



**Determination and Report on the
Maximum Levels of Aviation Terminal Services Charges
that may be imposed by the Irish Aviation Authority**

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1 Definitions

In this Determination unless the context otherwise requires

1. “aircraft operator’s fleet of the relevant aircraft series” means all aircraft owned and certified by the aircraft operator of the same series as the departing aircraft;
2. “aircraft series” is a category of aircraft model. By way of example, the Boeing 737-300, the Boeing 737-500 and the Boeing 737-800 are three different aircraft series;
3. “air navigation services” has the meaning assigned to it by section 2 of the Irish Aviation Authority Act, 1993 and includes services providing, giving or issuing information, directions or instructions, or other facilities, for the purposes of or in connection with the navigation or movement of aircraft;
4. “average revenue per tonne” means the revenue from aviation terminal services charges divided by the total weight of aircraft departing from Dublin, Shannon and Cork airports;
5. “Authority” means Irish Aviation Authority established pursuant to the Irish Aviation Authority Act, 1993;
6. “aviation terminal services charges” means charges levied in respect of the air navigation services provided for aircraft landing at or taking off from an aerodrome or while in the vicinity of an aerodrome before landing at or after taking off from that aerodrome;
7. “MTOW” means Maximum Certified Take Off Weight;
8. “total weight of aircraft departing from Dublin, Shannon and Cork airports” means the sum of the weight of aircraft departures, where the weight of an aircraft departure is the average MTOW of the aircraft operator’s fleet of the relevant aircraft series;

Other defined words, phrases or formulae shall have the meaning assigned to them where indicated, which meaning shall apply to that part of the Determination in which such words, phrases or formulae are defined.

2 Regulatory Year 2002/03

1. The Authority shall ensure that, for the regulatory year 2002/03, the average revenue per tonne yielded by way of aviation terminal services charges levied per aircraft departing from Dublin, Shannon or Cork airport shall not exceed:

$$Y_{02/03}^{Iaa} = \text{euro } 1.34$$

where

$Y_{02/03}^{Iaa}$ is the maximum average revenue per tonne of aircraft departing from Dublin, Shannon or Cork Airport in the regulatory year 2002/03.

2. In this part of the Determination
“regulatory year 2002/03” means the twelve month period beginning on 26 March 2002.

3 Regulatory Year 2003/04

1. The Authority shall ensure that, for the regulatory year 2003/04, the average revenue per tonne yielded by way of aviation terminal services charges levied per aircraft departing from Dublin, Shannon or Cork airport shall not exceed:

$$Y_{03/04}^{Iaa} = Y_{02/03}^{Iaa} \left(1 + \frac{\Delta CPI_{02/03} + X^{Iaa}}{100} \right) + W_{Car,02/03}^{Iaa} - K_{03/04}^{Iaa}$$

where

$Y_{03/04}^{Iaa}$ is the maximum average revenue per tonne of aircraft departing from Dublin, Shannon or Cork Airport in the regulatory year 2003/04;

$\Delta CPI_{02/03}$ means the percentage change (whether of a positive or negative value) in the Consumer Price Index between that published in January 2002 and January 2003;

$$X^{Iaa} = 7$$

$Y_{02/03}^{Iaa} = \text{euro } 1.34$ is the maximum average revenue per tonne of aircraft departing from Dublin, Shannon or Cork Airport in the regulatory year 2002/03;

$W_{Car,02/03}^{Iaa}$ is the difference between the Commission for Aviation Regulation's actual costs and expenses and budgeted costs and expenses, both expressed on a per tonne basis, recoverable through aviation terminal services charges levied on aircraft departing from Dublin, Shannon and Cork airports during the regulatory year 2002/03;

and

$K_{03/04}^{Iaa}$ is the correction per tonne to be made in the regulatory year 2003/04, which is derived from the following formula:

$$K_{03/04}^{Iaa} = (Y_{02/03}^{*Iaa} - Y_{02/03}^{Iaa}) \left[1 + \frac{I_{02/03}}{100} \right],$$

in which

$Y_{02/03}^{*Iaa}$ is the actual average revenue per tonne of aircraft departing from Dublin, Shannon or Cork Airport in the regulatory year 2002/03;

$Y_{02/03}^{Iaa} = \text{euro } 1.34$ is the maximum permitted average revenue per tonne of aircraft departing from Dublin, Shannon or Cork Airport in the regulatory year 2002/03;

$I_{02/03}$ means the average of the rate (expressed as an annual percentage interest rate) on three-month commercial paper issued between March 2002 and February 2003 by the National Treasury Management Agency.

2. In this part of the Determination

“regulatory year 2003/04” means the twelve month period beginning on 26 March 2003.

4 Regulatory Years 2004/05 - 2006/07

1. The Authority shall ensure that, for the regulatory years 2004/05, 2005/06 and 2006/07, the average revenue per tonne yielded by way of aviation terminal services charges levied on aircraft departing from Dublin, Shannon or Cork airport shall not exceed:

$$Y_t^{Iaa} = Y_{t-1}^{Iaa} \left(1 + \frac{\Delta CPI_{t-1} + X^{Iaa}}{100} \right) + W_{Car,t-1}^{Iaa} - K_t^{Iaa}$$

where

Y_t^{Iaa} is the maximum average revenue per tonne of aircraft departing from Dublin, Shannon or Cork Airport in the regulatory year t , where $t = 04/05$, $05/06$ or $06/07$;

ΔCPI_{t-1} means the percentage change (whether of a positive or negative value) in the Consumer Price Index between that published in January 2003 and January 2004 when $t = 04/05$, January 2004 and January 2005 when $t = 05/06$, and January 2005 and January 2006 when $t = 06/07$;

$$X^{Iaa} = 7$$

Y_{t-1}^{Iaa} is the maximum average revenue per tonne of aircraft departing from Dublin, Shannon or Cork Airport in the regulatory year $t - 1$, where $t = 04/05$, $05/06$ or $06/07$;

$W_{Car,t-1}^{Iaa}$ is the difference between the Commission for Aviation Regulation's actual costs and expenses and budgeted costs and expenses, both expressed on a per tonne basis, recoverable through aviation terminal services charges levied on aircraft departing from Dublin, Shannon and Cork airports during the regulatory year $t - 1$, where $t = 04/05$, $05/06$ or $06/07$;

and

K_t^{Iaa} is the correction per tonne to be made in the regulatory year t , which is derived from the following formula:

$$K_t^{Iaa} = (Y_{t-1}^{*Iaa} - Y_{t-1}^{Iaa}) \left[1 + \frac{I_{t-1}}{100} \right],$$

in which

Y_{t-1}^{*Iaa} is the actual average revenue per tonne of aircraft departing from Dublin, Shannon or Cork Airport in the regulatory year $t - 1$, where $t = 04/05$, $05/06$ or $06/07$;

Y_{t-1}^{Iaa} is the maximum permitted average revenue per tonne of aircraft departing from Dublin, Shannon or Cork Airport in the regulatory year $t - 1$, where $t = 04/05, 05/06$ or $06/07$;

I_{t-1} means the average of the rate (expressed as an annual percentage interest rate) on three-month commercial paper issued between March 2003 and February 2004 when $t = 04/05$, March 2004 and February 2005 when $t = 05/06$, and March 2005 and February 2006 when $t = 06/07$ by the National Treasury Management Agency.

