations.

5.4 Dublin Airport – the key elements

The sections below discuss in turn the key elements of Dublin Airport itself: terminals, runways, cargo and parking. Appendix 1 reviews the main generic components of airports and can be used as a point of reference.

5.4.1 The terminal

The existing facilities at Dublin airport were opened in the early 1960s and, in common with many other airports, the terminal has been expanded significantly many times, with the latest phase of expansion still under construction.

Current passenger throughput capacity is constrained by landside passenger handling facilities, rather than airside aircraft handling (see Appendix 1 for more details). The recent phase of terminal improvements will enable the airport to handle 20m passengers, a figure Aer Rianta expects to be reached by 2007. But the ultimate throughput of the airport, and hence the long-term development plan, will be principally determined by airside capacity – the runway configuration and space for the efficient manoeuvring and parking of aircraft – with other facilities integrated in a logical and flexible manner.

The terminal is unusual in serving two different types of major user. Most airports seek to separate out the low cost carriers from the scheduled operators, due to their different requirements. In Europe, for example, this usually means utilising different airports for different airline types; whilst in the Far East, efforts are being made in several locations to locate a low cost terminal for these operators. Dublin Airport is the home base of an international schedule operator, Aer Lingus, the national carrier, which is currently part of the One World alliance including both British Airways and American Airlines. The other

major user is Ryanair, the airport's best known low cost operator, basing itself on the operational principles developed by Southwest Airlines in the United States. The competition between these two major users appears to have played a major part in the recent significant growth in throughput of the airport.

It is sound policy to maximise on existing investment, as with the recent expansion of the existing terminal. This will bring the throughput of the terminal up to approximately 20 mppa. This is a very large terminal with few similar facilities within the UK - the existing terminals at Heathrow and Gatwick approach this figure, whilst at Manchester, combined T1 and T3 are designed to approach 20 mppa. Orly's 23 mppa are split 15m./ 8m. between Orly-Ouest and Orly-Sud.

Aer Rianta propose to then expand the existing terminal site at Dublin to a maximum capacity at 30-35 mppa over a 20-year period. In scale this puts it bigger than any terminal in the UK with the exception of the proposed T5 at Heathrow - though similar in concept to Schiphol, which was however developed both to be a hub for the national carrier KLM and to be in competition with the other really major European hubs.

Whilst the handling of this number of passengers creates difficulty with, for example, a potential requirement for check-in desks measured in hundreds, the main problems are usually associated with:

- provision of car parks and road access;
- access to aircraft: as the number of aircraft increases, so they have to park further and further away from the terminal at remote stands.

This latter point poses a particular problem: while the cross-runway is retained, (see below);aircraft parking has to be manipulated to fill the spaces available, rather than laid out in a logical parallel sequence as at most modern designed airports.

Ultimately, the airport will need a second terminal, which this study argues should be to the west, between what will then be two parallel runways. The exact threshold at which this need is reached cannot be defined to the nearest (say) million ppa, certainly not at present: it depends on variables such as average aircraft size, internal arrangements and road access constraints. But at or even before 30mppa, the existing focus at the eastern side would be reaching its reasonable limits.

Aer Rianta have developed a master planning exercise for the Airport, working with the SOM consultancy, which they have shared with the study consultants and Fingal County Council, and which builds on the Scott Wilson master plan (SWMP) work done earlier.

This careful, comprehensive and thorough piece of work starts by identifying the problems – that growth will be constrained by runway capacity beyond the end of the decade without a second main runway; that in any event terminal areas are becoming severely constrained; and that surface access / transport / parking are all coming under intense pressure too. It is based on an approach which seeks to balance development across all elements of the infrastructure (airfield, terminal, access, transport, parking), whilst recognising that a simple incremental approach will not be adequate in anything other than the very short term.

It sets out scenarios which allow an understanding and testing of the sensitivity of airport

development to variations in economic growth (GDP), the mix of traffic between conventional and low-cost operations, the proportion operating quick-turn-round formats, the proportion of wide-bodied aircraft in the mix, and so on.

A crucial initial conclusion, on runway capacity, is that, even squeezing the existing pattern of useage of the main runway and to a lesser extent the cross runway, the forecast demand beyond 2009 will exceed deliverable capacity and new provision will be needed: hence the conclusion, which the study team accept, that the second (parallel) runway) is essential by the end of the decade or soon after. The study team note that the figures sketched out by Aer Rianta suggest that even to hold the position to 2009, use of the cross-runway will have to increase from something like 8% of movements at present to over 10% (of a larger total) by the later period. As we argue below, the environmental impact of the use of the cross-runway means that this is a less than desirable strategy.

On the terminal and piers, the Aer Rianta / SOM analysis demonstrates that different elements of the airport "system" are under different levels of pressure. Notably, the kerbside arrivals, the departures concourse, and piers A, B & C are well below the capacity to match the handling ability of other elements (arrivals concourse, check-in, etc.). This useful and careful analysis demonstrates how each of the elements has to be kept "in synch" – otherwise heavy investment in, say, a new runway will be throttled and rendered less productive by bottlenecks elsewhere in the total system.

The master-planning exercise tested a wide (though we would argue not exhaustive) range of possible options and land-use approaches. The basic assumptions for all of them included the existence of a second main (parallel) runway, continuation in use of the cross-runway "for the foreseeable future" (but considering implications if removed), respect for the heritage requirements around the original Terminal Building, enhanced public transport, a design plan for 30 million passengers (mppa), and 22,500 airport employees at that level of passenger volume.