2. In this part of the Determination:

“regulatory year t ” means the twelve month period beginning on 26 March 2004 when $t = 04/05$, 26 March 2005 when $t = 05/06$ and 26 March 2006 when $t = 06/07$;

“regulatory year $t - 1$ ” means the twelve month period beginning on 26 March 2003 when $t = 04/05$, 26 March 2004 when $t = 05/06$ and 26 March 2005 when $t = 06/07$.

5 Entry into force of this Determination

This Determination shall enter into force on 26 March 2002.

2. EXPLANATORY MEMORANDUM TO ACCOMPANY DETERMINATION IN RESPECT OF THE MAXIMUM LEVELS OF AVIATION TERMINAL SERVICES CHARGES

The Commission in its Determination has set a common maximum for the average revenue per tonne of departing aircraft yielded by way of terminal services charges at Dublin, Shannon and Cork Airports.

The regulatory till used to calculate the maximum average revenue is limited to Irish Aviation Authority, "the Authority's" activities in respect of aviation terminal services.

In making its Determination, the Commission has carefully examined the operating costs and capital costs (both present and future) of the Authority, along with its other unavoidable costs. The Commission has considered the allocation of the Authority's costs between aviation terminal services and other services. The Commission has reached the view that the terminal charges fall below the full average cost of providing aviation terminal services. This is because the Authority does not currently allocate any portion of the cost of the provision of meteorological services to aviation terminal services charges. Accordingly, the Commission has set the average revenue maximum at a level that it considers would, over the period of the Determination, move the Authority's terminal services charges to the level required for full cost recovery. However, given the Commission's limited remit to setting *maximum* charges, it cannot compel the Authority to raise its charges from present or expected future levels.

The Commission would like to clarify for interested parties that the Authority is free to adopt a charging system based on criteria which differ from those used by the Commission in the formal expression of the maximum levels of aviation terminal services charges which can be levied on aircraft departing from Dublin, Shannon or Cork Airports. Compliance with the Commission's Determination will,

however, be monitored on the basis of the formulae and definitions set out therein.

The regulatory year shall run from 26 March to the following 25 March for each 12-month period beginning 26 March 2002. For accounting purposes, an assumption has been made that an accrual of six days income and expenditure for the start of the period of regulation equals that of the end of the period of regulation. This assumption has been made because the Financial Model has been prepared on a monthly basis.

The Aviation Regulation Act, 2001, ("The Act") provides, in section 35(3), that, not later than 30 days after the making of the Determination, it shall come into force. The Commission's Determination was made on 26 February, 2002. The Determination shall come into force on 26 March, 2002 and shall remain in force for 5 years. The first regulatory year shall run from 26 March, 2002 to the following 25 March and likewise for the following four years. The legal significance is that this date determines the reference period for monitoring the Irish Aviation Authority's compliance with the price cap. In other words, compliance must be implemented and measured from that date.

Maximum Aviation Terminal Services Charges

The Determination is expressed in terms of the maximum average revenue per tonne of aircraft departing from Dublin, Shannon and Cork Airports yielded by way of terminal services charges.

For the regulatory year 2002/03, the maximum is expressed in terms of a fixed monetary amount stated in the Determination. For the remaining four years of the Determination, the 2002/03 maximum is updated according to a CPI_{\pm} formula, as set out in the Determination, where the CPI refers to the Consumer Price Index of the Central Statistics Office and the X factor is stated in the Determination. The X factor is a positive number. Therefore, the maximum will increase each year of the Determination.

The Determination includes a correction term, that is, a formula according to which the Commission will make annual modifications to the maximum yield to allow for any under-or over-recovery of charges by the Authority.

The Commission's calculation of the maximum average revenue yield from terminal services charges is shown in Tables 1-3. As may be seen, the yield is calculated by adding the following four items: (i) the return allowed to the Authority, (ii) depreciation; (iii) the relevant operating costs (opex) of the Authority plus the regulatory fees of the Commission; and (iv) the Authority's relevant tax liability. The result is divided by a forecast of total weight of aircraft departing from Dublin, Shannon and Cork Airports.

TABLE 1 : Calculation of the RAB @ 25 March 2002 for Terminal Services Charges

	€ Historic	€ Indexed
Gross Book Value	5,794,078	6,641,812
Installations in progress @ 31/12/2001	11,714,500	11,714,500
Cumulative Depreciation	(3,300,929)	(3,919,403)
RAB @ 31 December 2001	14,207,649	14,436,909
3 quarters of RAB @ 31/12/01		10,827,682
plus		
1 Quarter of RAB @ 31/12/02		3,702,500
RAB for ATSC Regulatory Year 1		14,530,182

In Table 1:

The calculation of the RAB for the first regulatory year is illustrated, beginning with the Authority's historic asset valuations for December 2001, indexing for inflation (on an asset by asset basis), and adjusting to bring the RAB forward to the beginning of the regulatory period (March 2002). In each subsequent year, the RAB is updated by (i) adding new capex, (ii) subtracting depreciation (including depreciation on new capex), and (iii) indexing for inflation (because the return is calculated on a real (after-inflation) basis).

TABLE 2 : Calculation of the 02/03 Yield for the IAA

	€
RAB @ 25 March 2002	14,530,182
Multiplied by WACC	6.5%
= Return on Capital	944,462
Plus : Depreciation	915,000
OPEX	9,038,750
Regulatory Fees Feb 01/Mar 03	250,000
= Sub-total	11,148,212
Plus : Taxation	93,750
= Maximum Allowable Revenue	11,241,962
Divide by MTOW	8,376,250
= Maximum Average Revenue per tonne	€ 1.34

Each of the elements of this table is made up of three quarters of the corresponding budgeted figure for 2002 plus one quarter of the figure for 2003; this accounts for differences between tables 2 & 3.

In Table 2:

“RAB” means the regulatory asset base; this is the value of the set of physical assets on which the Authority is allowed to earn a return from the provision of terminal services. The Commission has accepted, for the purpose of calculating the value of the RAB, the Authority’s figure for the Historic Cost Net Book Value (NBV) of the assets;

“WACC” means the weighted average cost of capital; this is computed as the weighted average of the Authority’s cost of equity and its cost of debt, with the weights given by the shares of equity and debt in the Authority’s total financing;

“return on capital” means the return allowed by the Commission to the Authority, computed as the weighted average cost of capital multiplied by the value of the regulatory asset base;

“depreciation” means depreciation evaluated with reference to the historic book value of the Authority’s assets.

“opex” means operating costs associated with the provision of terminal services;

“taxation” means the Commission’s estimate of the tax liability of the Authority in respect of the return allowed on terminal services;

“maximum allowable revenue” means the total revenue which the Authority is allowed to collect in the form of terminal services charges;

TABLE 3 : Reconciliation of OPEX to IAA Budget 2002

TOTAL IAA Budget for 2002	€
TOTAL	83,707,000
Depreciation	4,751,000
Reconciliation to IAA Budget	88,458,000

ATSC Portion of each Expense Category	€
Payroll	5,665,000
Training	860,000
Rent, Rates & Administration	1,424,000
Other Operating costs	285,000
Telecommunications & Utilities	135,000
Met (4% of total)	279,000
Finance	292,000
TOTAL ATSC OPEX	8,940,000

In Table 3:

The Authority’s budgeted figures are presented for 2002 for the main elements of the operating costs associated with its provision of aviation terminal services, along with the allocation of a portion of the MET costs by the Commission to terminal services charges.

The regulatory year for the Determination runs from March to March. The Authority's budgetary year is the calendar year. In the Commission's financial model of the Authority, which is based in part on the Authority's budgetary figures, the data are entered on a calendar-year basis. The model then estimates the maximum charges by taking, for the first regulatory year, 75% of the costs of calendar year 2002 and 25% of the costs of calendar year 2003, and dividing this figure by 75% of the total chargeable tonnage (in respect of aviation terminal services) of 2002 and 25% of the tonnage of 2003, and likewise for subsequent years.

Efficiency

The Commission has considered evidence regarding the efficiency of the Authority. It notes that, on the basis of a statistical model relating the costs of Air Traffic Control Services (which comprises both ATC and en route services) "ATC" service provision to certain explanatory variables, the Authority's costs of *en route* services are significantly below those of the other service providers in the study. As regards the charges levied for *terminal* services, information quoted in the Airport and Air Navigation Charges Manual suggest that the Authority's terminal services charges are lower than those of UK providers of such services. The Commission notes that the Authority has made significant efforts to reduce its cost base since September 11th 2001 and to freeze its charges following the recent decline in its traffic and the decline in its forecast traffic growth. Accordingly, the Commission believes that the Authority is attempting to provide a cost effective service to its customers and it has accepted the Authority's budgeted costs for 2002 and cost growth projections for subsequent years.

Capex

In the Determination, the Commission has included in the financial model revenue to the Authority sufficient to fund the recoverable CAPEX Programme, details of which are set out in an Appendix here.

Cost of Capital

Based on an expert consultancy study prepared for the Commission by Elaine Hutson, Lecturer in Finance, and Colm Kearney, Professor of Finance, at Trinity College Dublin, and published as an appendix to the report on the Determination, the Commission has set a value for the Authority's cost of capital, on a real, after-tax basis, equal to 6.5%. The Commission has modelled the Authority's future tax liabilities directly and included these in the company's cost base. Therefore, in calculating the maximum average revenue from terminal services charges, the Commission has allowed the Authority a real, after-tax rate of return equal to 6.5%.

3. SCOPE OF REGULATION

Section 2 of the Aviation Regulation Act, 2001 states that “terminal services” should have the meaning assigned to it by the Irish Aviation Authority Act, 1993 (the “1993 Act”). The 1993 Act defines terminal services as *“the air navigation services provided for aircraft landing at or taking off from an aerodrome or while in the vicinity of an aerodrome before landing at or taking off from that aerodrome”*

Air navigation services are defined by the 1993 Act as including *“services providing, giving or issuing information, directions or instructions, or other facilities, for the purposes of or in connection with the navigation or movement of aircraft”*.

It is clear from the recommendations and charging principles of the International Civil Aviation Organisation (ICAO) that the provision of air navigation services are generally divided between the three main phases of a flight, as follows;

1. Aerodrome control
2. Approach control, which includes approach and departure of flights.
3. En route.

It is also clear, from ICAO principles and recommendations, that terminal services comprise air navigation services provided to an aircraft in the aerodrome control and approach control phases of a flight.

The Commission believes that it is reasonable to interpret the meaning of terminal services set out in the 1993 Act as corresponding with the ICAO principle that terminal services comprise air navigation services provided to an aircraft in the aerodrome control and approach control phases of a flight. In other words, that the reference to *“aircraft landing at or taking off from an aerodrome”* in the 1993 Act corresponds with aerodrome control in the ICAO principles and the reference to *“while in the vicinity of an aerodrome before landing at or after taking off from that aerodrome”* in the 1993 Act corresponds with approach control in the ICAO principles.

In 1993, Eurocontrol, European Organisation for the Safety of Air Navigation, having examined the Irish Aviation Authority's systems, provided a set of allocations for costs which were common to the provision of terminal services, en route services, and other services provided by the Authority, such as Shanwick Communications. The Commission has been informed that these cost allocations were aimed at ensuring full cost recovery in accordance with ICAO principles. In respect of terminal services therefore, the proportion of cost allocated to terminal services should, using the Eurocontrol cost allocation methodology, reflect the amount of costs associated with the provision of air navigation services provided to an aircraft in the approach control and aerodrome control phases of a flight.

It is clear, therefore, that the Eurocontrol methodology referred to above allocated costs between services including terminal services as defined in the 1993 Act and as interpreted by the Commission. For this reason, the Commission has used the relevant proportions of costs to be allocated to terminal services, as determined by Eurocontrol, for the purposes of determining the maximum levels of aviation terminal services charges. Furthermore, the Eurocontrol cost allocations are the only set of allocations available to the Commission for the purposes of distinguishing the cost base for aviation terminal services provided by the Authority from other services it provides.

The Commission is also aware of the Eurocontrol en route charging rule, which exempts the 20 kilometres of flight closest to the airport from en route charges. Once the terminal and en route cost bases have been distinguished through a process of cost allocation (as done by Eurocontrol), the only purpose of the 20km rule is to determine the en route charge per service unit (determined by both distance and aircraft weight) that will allow recovery of the total *en route* cost base. Terminal service units are aircraft weight-related only. The 20km rule has no bearing on the terminal charge per service unit that will allow recovery of the total *terminal* cost base. Therefore, the Commission has adopted a cost allocation system developed by Eurocontrol which aims to ensure full cost recovery and reflects the operational reality of the provision of terminal services and en-route services.