Four principal options emerged from the array of possibilities:

- 1: expansion on the existing eastern main site, plus airside overspill west of the cross runway as demand builds up
- 2: a completely new "Greenfield" airport to the west, with closure and replacement of the existing facilities
- 3: a two-terminal airport, with a 50:50 split of volume east and west of the cross-runway (the study team note that this is a somewhat arbitrary treatment of this option, which probably under-performs in the appraisal as a result)
- 4: a full-on intensification of the eastern site, as Option 1 but "more so" in that it would remove all the hangarage to the north and extend passenger handling to that area too; by the same token, there is less use of the "airside overspill" west of the cross runway than in Option 1.

Aer Rianta's analysis scores Option 1 the highest, and they would seek to develop this as the planning basis. It would seem however that the appraisal criteria utilised are based only on internal site considerations and do not take account of the external impacts of the various options, for example on traffic patterns in the area and on community issues. They also conclude that the influence of the cross-runway does not significantly affect the performance of the options in the appraisal.

Other points from the master planning exercise which are worthy of particular note include:

- Internal movement: Aer Rianta/ SOM conclude that at or around 22 mppa (expected to be reached 2010) some form of Advanced People Movement system (APM) would be viable, linking not just passenger facilities but also employee parking and commercial areas, car hire, etc. In the view of the study team, this logic could be extended westward, despite the distance, to serve a second terminal node.
- Cargo: all the options assume that the cargo operation would move to a new location in a "Southern Development Area" south of the main runway and a new taxiway, and there is no explanation as to why a location west of the cross-runway would not be equally acceptable or better.
- Designated Airport Area: the Aer Rianta master planning exercise suggests some alterations to the boundaries suggested in this study and in the new Development Plan; these are in general not controversial, except in the case of the suggested addition of the "Southern Development Area" which has no compelling justification (see 5.4.4 below).
- Surface access: for Metro, the planning studies include detailed and realistic planning for the accommodation of a Metro station in the Airport core area, possibly including providing a "station box" as part of advance works if it can be synchronised. For road access and parking, the studies continue the careful and well-argued work that have characterised Aer Rianta's approach to these issues, as summarised elsewhere in this chapter.

The study team's view can be summarised as:

- Recognition of an enormous volume of serious and thorough work behind the options and data summarised
- A concern, however, that the boundaries of search and conceptualisation are still too narrowly drawn, with some lack of awareness of the scale of change and impact associated with the Airport on its whole hinterland, and for example no real recognition of the potential for a working western terminal taking advantage of the new access possibilities from the N2
- A failure to explore the potential of a positive policy to remove the cross-runway as soon as possible after 10L/28R is opened: although the study team accept the even-handedness, which Aer Rianta were at pains to stress, of the option appraisal as the cross-runway affected it
- Thus, a set of options all of which are sub-optimal in one way or another (split operations, over-crowding of eastern site, etc), yet in ways that could be rectified by accepting closure: Aer Rianta staff accepted in discussion that retaining the cross-runway could be regarded as imposing considerable constraints.
- An approach to cargo relocation which is scarcely justified, runs counter to the economical use of land, and seems likely to be expensive in any event.

5.4.2 The runway configuration

At present the main east-west runway handles the vast majority of aircraft movements, with a cross-runway handling up to 10% of flights. This may be used in particular wind conditions, and could be made available as a reserve runway to cater for emergencies.

We understand however that the crosswind runway is not merely a reserve runway for emergencies. It is stated to be used for 8 - 10% of operations and can cater for most aircraft types. A review of its operation is currently being undertaken. The study team are concerned that the environmental issues raised in this decision should be fully understood and any increase in usage should be fully debated with all stakeholders in the community.

A standard planning figure for a single runway is 36 movements per hour (though it is worth noting that Gatwick manages as many as 55/60). The main Dublin runway currently handles 42/43 movements per hour at peak periods, implying that it is operating at capacity. So an increase in passenger throughput will depend on (a) increasing runway capacity and/or (b) an increase in the average number of passengers per aircraft movement.

As noted, the first of these is planned; the second is tending to occur but cannot be taken as axiomatic at an airport like Dublin with a very mixed range of routes served and aircraft types/sizes.

Aer Rianta plan to develop a parallel runway about 1,500m north of the main runway. It remains unclear when the planning procedures for this are to start. Aer Rianta have confirmed that in their view the runway must be operational by 2009 (when projected passenger throughput is forecast to reach about 22 mppa). This would deliver a potential total runway capacity in the order of 50mppa. The planned distance between the runways is sufficient to allow each parallel runway to operate independently, with the traffic on one not interfering with the traffic on the other.

The creation of the parallel runway generates our preferred long-term development model, with a second terminal located between the runways at the western end of the airport, and with road access from the upgraded N2 in the west. The earlier Scott Wilson Master Plan study (SWMP) envisaged this as being post-2020, when the passenger throughput exceeds 35mppa.

However, it should be noted that on certain assumptions (about passengers per aircraft, and runway operation), the existing main runway could cope with the expected passenger throughput beyond the end of the decade. Indeed, the report of the Regulator clearly indicates a view that no second runway is needed before 2010, and possibly not immediately thereafter either – although it does allow for the planning costs of the second runway in Aer Rianta's capital spending assessment. Nonetheless, this Planning Study assumes that Aer Rianta's forecast is reasonable, that the second runway should be constructed before 2010, and that Aer Rianta should indeed be encouraged to proceed in line with this timescale.