4. REPORT ON THE REASONS FOR THE DETERMINATION

4.1 Statutory Objective

Under Section 36 of the Act, the Commission is obliged to “aim to facilitate the development and operation of safe, cost-effective terminal services which meet international standards.”

As the Commission stated in CP11/2001, in aiming to facilitate the development and operation of safe, cost-effective terminal services, the Commission must have due regard to the 7 specified factors contained in Section 36 of the Act. However, the extent to which reliance on any one of these factors contributes to the achievement of the statutory objective is a matter for the Commission to determine.

The Commission received representations from interested parties on both the statutory objective and the statutory factors. The Commission sets out below its final analysis of the statutory factors in light of the representations received. In its report on the Statutory Representations and the Commission’s Responses, the Commission gives the reasons for accepting or rejecting the representations.

4.2 Statutory Factors

- a. “the relevant charging principles of the International Civil Aviation Organisation and of Eurocontrol”¹*

The Commission, in setting the maximum levels of Aviation Terminal Services Charges has had regard to those charging principles of ICAO and Eurocontrol which the Commission considered relevant to the discharge of this function.

¹ Section 36(a)

Set out below are the main ICAO and Eurocontrol principles to which the Commission has had regard.

ICAO charging principles

The Council of ICAO has issued policies in respect of charges for airports and air navigation services.² The section of these policies relating to charges for air navigation services relates *inter alia* to the cost basis for air navigation services charges, the allocation of costs among aeronautical users, the pre-funding of projects and consultation with users in relation to new or expanded services.

As a general principle the ICAO Council state that

"...where air navigation services are provided for international use, the providers may require the users to pay their share of the related costs; at the same time, international civil aviation should not be asked to meet costs which are not properly allocable to it".

In addition, as another general principle, the ICAO Council states that they consider that

"an equitable cost recovery system could proceed from an accounting of total air navigation services costs incurred on behalf of aeronautical users, to an allocation of these costs among categories of users, and finally to the development of a charging or pricing policy system."

In addition, the ICAO Council recommends that certain principles be applied when establishing the cost base for air navigation services charges.

In relation to the allocation of costs of air navigation services among aeronautical users, the ICAO Council recommends that such allocation be

² ICAO's policies on charges for airports and air navigation services, 6th Edition – 2001 Doc 9082/6.

carried out in a manner equitable to all users and that the proportions of costs attributable to international civil aviation and other utilisation of the facilities and services should be determined in such a way as to ensure that no users are burdened with costs not properly allocable to them according to sound accounting principles.

In relation to charging systems for air navigation services, the ICAO Council in its policies have set out a number of principles for establishing systems used for charging for air navigation services.

These ICAO policies accept that, notwithstanding the principles of cost-relatedness for charges and of users not being charged for facilities that do not exist or are not provided, pre-funding of projects may be accepted in specific circumstances where this is the most appropriate means of financing long-term, large scale investment provided certain safeguards are in place.

These policies emphasise the importance of consultation with users before the finalisation of plans for projects to provide new or expanded air navigation services.

The Commission has had regard to these ICAO charging principles.

Eurocontrol charging principles

Although the principal function of the Central Route Charges Office (the "CRCO") of Eurocontrol is the operation of a common route charges system pursuant to a multi-lateral agreement relating to route charges, the CRCO also offers Member States a calculation, billing and collection service for terminal charges.

The Irish Aviation Authority has entered into a bi-lateral agreement with Eurocontrol entrusting Eurocontrol with the calculation, billing, accounting and collection on its behalf of charges for the use of terminal services in

accordance with the laws and regulations in force in Ireland. Pursuant to this agreement and in accordance with the recommendations of ICAO, Eurocontrol have published "*Rules governing Terminal Charges in Ireland*"³

Article 3 of these rules states that the terminal charge (R) shall be calculated in accordance with the following formula:

$$\mathbf{R = t \times N}$$

Where **(t)** is the unit rate of charge and **(N)** is the number of service units corresponding to terminal services used or made available.

Article 4 of these rules states "*that for a given departing flight, the number of service units in respect of terminal charges, designated (N) shall be equal to the maximum certified take-off weight (MTOW) for the aircraft concerned...*"

The Commission notes that, for the purposes of levying aviation terminal services charges, the Authority at present applies the average certified MTOW of an aircraft operator's fleet of the aircraft series to which the departing aircraft belongs. For the purpose of this Determination the Commission has had regard to these principles and the manner by which they are currently applied by the Authority and Eurocontrol in the calculation of terminal services charges in Ireland.

- b. "*the level of investment in aviation terminal services by the Authority, in line with safety requirements and commercial operations, in order to meet current and prospective needs of the airline industry*"⁴

The Commission carefully reviewed the historic and medium-term capital expenditure programme (CAPEX) of the Authority and was assisted in this regard by Infrastructure Management Group (IMG).

³ These rules are incorporated in a document titled "Information Circular - effective 1st January 2001 (Ref EI 2001/01) Terminal Charges in Ireland

The Commission assessed the Authority's CAPEX against the future needs of the airline industry and allocated the cost of an appropriate portion of that CAPEX to users of aviation terminal services. This analysis is set out more fully in the IMG CAPEX report attached as an Appendix to this report.

The Commission has made provision in the Determination for the Authority to maintain and enhance the safety and quality of the ATM services provided by the Authority. This includes resources for the Authority to upgrade its ATM system to enable it to provide increases in capacity, to achieve increases in productivity and safety as well as to comply with its international commitments under the European Air Traffic Management Programme managed by Eurocontrol.

Furthermore, in order for the Commission to have due regard to the level of investment by the Authority, there is an implicit requirement that the Authority be given a rate of return at least equal to its cost of capital, so that it may obtain funds for the purposes of investment. The ICAO principles also recognise the link between the ability of the provider of air navigation services to undertake investment and the rate of return that is earned by that firm.

Therefore, the Commission had an expert consultancy study prepared by Elaine Hutson, Lecturer in Finance, and Colm Kearney, Professor of Finance, at Trinity College Dublin. This is published as an appendix to the report on the Determination. The consultancy study concluded that the Authority's costs of capital, on a real, after-tax basis, is equal to 6.5%. Therefore, in calculating the maximum average revenue from terminal services charges, the Commission has allowed the Authority a real, after-tax rate of return equal to 6.5%.