This is primarily because the provision of a new runway relates to the use of the existing cross-runway (SE/NW). Aer Rianta have stated that the cross-runway provides additional capacity in the order of 2-3 movements per hour. Certainly in our view the cross-runway is not required for over-riding operational reasons. In the long term, whilst it is appreciated that it may be argued that the cross-runway might possibly be needed for light aircraft in specific wind conditions, Dublin is unique in seeking to maintain the cross-runway as a viable commercial facility.

Whilst cross runways are more common on the Continental mainland, possibly because of more extreme weather conditions associated with the size of the landmass, a more reasonable comparison is with the rest of the islands off the coast of Europe - where cross runways are very much the exception rather than the rule and usually relate to the

use of an airport as a training base with small and light aircraft. Indeed Birmingham Airport, of which Aer Rianta has a particular knowledge, has a North/South main runway which of course lies almost at right angles to the prevailing wind conditions.

So the overall capacity of the airport under its present configuration is effectively determined by the capacity of the main runway. We note however that both Manchester and Frankfurt maximise the utilisation of two runways by using them for either take-off or landing only, rather than in a mixed mode as in Dublin at present. Thus it is possible that the current runway configuration prior to construction of the new parallel runway could take substantially more movements than at present. This appears to be the basis for the analysis in the report of the Regulator. But we stress that any increase in the use of the cross-runway would not be desirable from an environmental point of view, in particular because of the significant noise impact on large swathes of residential development in North Dublin. It also impacts on logical airport development, as we explain below.

In any event, the cross-runway will remain in operation until at least 2009, and possibly beyond, for take-off/landing in particular wind conditions and emergencies. Aer Rianta have also confirmed that use of the cross-runway will increase in the short term (prior to construction of the second runway), and this will need to be taken into account when determining land use proposals for the airport environs.

A policy controlling its use until the parallel runway is completed should be considered in the light of the environmental and planning limitations. In a later section (5.7 below), we suggest an Airport consultative arrangement which could help to structure this. In the longer term it can reasonably be argued that with two parallel runways a cross-runway is not essential, and that given its environmental disadvantages (Chapter 8), it should be a clear objective of policy to eventually take it out of service. This study's recommendations (5.9.2-3 below) sketch out that long-term prospect, but concentrate more on the important need to define and control its use in the short to medium term.

5.4.3 The impact of the cross-runway on airport planning

The retention or otherwise of the cross-runway is an issue for more than just the operational and environmental aspects. It relates, too, to longer-term airport development choices. In particular, it affects the ability to develop all the elements in a balanced way. An airport is a multi-modal transport link in which all elements should remain in balance – recognition of which lies at the heart of Aer Rianta's current master planning approach. Thus the vehicular capacity of the highways, rail links and car parks should match the passenger capacity of the terminal, which in turn should be balanced by the apron capacity. As airports grow, strains are revealed in different parts of these systems at different times. In considering a final throughput in the 30-35 mppa range for Dublin Airport, it is essential that all aspects of the system balance in the most efficient manner to meet this ultimate demand.

The two terminal configuration which this report outlines is the best way of balancing the various capacities across the system. The highway network and the car parking locations can spread the demand in accordance with realistic capacity assessments, the terminals could have a capacity in line with most European terminals, whilst the aprons could be organised to minimise passenger access distances.

The cross-runway introduces a further complication. In the longer term, it is not realistic to allow vehicular cross-runway movements as a normal part of the operational procedures, although it will remain operational in the short term. The implication of this is that in the event that the new parallel runway is either delayed or not constructed, the second terminal area should be opened, as the apron feeding the original terminal reaches its capacity. Even if the cross-runway were never actually closed, it would be desirable that the new terminal capacity should match the capacity of apron able to be constructed to the east of the cross-runway. These are issues for an agreed Action Plan for the whole airport.

In summary, however, the closure of the cross-runway would clearly improve the airport planning of existing facilities, future development and access arrangements; though the main impact of the cross runway will always be the environmental impact on the aircraft approaches particularly on the existing suburbs of Dublin.

Subject to the forecast scale of noise impacts on nearby residential areas (see figure 8.1) there should be tight constraints on the use of the cross-runway. Movements should relate only to emergency situations or in accurately defined weather patterns.

5.4.4 Cargo development and activity

The cargo operation at Dublin is part of a three airport system with Shannon and Cork. Shannon airport is favoured as the centre for cargo hub operations, including those by integrators such as DHL, and some of the growth is expected to be deflected there from Dublin. With the reorganisation of the three-airport system (see 5.3 above), this might change somewhat, but not in any way, or to any extent, that is easy to define at present. However, cargo will remain very important at Dublin, and will continue to grow broadly in line with aircraft movements.

Flown cargo, (as opposed to trucked cargo on an air waybill), forms the bulk of total cargo at Dublin Airport. In the late 1990s, 65% of this was belly-hold cargo (72kt) underpinning many of the main flight routes, and the importance of belly-hold cargo has meant that cargo areas have tended to locate as near to the passenger terminal as possible. These are not immutable relationships. When the flown tonnage is in the belly-hold, there is a direct relationship between the number of passengers flown and the cargo capacity generated. This relationship is being affected by the low cost airlines, who do not take on board cargo as it inhibits the speed of the turnround, and by an increase in the proportion of dedicated freighters. Trucked cargo is being discouraged, and decreased by 9% in 2000.