⁴ Section 36(b)

c. *"efficient and effective use of all resources by the Authority"*⁵

The Commission notes that the Authority has made significant efforts to reduce its cost base and to freeze its charges during part of 2002 following the recent decline in its traffic and the decline in its forecast traffic growth. Recorded and anticipated declines in traffic and traffic growth had their origins in both the pre 11 September 2001 economic climate and the events of 11 September itself. In response, the Authority has lowered its cost base by €7 million in 2002 due to reductions in staffing levels (including the placing of some staff on secondment outside the Authority) and reduced discretionary spending. This reduction in the cost base partially funds the Authority's policy of maintaining terminal charges for part of 2002 at 2001 levels. Such a charging policy amounts to a real reduction in charges as the effects of inflation and a reduced volume of output would otherwise put upward pressure on terminal charges for 2002 over 2001. Accordingly, the Commission notes that the Authority is attempting to provide a cost effective service to its customers in a difficult trading environment.

d. *"the level of the Authority's income from aviation terminal services and other revenue earned by the Authority generally"*⁶

In respect of this factor, the Commission must assess what are the appropriate revenues to be taken into account in determining maximum levels of aviation terminal services charges so that economic welfare is enhanced.

The Irish Aviation Authority's revenues consist of those for aviation terminal services, the control of en route movements in Irish controlled airspace, Shanwick Communications, safety regulation, exempt air traffic and commercial and training activities.

⁵ Section 36(c)

⁶ Section 36(d)

It is the Commission's view that there is no justification for taking into account revenues earned by the Irish Aviation Authority for the control of en route movements in Irish controlled airspace, Shanwick Communications, safety regulation, exempt air traffic or commercial and training activities for the purposes of this Determination. In the case of en route and Shanwick Communications, the fact that the same agent pays for these as for complementary terminal services (in the case of aircraft landing at or taking off from Dublin, Shannon or Cork airport) and that en route charges are set according to ICAO cost recovery principles, renders the application of a single till type principle redundant. Demand for the remainder of the Authority's services bears no relationship to the demand for aviation terminal services. Accordingly, the regulatory till here only includes revenue earned by the Authority from Aviation Terminal Services.

- e. *"operating and other costs incurred by the Authority in providing aviation terminal services"*⁷

In making its Determination, the Commission aims to set a maximum terminal service charge so as to cover all necessary operating and capital costs, while giving a reasonable return on investment to the service provider. In pursuit of this statutory objective, the Commission sought to include in that maximum, only those operating costs necessary for the maintenance of safety and for a given level and quality of service, that planned investment would be consistent with cost minimisation.

The Commission has determined that aviation terminal services have been provided by the Authority at a level below the fully allocated cost of providing the service. This is because the Authority does not currently allocate any portion of the cost of the provision of meteorological services to aviation terminal services charges. Therefore, the Determination aims to set the maximum at a level to cover all such costs, including the relevant

⁷ Section 36(e)

portion of MET service costs, with the necessary increases phased in during the duration of the Determination.

Accordingly, 4% of the Authority's total MET service costs are allocated to terminal services during the first year of the Determination. This allocation of the total MET service cost to terminal costs is increased by 4% per annum so that in the last year of the Determination 20% of the total MET service cost levied on the Authority is allocated to terminal services.

- f. *"the level and quality of aviation terminal services, and the reasonable interests of the users of these services"*⁸

As discussed in CP5/2001, the Commission is mindful that where there is price regulation, the supplier has the incentive to reduce service quality in order to increase profits. The Commission is not proposing to introduce performance standards with regard to service quality at this time. However, the quality of service provided by the Authority during the period of the Determination will be taken into account by the Commission in any review.

- g. *"the cost competitiveness of aviation terminal services with respect to international practice"*⁹

The Commission has examined evidence of the Authority's international cost competitiveness. This includes the Eurocontrol statistical model, which relates the costs of the provision of air traffic control services to certain explanatory variables. This study found that the Authority's costs in 1998 and 1999, albeit its *en route* costs, were significantly below those of the other service providers in the study. As regards the charges levied for *terminal* services, information quoted in the Airport and Air Navigation Charges Manual suggests that the Authority's terminal services charges are lower than those of UK providers of such services (albeit that Eurocontrol

⁸ Section 36(f)

⁹ Section 36(g)

found that UK ATM services are costlier than those of other air providers). The Commission has also noted statements by IATA on behalf of the users that the Authority's efficiency is satisfactory. Accordingly, the Commission believes that the Authority is providing an internationally cost effective service to its customers.

5. ASSUMPTIONS FOR THE FINANCIAL MODEL

- 1) Operational Expenditure (OPEX) – The OPEX in the model is based on the Authority's Estimated Budget for the year ended 31 December 2002. The Commission has also made the following assumptions:
 - a. The expense categories are as per Table 3 of the Explanatory Memorandum accompanying the Determination.
 - b. The Authority stated that the budget for 2002 has been reduced by a 7% cost cutting exercise indicating that this reduction is only a temporary one lasting 2 years; therefore in 2004 the costs have been increased correspondingly to reflect an end to this temporary reduction.
 - c. The Authority stated in their 5 year Corporate Plan 2001-2006 that Payroll costs increase at a level of 4% per annum. This rate of increase has been used in projecting forward the payroll costs.
 - d. The Authority stated in their 5 year Corporate Plan 2001-2006 that other operating costs will increase at a rate of 4.5% per annum. This rate of increase has been used in projecting forward the other operating costs.
 - e. These rates of increase include inflation. The payroll and other OPEX growth rates have been modified, therefore, to avoid double counting of inflation – see (8).
- 2) The Authority has provided detailed information to enable the Commission to calculate the actual projected annual depreciation on existing assets for the period of the Determination.

- 3) The Depreciation Policy used by the Authority – as per their annual accounts is as follows;

Asset Group	Rates
Buildings	5%
Completed Installations and Other Works	12.5%
Motor Vehicles	20%
Office Equipment and Non-Operational Administrative Software	20% - 33.3%

- 1) The Authority has provided a breakdown of the Installations in progress as at 31 December 2001, along with the Depreciation rates which will be applied to these assets when they are added to the Fixed Asset Register in 2004.
- 2) The Commission has entered a 50% Dividend Payout Rate into the Model – as per the payout rate the Department of Finance has indicated to the Authority that it must apply.
- 3) Interest is calculated using a projected base rate of 4% (less 2% for positive balances, plus 1.5% for negative balances).
- 4) In considering the Authority's total financial position for the duration of the Determination, the Commission has assumed the following;
 - a. En Route and other Income is equal to their total operating costs plus an 8% profit margin.
 - b. The traffic for the calendar year 2002 shows a reduction of 5% on 2001 and an increase thereafter of an average of 4.5% per year until 2007.
- 5) An inflation rate of 3% per annum has been applied to the regulatory period.