The total current cargo area is on a 13 hectare (31 acre) site at the south east of the terminal and has a notional throughput of 120kt. Actual cargo tonnage figures supplied by Aer Rianta are:

- 2000: 150,023
- 2002 140,126
- 2003 116,739
- 2004 133,871

Aer Rianta have stated that the present site only has capacity for 150kt throughput and that the cargo operations will therefore have to relocate in the next 3-5 years. The report

of the Regulator estimates that the floorspace needed for cargo will grow from 14118m^2 (2001) to 23994m^2 (2005) and 44615m^2 by 2010.

Aer Rianta's proposed cargo site ("Southern Development Area", see 5.4.1 above) covers 48-61 hectares (120-150 acres), providing for a throughput of 250-400kt/year to 2011. Aer Rianta have consulted with the operators and regard this site, to the south of the main runway, as the most appropriate for the new cargo facility. They currently own only about 8 hectares (20 acres) of this area and are in discussion with the landowner about purchasing the rest of the site. The removal of cargo from the existing terminal would release a large amount of land for further passenger facility expansion.

The earlier planning study (SWMP) compared the advantages and disadvantages of locating to the west between the runways and on the preferred site to the south. The key reasons given for choosing the southern site were identified in the SWMP study plan as:

- Surface access
- Proximity to the passenger terminal
- Costs
- Environmental considerations

Other reasons given in further discussions included proximity to the M50/ north Dublin urban services, existing access to the site, timing implications, and the fact that some of this land may otherwise be sterilised by Public Safety Zone notation. Whilst this is Aer Rianta's perspective, t is important in planning terms to test it against wider considerations, which we discuss below.

The study team's considered view of this issue is that whilst operationally feasible, this configuration appears both to lack integration into overall long-term planning of the airport and its surroundings, and to raise questions about the desirability of relocating operational airport uses outside the parallel runways. The counter-arguments are, in summary:

- There is sufficient land (approximately 240 hectares) between the runways to accommodate long-term airport needs;
- Transferring airside uses south of the runway will inevitably mean less activity between the runways, when there is no obvious alternative use other than airport-related uses – it therefore tends to be wasteful of land;
- Land for future expansion would have to be reserved south of the runway adjacent to the cargo site, which would effectively make this prime land between the airport and the M50 unavailable for other uses, whether market-oriented or recreational;
- Developing south of the runway would act as a catalyst encouraging commercial development pressure to fill the whole of the area between the runway and M50, contrary to regional guidance at least until high-capacity public transport (rail) is available (in which case, cargo-handling would not be the most logical use anyway); and
- Given that the report of the Regulator suggests over-provision and over-planning of passenger terminal facilities, it is at least worth considering whether the short-term cargo needs could actually be met (a) more or less in-situ, by reorganisation and

local expansion, rather than a major move; or (b) by a move westward of the sort already envisaged in the master planning options study (5.4.1 above) for other airside activities.

It also does run counter to the logic of the basic concept (Section 5.2.2 above) of expanding westwards and providing the related infrastructure in a coherent way.

On cost as an issue in such a choice, this study does not attempt an assessment; but we would note that the associated requirement to build a parallel taxiway south of the existing east-west runway, to serve the cargo proposal, would inevitably make the cost equation less attractive.

A further consideration, also related to the apparently short-term and piecemeal nature of the assessment, is in relation to the road network. Inadequacy of access was given as a reason for being unable to move to a site between the runways, but this does not seem critical. As Chapter 6 explains, there will be a need for (and potential delivery of) western access before 2006; and during the short intervening period (2004-2006) the site could be accessed by the existing (admittedly limited) local road network.

Whilst major airports have indeed developed cargo handling areas outside the parallel runways, as at Heathrow, Changi (Singapore) and Chek Lap Kok (Hong Kong), they cannot be used as a model for Dublin's growth, as all three have passenger throughput way in excess of Dublin's. We are not aware of any airport, with capacity of 30 mppa, which has developed apron-related activities outside parallel runways when located at 1.5km centres.

So there is an important planning issue about ensuring the most efficient use of land, an objective reflected in the National Spatial Strategy and, by implication if not by direct reference, in the County Development Plan. Discussions have continued with Aer Rianta, and the study team believe it is important to try to achieve a policy that results in the compact development of the airport between the runways.

5.4.5 Car parking

Car parking, both short and long-term, is the single biggest landside land user at any airport and is therefore a very significant element for the land use planning process. It is made more complex by its interrelationship with transport mode share and peaks in the passenger movements throughout the year.

Table 5.2 shows existing car parking provision at the airport. In addition, there is car-hire parking of 910 spaces, and employee car parking totalling 5,360 – of which Aer Lingus, FLS and Aer Rianta's dedicated spaces account for 1792, 1044 and 461 respectively. The short-term parking is located adjacent to the terminal, with the long term provision being some distance away, with passengers bussed to and from the terminal.

Table 5.2: Existing Public Car Parking Supply 2003

Car Park	Short term	Long term	Location	Remarks
Block A	550		By terminal	Multi-storey
Block B	650			
Block C	1250			
2	1350		By terminal	Surface
3 – Eastlands		5800	Eastlands – general	Surface
3 – Dardistown		2050	Eastlands – south	Surface
5 – East.Green		2550	Eastlands – north	Surface
6 – Southl'ds		4200	Harristown	Surface
Totals	3800	14600		
Overall total		18400		

Source: Aer Rianta Car Parking Strategy Document 2003

At present it is understood to be the Government's presumption that long-term and short-term car parking will continue to be provided according to demand and at low prices, as there are currently no realistic alternative modes of transport for many airport users and the pricing regime has meant that there have not historically been any privately-run parking areas. Now, however, there are some 3500 spaces operated privately, and the parking strategy and planning policy will increasingly need to include this provision in their assessments.

Aer Rianta factors existing capacity and demand into a parking model which is used to forecast future provision needs. They have very helpfully shared their thinking in detail with the study team, on this and other technical issues.

There are already times during the peak holiday season when long term parking demand exceeds capacity and has to be temporarily provided for in the short term parking area.

The peak demand for long-term parking in 2001 was approximately 16,000 spaces, and this rose to 17,600 during the peak weekend in 2002.

Table 5.3 shows Aer Rianta's projected long-term car parking demand forecasts to 2020, broken down to compare the effects of successful introduction of high-quality public transport access (primarily Metro) and its use by 45% of passengers ("high target PT"; as against rather less effect on mode share (35% by 2020 = "low target PT"); and the effects of failing to shift public transport mode share from current levels ("Do Nothing").

Table 5.3: Projected long-term car parking demand

Year	"High target PT" Demand	"Low target PT" demand	"Do Nothing" demand
2001	16066		17,164
2005	18870	19299	19615
2010	20911	23584	25562
2020	23948	31094	36876

Source: Aer Rianta

The range is thus very wide, by the time 2020 volumes (33mppa) are reached: between 24,000 and 37,000 long-term spaces – i.e. from 7000 more spaces' demand than at present, up to 20,000 more. This potential requirement for land (for surface parking) and/or investment (for MSCPs), as well as the implications for extra movements in the peak, emphasise just how crucial is the successful delivery of the Public Transport strategy.

For short-term parking, the figures are smaller, but the pattern similar: peak demand in 2001 was about 3,500 spaces; by 2020, "High PT" would require 4100, "Low PT" 5400, and "Do Nothing" 6800. For employee parking (2001 = 5360 space demand), the equivalent 2020 figures are: 6100; 7100; 9000.

Putting these together, the arithmetic thus gives a demand range for 2020 from 34,200 ("High PT") to 43,500 ("Low PT") and 52,800 ("do Nothing"): from a current demand level around 25,000. We note, and agree with Aer Rianta, that the existing public transport mode share performance (over 22%) is actually quite impressive, by international comparison, for an airport with no rail link; and that the employee PT mode share, though disappointingly low at 16%, is not untypical of other airports. This underscores how ambitious, as well as critical, the "High target PT" strategy is.

In this context, the Airport's strategy for parking supply is, in summary:

- secure consents for the Eastlands and existing Harristown car parks
- develop Harristown as long-term "overflow" car park if and when demand arises
- intensify Eastlands' use by replacing surface layout with MSCPs (Aer Rianta link this to the arrival of Metro and possible cross-subsidy from commercial development, but the logic in their Parking Strategy suggests that it will have to happen anyway, and this is an financial-planning rather than land-use issue)
- expand Eastlands' capacity as a long-term car park to match forecasts (above) and by relocating employee and car-hire parking
- short-term parking to be located close to the terminal, with supply growing to match the forecast (obviously, this would be primarily by extra MSCP provision)
- car hire and most employee parking relocated to Eastlands, though with about 2000 of the latter retained in the terminal area
- implementing their "Mobility Management Plan" to reduce reliance on the private car for employee trips, and shift the PT mode share from 16% towards a 40% target.

For the end of the Plan period for the new Fingal Development Plan (2005-2011), the implied level of supply needed is at least 30,000 – assuming that progress is being made towards the "High PT" target. Slower progress on shifting car mode share implies demand for spaces in the range 35-38,000. The former should, in the view of the study team, be treated as the control total and planning target, which land use, pricing policy and public transport planning should all work around; but the higher demand figures are a warning of the scale of extra need (and traffic, and land area) which policy failure could cause.

The location and organisation of parking provision needs to be carefully monitored and controlled by the Planning Authority against an agreed plan. This should initially take the form of allowing X-number spaces per annum against an agreed increase in passenger activity. The visual impact of airport-related parking areas should be minimised through positive measures such as landscaping. As Aer Rianta stops providing for all long term

parking demand, policy will have to apply equally to the land to accommodate private car parks.

5.5. The land use "budget"

5.5.1 General considerations

The current land bank of Aer Rianta is extensive, but nonetheless finite. Over time the planning policies have far-sightedly retained the ability of the airport to expand with very limited environmental impact on an East/West axis. So it is important both for the airport and for efficiency of land use that adequate reserves be identified.

It is not a precondition that the whole area should be in common ownership; there are many cases within the USA, for example, of separately owned facilities planned and coordinated within an agreed infrastructure provision.

The planning process should aim to promote a development footprint which provides sufficient space for all anticipated operational uses up to a reasonable time horizon, and which is compact and prevents the wasteful spread of airport related activities.

Some of these activities are very closely linked to the terminal gate or to each other, whilst others have more flexibility, where they can be within the general airport "envelope". Some can only really expand in situ, some require completely new provision, whilst some can move elsewhere relatively easily. And each of these choices also has a timing dimension.

5.5.2 Timing and runway development

The area of land available for airport expansion and the desired form or direction of development is linked to the timing of the second runway. When the second runway is operational (whether in 2009, as we understand Aer Rianta's assumption to be, or beyond 2010 as the Regulator's report implies), the existing terminal's current capacity of 20mppa will have been reached. So additional terminal capacity will have to be provided before then, to be available by the end of the decade.