- 6) The ATSC Regulatory Asset Base has been calculated by
 - a. Indexing at CPI the Gross Historical Cost of the Total Fixed Asset Register, less the Indexed Cumulative Depreciation.
 - b. The Authority has provided the depreciation rates that apply to existing assets showing the allocation to Terminal Service Charges. These allocations have been used to calculate the ATSC RAB.
 - c. The Regulatory Asset Base has been indexed in line with the assumed 3% inflation rate.
- 7) The Commission has modelled the future tax liabilities of the Authority directly, as per the following corporation tax rate assumptions
 - a. Financial year ended 31st December 2002: 16%
 - b. Financial year ended 31st December 2003 & onwards: 12½%
- 8) The Commission estimated the Capital Allowances of the Historical Assets and adjusted for changes in the Asset base during the Regulatory Period. The Capital Allowances were calculated in line with the rates which the Authority have used in their Corporation Tax Returns for the years ended 31st December 1999 and 2000.

APPENDIX I

IMG REPORT ON

IAA CAPITAL INVESTMENT PROGRAMME

IAA Capital Investment Programme

Irish Commission for Aviation Regulation



**Infrastructure
Management Group, Inc.**



Overview

1. Introduction and Executive Summary
2. Objective
3. CAPEX Drivers
4. IAA Total CAPEX (2001-2007)
5. Comments on IAA CAPEX
6. IMG Total Proposed CAPEX (2001-2007)
7. Proposed Recoverable CAPEX for Terminal Charges
8. Assumptions, Inputs and References

1. Introduction and Executive Summary

The purpose of this report is to assess and comment on the capital expenditure programme (CAPEX) proposed by the Irish Aviation Authority (IAA) as part of their expansion and modernisation programme for Terminal Services.



- CAR has requested that IMG provide a review of IAA recent (past 2 years) and future (next 5 years) CAPEX programme.
- IMG has used as the basis of this analysis information provided by IAA to justify the past and proposed CAPEX programmes, as well as industry standards
- Items identified in IAA CAPEX programme as related to safety and compliance have been accepted without modification
- Items identified in IAA CAPEX as capacity driven have been scrutinised using industry standards.
- Commercial and corporate projects identified as such in IAA CAPEX have been scrutinised in the same way as other proposed projects

1. Introduction and Executive Summary (cont.)

- Costs of proposed maintenance projects have been verified and included if adequately documented. Maintenance projects that are normally covered under normal routine and preventive costs have been excluded from the CAPEX. These costs are covered under the Operations and Maintenance (O&M) costs
- Timing of all projects has been reviewed against IAA proposed schedule and needs.
- In response to the Commission of Aviation Regulation's (CAR) request for information, the IAA provided a list and brief explanation of their proposed CAPEX for years to 2001 to 2005. That CAPEX was broken down into the following major areas:
 - Air Navigation Services
 - Commercial Training
 - Transportation, Building and Security
 - Information and Communications Technology
 - Ballycasey Building
 - Dublin ATM
 - Shannon ATM
 - Control, Navigation and Surveillance (CNS) Systems



2. Objective



Main purpose of the review of IAA CAPEX was to satisfy the Commission mandate to "facilitate the development and operation of safe, cost-effective terminal services which meet international standards" and having due regard to the following issues :

- The level of investment in aviation terminal services by the Authority, in line with safety requirements and commercial operations, in order to meet current and prospective needs of the airline industry.
- The efficient and effective use of all resources by the Authority
- The level and quality of aviation terminal services, and the reasonable interests of the users of these services

3. CAPEX Drivers



- CAPEX projects generally are necessary:
 - To satisfy safety and compliance requirements (*Safety and Compliance Projects*)
 - To meet capacity demand (*Capacity Projects*)
 - For operational and/or maintenance needs (*O&M Projects*)
 - To improve quality of services provided (*Quality Service Projects*)
 - For commercial, training and/or marketing purposes (*Commercial and Training Projects*)
 - To satisfy other needs (*Land Acquisition, Corporate*)

3. CAPEX Drivers (Cont.)

Safety and compliance requirements for Terminal Services are:

- Set by International and External Agencies: International Civil Aviation Organisation (ICAO), International Air Transport Association, US Federal Aviation Administration (at Airports where US Carriers fly), etc...



Safety related CAPEX items were reviewed :

- Based on IAA proposed CAPEX
- Compared with industry common practices
- Costs from similar projects carried out by IAA or from similar industry projects

3. CAPEX Drivers (Cont.)

Capacity driven projects are set:

- Based on air traffic forecasts and its composition

Capacity CAPEX items were reviewed :

- Based on IAA forecast models
- STATFOR forecast received in February 2002 that reflect the changes in forecast traffic since the events of September 11
- Based on demand requirements
- Based on industry common practices
- Costs from similar projects carried out by IAA or similar industry projects



3. CAPEX Drivers

Operational and Maintenance issues were reviewed :

- Based on IAA CAPEX
- Based on industry common practices
- Costs from IAA CAPEX both historic and future

Service issues were reviewed :

- Based on IAA CAPEX
- Based on industry common practices
- Costs from IAA CAPEX both historic and future
- Demand for specific type of service by users



3. CAPEX Drivers

Commercial issues were reviewed :

- Based on IAA CAPEX list of commercial projects
- Based on industry common practices
- Costs from IAA CAPEX both historic and future
- Capacity analysis for those facilities that are related to aircraft operation growth

Other (Corporate, property, etc.) issues were reviewed :

- Based on IAA CAPEX list of other projects
- Based on industry common practices
- Costs from IAA CAPEX both historic and future



4. IAA Total CAPEX 2001-2007

Items	Calendar years (Costs in €)					
	2001	2002	2003	2004	2005	2006
Air Navigation Services	2,594,500	800,000	200,000	100,000		
Commercial and Training	50,000					
Transportation, Building and Security	115,000	1,800,000	300,000	300,000		500,000
Information & Communications Technology	2,700,000	2,000,000	2,000,000	2,000,000		2,000,000
CNS Systems	3,074,500	2,200,000	5,700,000	8,700,000		1,500,000
Shannon ATM ¹	5,267,000	16,592,000	9,776,000	6,663,000	5,000,000	
Shanwick	1,497,000					
Dublin ATM ¹	2,231,000	7,030,000	4,017,000	1,006,000		
Ballycasey Building ²	3,616,000	380,000	25,000			
Total	21,145,000	30,802,000	22,018,000	18,769,000	5,000,000	4,000,000

Notes: 1- The total combined cost of the ATM Upgrades at Shannon and Dublin cannot exceed € 72.5million. About € 31 million have already been invested prior to 2001. The total cost of the project will not be included in the terminal charges until project completion which has been estimated to happen after 2004

2- The total cost of the Ballycasey Building cannot exceed € 25,640,000

5. Comments on IAA CAPEX

IAA CAPEX approval process follows guidelines set in IAA Purchasing Manual Part 4

In the Manual the following guidelines are included:

- IAA CAPEX shall:
 - Be reviewed by the recommend Guidelines for projects in excess of EU 1,500
 - Ensure that Capital Investment Proposals are in accordance with Capital Budgets and Plans
 - Ensure that the most economic options are submitted and ensure that sound business principles are observed
 - Ensure that there is an effective control framework within which capital investment is approved in the company and that it is being effectively monitored for implementation



5. Comments on IAA CAPEX (Cont.)



Regarding the justification provided by IAA for their proposed CAPEX program we can state that:

- Business cases presented were sound and effective
- Technical and cost details were provided for all major projects

Since many items in the IAA CAPEX are shared among business units IAA has developed an allocation table among the various services it provides. The IAA’s respective allocation percentages for CAPEX costs according to IAA is 25% for terminal charges and 75% for en-route charges.