Whilst this could be provided in line with the thinking in the earlier (SWMP) study - i.e. relocating the cargo handling facilities, and expanding the existing terminal - there is an alternative approach, which we believe is more consistent with the long-term vision for westward expansion, which contains the airport footprint within the parallel runways, and which offers no obvious operational disadvantages compared with the Aer Rianta (SWMP) proposal. It is also consistent with the view of the Regulator that more can be got out of the existing terminal location in the short-term.

When the second runway is operational, the cross-runway will be either closed or downgraded to emergency use only, and will no longer pose a significant barrier to ground level operational movements (aircraft or vehicles). This opens up the possibility of using the land to the west of the existing apron, between the parallel runways and around the central services area, which is (a) no longer required as runway (except in the event of emergency) and (b) is not blighted by safety or line-of-sight restrictions associated with the cross-runway.

Given the need to have expanded passenger and cargo handling facilities, and the long-term objective to develop in a western direction, there is a strong case for starting in this area, rather than spreading south of the present main runway. And the cargo facilities

could be developed here in the short-medium term, to fit in with anticipated demand as throughput picks up again with economic recovery. But this would depend on whether an in-situ expansion is possible in the short term, in the light of the conclusions of the Regulator. Moving west would involve vehicles and occasional aircraft crossing the cross-runway, but this should be possible on a regular basis given its relatively low use, whilst acknowledging that cargo movements may be disturbed during infrequent adverse wind conditions.

And in the longer term, this would help with staging the development of a second terminal in the west, offering greater flexibility than the current Aer Rianta preference. One option would be to expand the existing terminal to increase capacity beyond 20mppa once cargo facilities are moved west of the cross-runway – this is effectively the SWMP concept, but using a different (closer) location for the relocated cargo. A second option would be to retain the existing terminal configuration with a mix of passenger and cargo handling, and start to duplicate the facilities in the west.

5.5.3 Broad land requirements

We have examined the land available and the broad land use "budget" implied by the requirements that Aer Rianta have shared with us. We see no physical constraint, in land availability terms, to this "between the runways" concept. The land use requirements for this second option would be in the order of the following:

Table 5.4: Broad Land Requirements

Land Use	Approximate Area Required
▪ Terminal plus short-term car parks	30 hectares/75 acres (based on existing footprint)
▪ Apron	40 hectares/100 acres (based on existing footprint)
▪ cargo handling facility	50 hectares/120 acres (Aer Rianta requirement = 150 acres max; less existing = 30 acres)
Total	**120 hectares/295 acres**

These uses would thus consume less than 50% of the total land available, indicating that there would be plenty of land available for other uses such as drainage attenuation, landscaped areas, and ancillary facilities. Even if our calculations are optimistic for reasons that might be demonstrated, the scale of the margin suggests that there is not a land availability constraint.

5.6 Designated Airport Area (DAA)

5.6.1 Extent of the DAA

It is normal practice in the UK and at the main airports in mainland Europe for the statutory Development Plan to designate an area reserved for airport activities to accommodate both operational and airport-related uses. The purpose is to give greater clarity to the planned extent of the airport's development, and simultaneously to allow the airport operator to plan and carry out its business with a greater degree of certainty.

In the Dublin case, this would sensibly define an area sufficiently large to allow the airport comfortably to expand up to the 30 mppa target - and even beyond. The boundary of the designated area should have an element of logic, and should ideally coincide with well-defined physical existing or proposed features.

The study team considered a range of possible formats for a Designated Area. This included a designated area extending to the M50 on the south side; one which included all the land between the M50 in the south, and the N2 in the west, a very broad approach which would even provide room for a third runway; and our preferred Designated Airport Area which is contained within the parallel runways and terminal approach roads. Given that the runways are 1.5 km apart, this provides sufficient land between to provide all necessary facilities, including aprons, between the two runways (ref. Table 5.4 above). Aer Rianta have suggested changes to the suggested boundary (see 5.4.1 above) which in most cases do not affect the principle and may well be acceptable to the Council; in the case of the "Southern Development Area", however, the study team's view remains that this should remain outwith the DAA.

5.6.2 Appropriate uses in the DAA

As noted, the way to ensure that only activities essential to the efficient and effective operation of the airport obtain permission to develop within the designated area is to include a schedule of appropriate uses within the policy. Fingal County Council, in consultation with Aer Rianta and landowners, should prepare an Airport Action Plan for the DAA, which would be used as the principal development control tool for the area, which would specify the long term disposition and mix of uses, and work towards a high and consistent standard of design for this important national gateway location.

Table 5.5 sets out an indicative breakdown of the uses, which would normally be permitted in different zones of the Designated Airport Area (DAA). These have been based on experience throughout the UK and discussions with Aer Rianta. The operational activities are those uses that must be on the airside and/or landside airport area, and are the core activities associated with operation of the airport. The ancillary uses are those that need to be adjacent to the operational area by virtue of a functional association, but need not be located within it, and so do not have priority within the DAA.

The new draft Fingal Development Plan 2005-2011 (Table 4.4) adopts this approach, though with a different detailed classification of uses which are "permitted in principle"; the analysis and proposals in this present chapter can therefore be read as supplementary guidance which may help with choices and priorities as between competing activities: see Appendix 1.

Table 5.5: Suggested breakdown of uses for Designated Airport Area

Operational activities	Ancillary activities
▪ Aircraft areas: runways, taxiways, aprons, terminal airside/jetties, fuel storage	▪ Most car parking (long term; also for employees)
▪ Airlines' routine maintenance hangars / engineering shops	▪ Car hire holding areas
▪ Air traffic control / meteorology	▪ Freight forwarders (back-up warehouse space)
▪ Aero Club / GA	▪ Petrol filling station
▪ Secure cargo sheds	▪ Coach park
▪ Health/security/etc. (infirmary, police, fire service, etc.)	▪ Park and Ride
▪ Airline and handling agents	▪ cargo handling
▪ Aer Rianta as airport operator	▪ air catering
▪ Control functions: customs, immigration	
▪ Concessions (duty free shopping, cafés and restaurants, etc.)	
▪ Car hire front desks	
▪ Hotel booking/information/general tourist information/etc. counters	
▪ Possibly an additional hotel (either inside the terminal or immediately adjacent)	
▪ Traffic "waiting" (as opposed to "parking") areas: drop-off/pick-up, taxis, buses, coaches	
▪ Short term MSCP parking	
▪ Some warehouse and office space for freight companies	

Many ancillary uses could also take place outwith the DAA, for example freight forwarding. As Chapter 7 notes, these are anyway spread over the hinterland, ranging from places like Coolock and Ballymun to locations as close in as the belt south of the main runway (Expeditors, Kuhne & Nagel, KWE, EGL, etc).

The aim of the breakdown is to allow sequential testing of the land use pattern to ensure that priority is given to uses that need to be on or close to the airport operational area, over those that can be remote. The prioritisation must take into account the need to maintain the functional viability both of the airport and of individual support facilities and developments. This classification is not intended as a rigid zoning, but to help decide which uses are most appropriate in which locations. Existing properties in the DAA may be subject to alteration and improvement, even if their uses are not associated with airport operations, as long as this alteration does not result in an intensification of activities which would conflict with the strategic objective of airport development.

This could form the basis of the Airport Action Plan, which would be a cornerstone of the development activity within the airport. Examples from Heathrow and Manchester, illustrating the content of their policy and the advantages and disadvantages of levels of control, could help recommend a model for Dublin/Fingal.

5.7 Safety zones

The safety zones at the end of the runways formed an important element in defining the original study area boundary for this report. Public Safety Zones (PSZs) are to help protect the public from the small, but real, possibility that an aircraft might crash in a populated area, mainly by preventing inappropriate uses of land where the risk is the greatest. The definition of Public Safety Zones, and of their extent and significance, has been the subject of a very long-drawn-out study and review process which has still not resulted in final decisions from Government. Consultants ERM were commissioned by the Department of Transport and the Department of Environment, Heritage & Local Government to carry out a Public Safety Zones Study. The scope of work included a risk analysis over a 40km radius around the airport and a matrix which matches land use to particular locations with reference to assessed risk.

The Study concerns itself with a risk assessment on both the existing situation and also the future situation, which is assumed to be parallel runways with the existing cross-runway still being available for use.

The equivalent current designations in force, prior to any amendments which the Government might decide in the light of the ERM study, are “protection zones” (similar to those in use in many other countries) which limit the type and allowable height of buildings – essentially from the end of the runways outwards for between 1.8 and 3 kilometres, and shown as a “red zone” boundary on town planning maps. The ERM study recommends a change to a two-zone protection system: an inner zone where requirements are very restrictive, and an outer zone where they are much less so. These are shown, together with the “red zones”, on Figure 5.3. Because the likelihood of an accident is less in the outer zones, future development is generally recommended by ERM to be permitted, with only a few restrictions: exclusion of very high-density housing, schools, hospitals, and facilities attracting large numbers of people. In the inner zones, closest to the runways, with the highest likelihood of an aircraft accident, no new development would be permitted but existing development could stay.

The proposed new inner zones are very tightly drawn compared to the “red zones”. The outer zones, though much bigger, in fact permit a very wide range of possible developments, and even housing well up the density range; so the net effect once they are approved (if in this form) is probably to relax the effect of PSZs on development in the airport hinterland.

Following approval of the PSZs, the red zones will remain in force, but only as guidance in relation to areas of sensitivity with regard to the safe navigation of aircraft. These areas are shown in the new draft Fingal Development Plan 2005-2011 (pp.44 and Maps). As now, the Council will continue to take advice from the Irish Aviation Authority on the implications that proposals might have for safe and efficient aircraft movement.

Fig 5.3 - Public Safety Zones

5.8 Airport Consultation arrangements

Many of the issues raised in this chapter will demand long and complex debate, and even once agreed will need constant monitoring and discussion in practice. A key example is the cross-runway. The position taken in the present Study is that the cross-runway should remain operational only up to the opening of the parallel runway. In the event that an immediate closure is not proceeded with, then a significant option to make the movements on the cross-runway subject to agreement with the Planning Authority on an annual basis should be suggested. This is common at other major international airports, whereby airports negotiate their movements against certain defined conditions, ideally with these movements being monitored by external authorities.

In this and similar instances, relationships would in the team's view benefit if management and co-operation arrangements could be put in place. The Airport currently does not have an Airport Consultative Committee. These are common at British and many European airports, such as Schiphol (though not in France, with its more "dirigiste" tradition) . They consist of a variety of interested stakeholders: local communities, local planning authorities, and possibly industry and trade organisations. They would normally be concerned with environmental issues, and progressive airports would reach agreement with them on, for example, number of flying movements. It is therefore recommended that Fingal County Council, as Planning Authority, take the initiative in setting up such a forum with a view to monitoring and discussing airport activities, developments, off-site implications and access improvements.