6. IMG Total Proposed CAPEX 2001-2007



- Based on the information provided by IAA, IMG reviewed IAA's CAPEX programme considering the type of project and its driver. Projects were first justified and later their cost reviewed. Following is IMG total proposed CAPEX programme for IAA.

Items	Calendar years (Costs in €)							Total
	2001	2002	2003	2004	2005	2006	2007	
Air Navigation Services	2,594,500	800,000	200,000	100,000				3,694,500
Commercial and Training	50,000							50,000
Transportation, Building and Security	115,000	300,000	300,000	300,000	500,000	500,000	500,000	2,515,000
Information & Communications Technology	2,700,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	2,000,000	14,700,000
CNS Systems	3,074,500	2,200,000	5,700,000	8,700,000	1,500,000	1,500,000	2,500,000	25,174,500
Ballycasey Building	3,616,000	380,000	25,000					4,021,000
Shannon ATM	5,267,000	16,592,000	9,776,000	6,663,000				38,298,000
Dublin ATM	2,231,000	7,030,000	4,017,000	1,006,000				14,284,000
Total	19,648,000	29,302,000	22,018,000	18,769,000	4,000,000	4,000,000	5,000,000	102,737,000

7. Proposed Recoverable CAPEX for Terminal Charges

- The following **Terminal Charges** CAPEX programme was developed using the respective cost allocation percentages shown in previous pages and IMG's Total Proposed Recoverable CAPEX

Item	Calendar years (Costs in €)							Total
	2001	2002	2003	2004	2005	2006	2007	
Air Navigation Services	648,625	200,000	50,000	25,000				923,625
Commercial and Training	12,500							12,500
Transportation, Building and Security	28,750	75,000	75,000	75,000	125,000	125,000	125,000	628,750
Information & Communications Technology	675,000	500,000	500,000	500,000	500,000	500,000	500,000	3,675,000
CNS Systems	768,625	550,000	1,425,000	2,175,000	375,000	375,000	625,000	6,293,625
Ballycasey Building	904,000	95,000	6,250					1,005,250
Shannon ATM	1,316,750	4,148,000	2,444,000	1,665,750				9,574,500
Dublin ATM	557,750	1,757,500	1,004,250	251,500				3,571,000
Total	4,912,000	7,325,500	5,504,500	4,692,250	1,000,000	1,000,000	1,250,000	25,684,250

8. Assumptions, Inputs and References

Reference Material

- ICAO Annex 10
- ICAO Annex 15
- IAA Corporate Plan
- IAA Purchasing Manual Part 4 - Capital Expenditure Procedures



APPENDIX II

The Irish Aviation Authority's Cost of Capital

**Report by Professor Colm Kearney
and Elaine Hutson**

Dublin City University

The Irish Aviation Authority's Cost of Capital

Report to the Commission for Aviation Regulation

1st February, 2002

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Executive Summary

1. *The weighted average cost of capital (WACC) approach is used to estimate the IAA's cost of capital. To implement this approach, it is necessary to estimate the IAA's cost of equity, its cost of debt and its gearing ratio. Following a brief financial summary, the cost of equity is discussed in Section 3, the cost of debt is discussed in Section 4, the IAA's gearing is discussed in Section 5, and Section 6 brings these together in the WACC calculations to derive the estimate of the IAA's cost of capital.*
2. *The estimated value for the real risk-free rate is 2.6%. The estimated equity risk premium is 6.0%. The IAA's asset beta is estimated at 0.65 and its equity beta is estimated at either 1.2 (assuming an optimal gearing ratio of 50 %), or 0.65 (using the Authority's actual gearing of 0 %). The resulting estimate of the IAA's real cost of equity is either 9.8 % or 6.5 %.*
3. *With a real risk-free rate of interest at 2.6%, and an estimated debt premium of 1.2%, the resulting estimate of the IAA's real cost of debt is 3.8%.*
4. *The corporate tax rate that applies over the coming years is estimated at 13.2%.*
5. *The resulting estimates of the IAA's post-tax WACC is 6.5%, regardless of whether gearing is assumed to be 50 % or whether it is taken as its actual value of 0 %.*
6. *This report suggests that the best estimate of the IAA's real post-tax WACC is 6.5%.*

[1] Introduction and Overview

Financial theory has much to offer in setting the appropriate cost of capital for regulated corporations. In applying the theory to real business situations, however, it is necessary to make subjective judgements, because many of the concepts and variables that are defined precisely in theory are not readily measurable in practice, and have to be estimated in some way. Examples of these include the real risk free rate of interest and the equity risk premium. The 'true' cost of capital cannot therefore be known precisely, and uncertainty will be attached to the estimate. This observation is particularly applicable to the Determination of the appropriate cost of capital for regulatory purposes. As the Economic Regulation Group (2000a) (part of the Civil Aviation Authority (CAA)) observes in its recent position paper on the price regulation of the National Air Traffic Services (NATS) in the UK:

"There remains intense debate on how the key components of the cost of capital should be estimated for regulatory purposes".