5.9 Airport development policy scenarios

5.9.1 Issues where there are no choices to be made

- The scale of growth of passenger and cargo facilities suggested by Aer Rianta provides a sound planning basis – 33 mppa by 2020, 250-400 kt cargo by 2020.
- Definition of a Designated Airport Area; within this area, provision for operational and related uses.
- It should remain a target for the second runway to be in operation by the end of the decade.
- Additional terminal capacity should be provided to the west of the existing Airport's centre of gravity, as the existing facilities together with highway access and associated landside infrastructure approach capacity.
- Parking will need to be reaching a figure of around 30,000 by the end of the new Plan period (2011); short stay will continue to be by the terminal in multi storey; a proportion of the long stay will be provided privately and so included in the schedule as part of the Designated Airport Area. (It should be noted however that a significant proportion of the existing long-term parking lies outside the proposed DAA.)
- Fingal should consider the setting up of a Consultative Committee as currently exists in the UK and other countries, including representatives of local Communities and other local Stakeholders.

5.9.2 Areas of choice:

- **Use of the Cross-Runway 16/34** – Aer Rianta are currently examining the use of the cross-runway, in order to better understand the balance of flights which have to use it, the reasons, and the scale of "discretionary" use as controllers vary the approach patterns for reasons other than weather patterns. This will provide a basis for further analysis. In principle, the aims must be to cap the number of cross-runway flights, and restrict their times of use, so as to minimise the extent of environmental intrusion (and the risk of its growing pro-rata with airport throughput) on the residents beneath the flight path, especially in the north suburbs; to maximise the utilisation of the existing main runway; and to provide new runway capacity as soon as practicable. The study team note that whilst some 8-10% of flights currently use 16/34, the assumptions underlying the noise assessment assume only 2-3% useage (see Chapter 8 below). This is not just an environmental issue, though – it involves choices of strategy over airport layout: so the cross-runway's ultimate closure (except perhaps for possible emergency use) should not be ruled out in continuing study of longer-term options aimed at optimising terminal layout.
- **Extent of the Designated Airport Area** – based on this study's recommendations at the Interim stage, a Designated Airport Area has been included in the new draft County Development Plan, to provide a clear basis for future airport development, and certainty for Fingal County Council, Aer Rianta, developers and local residents. Policy would suggest that the scale and location of the zone should be based on the accommodation of airport-related activities, i.e. those uses that **need** to be by the airport, related to operational uses (see Table 5.5). All other uses, including employment, should be located in existing centres with priority to locations with very good public transport access, many of which are within easy access of the airport, and the majority of the land around the airport retained in rural and open character. There is no doubt that locating next to the airport is desirable in market terms, and if the land were released for commercial and employment development, it would all eventually be taken up. Chapter 7 includes a suggested strategy and rationale for treatment of potential development in the land between the M50 and the main runway.
- **Uses within the airport area** - The uses within the Designated Airport Area could be further specified, beyond the indications in this report and the new draft Development Plan, in the Airport Action Plan. These uses will include airport operational uses, but the activities could be widened to include uses that need to be near the airport, such as cargo handling, or those that would like to be located next to the airport in market terms, such as business parks. Further discussion of relevant uses is included in Appendix 1.
- **Moving the cargo to the west or the south** – Aer Rianta propose to develop a cargo facility south of the runway, but the study team remain unconvinced by the justification for this, and a longer term and more sustainable solution in land use terms would be to put all airport related development between the runways.
- **Future of St Margaret's Village**: dealt with in Chapter 9.

5.9.3 Recommended scenario:

- **Use of the Cross-Runway:** The number and timing of cross-runway flights should be limited to minimise the extent of environmental intrusion to the residents beneath the aircraft approach flight path. It is accepted that until new runway capacity is provided, there may well be a need for some use of the cross runway 16/34 as well as the main runway 10R/28L, to maintain airport performance. But the cross-runway's ultimate closure should not be ruled out in studying longer-term options aimed at optimising terminal layout. As a rule, aircraft movement should not be allowed outside the area defined by the parallel runways.
- **The preferred Designated Airport Area** should be defined largely by existing physical boundaries, broadly as described in 5.6.1. It should include land between the runways for operational expansion; but not land to the south of the main runway, which has the potential for a high-density nodal development around the intersection of the proposed public transport routes, once they have been implemented, and which is discussed further in Chapter 7. Other sites can provide for uses that need to be within reasonable range of the airport. Tight control will be necessary within the designated area to ensure that approval is given only to development that is essential to airport operations, and to direct non-essential uses (e.g. business parks) to more appropriate locations. In formal planning terms, the approach would be through the Airport Action Plan and Airport Consultation Committee. In view of the airport's crucial gateway role, it is essential that development is of a high standard of design, and proposals for future development must reflect that objective. Chapter 3 of the new draft Development Plan sets out the guiding principles of good design.
- **Cargo area between the runways**: Aer Rianta's proposal to expand cargo facilities south of the main runway is in direct conflict with the above logic. The second runway is planned to be in operation by 2009/2010, and together with our preference for minimising use of the cross-runway, provides the logic to expand airport facilities (terminal and freight) to the west, between the two runways, and so create a coherent and compact development footprint. Fingal County Council will need of course to continue to engage with Aer Rianta to explore how agreement can be reached on the more compact 'between the runways' model.
- In order to provide a sound basis for development control, especially of new facilities such as piers, terminals or cargo facilities, the suggested **Airport Action Plan** should be prepared as early as possible, and it may be best for the Council to take the initiative in setting up such a joint process, even before the Development Plan alterations are finalised.
- **Planning –** The sustainable planning process should aim to promote a development footprint which provides sufficient space for all anticipated operational uses up to a reasonable time horizon, and which is compact and prevents the wasteful spread of airport related activities.