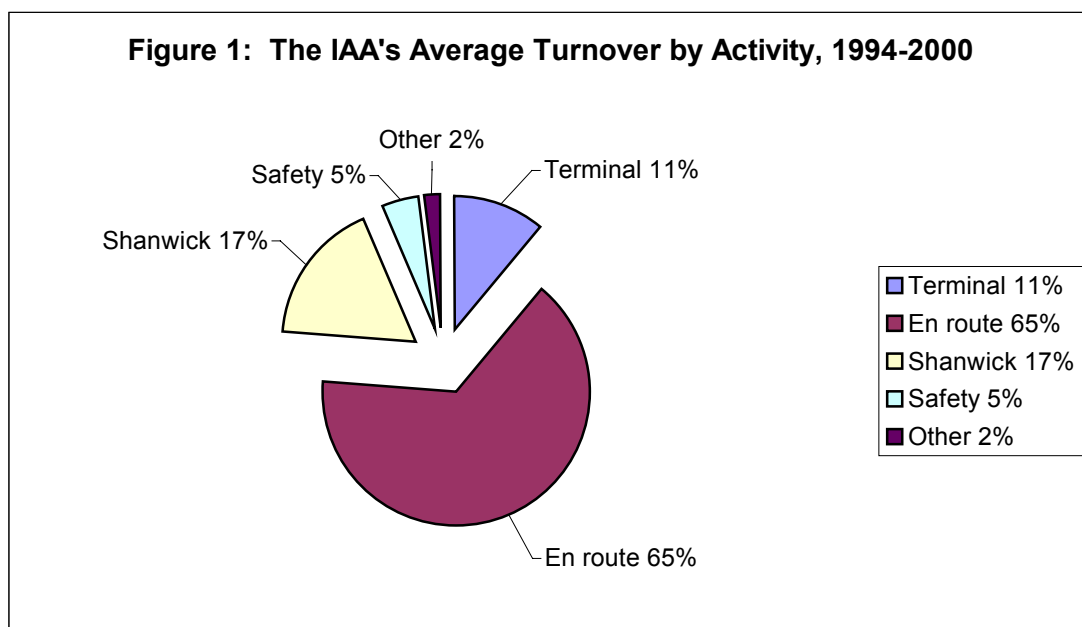
[ERG (2000a), p. 74].

In estimating the IAA's cost of capital, an extensive search was first conducted of the practice by other regulators throughout the world in estimating the cost of capital for air traffic control companies. There are very few examples of Determinations specifically for these sorts of organisations. The most recent and relevant case is that applied by the ERG of the British CAA to NATS. In describing its approach to estimating the cost of capital for NATS, the ERG followed precedents set by regulators in the aviation and other sectors of the economy. The ERG (2000a) describes this approach as follows.

"Given the relatively low significance of the cost of capital for the purposes of setting prices for the first five years following PPP [public-private partnership], ERG has not come to a conclusion on the key issues affecting the generic elements of the cost of capital (the risk free rate and the equity risk premium). Instead, for the purpose of this advice, ERG has opted to follow precedents set by other regulators and the MMC. The analysis presented here should not be taken as having any precedential importance for the approach the CAA will take to estimating the cost of capital in other areas of its competence".

[ERG (2000a), p. 74].

It is readily acknowledged that the circumstances within which the IAA operates are different to those within which NATS operates insofar as the former is a government owned enterprise while the latter has been partially privatised. Nevertheless, an important similarity between the two organisations in the context of estimating their costs of capital is that both are relatively labour intensive businesses (although this may change over the longer term). It follows, therefore, that significant variations in estimates of the cost of capital will tend to have limited effects on any derived regulatory pricing Determinations. This situation is amplified when cognisance is paid to the fact that the regulated proportion of the IAA's revenues is small relative to its overall earnings. This is shown in Figure 1 below.



It is also acknowledged, while the British and Irish aviation scenes share many common features, there may be some differences. It may be appropriate, therefore, to consider an Irish benchmark. The closest Irish organisation for which an estimated cost of capital is available is Aer Rianta (see Kearney and Hutson (2001)).

Therefore, the approach adopted here for estimating the IAA's cost of capital is to take the relevant components of the cost of capital estimate from the Aer

Rianta study, making amendments where appropriate based on CAA's Determination of NATS' cost of capital. This approach should ensure that the derived estimate for the IAA complies with best practice in Ireland and elsewhere.

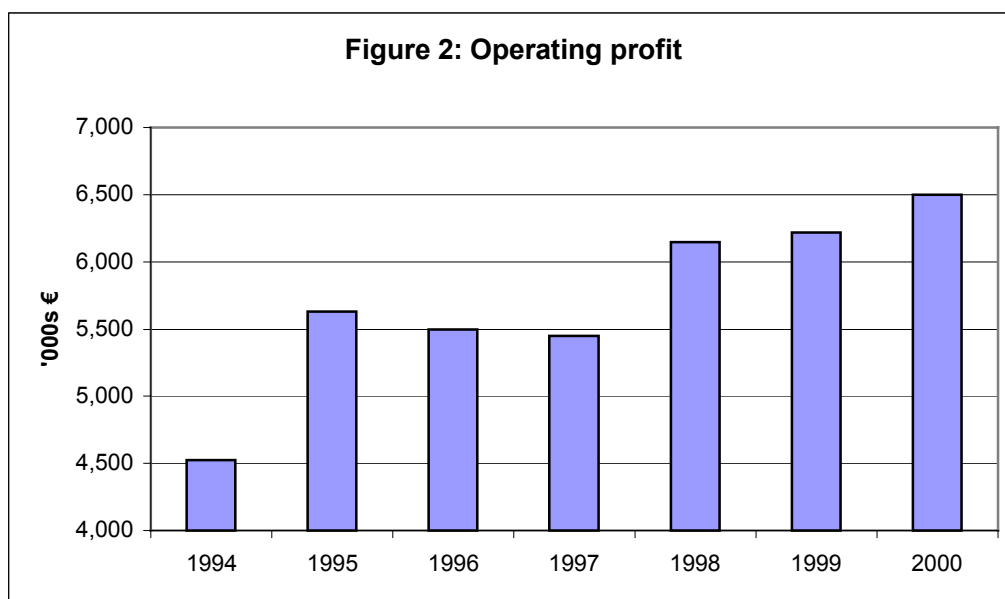
Following standard practice in regulatory Determinations, we use the weighted average cost of capital (WACC) approach, which involves weighting the cost of debt and the cost of equity according to their relative weights in the company's capital structure. To implement this approach, it is necessary to estimate the IAA's cost of equity, its cost of debt and its gearing ratio. This report begins with a brief financial summary of the IAA. The cost of equity is discussed in Section 3. The cost of debt is discussed in Section 4. The IAA's gearing is discussed in Section 5. Section 6 brings these together in the WACC calculations to derive our estimate of the IAA's cost of capital.

[2] Financial Summary

The IAA was established in the early 1990s, and accounts for the authority are available from 1994 to 2000. Table 1 below provides the Profit and Loss account in € millions from 1994 to 2000. Over this period it has recorded a 24 percent increase in sales from an average of just over €60 million in 1994 and 1995, to over €75 million in 2000. Its cost of sales has risen by just under 22 percent from an average of just under €50 million in 1994 and 1995 to almost €61 million in 2000. This has enabled it to expand its gross profits by 36 percent from an average of €10.8 million in 1994 and 1995 to €14.7 million in 2000. The IAA has earned consistently increasing operating profit over the period 1994 to 2000 inclusive (see Figure 2). Its after-tax profit has fluctuated from an average of €1.9 in 1994 and 1995 to an average of €6.6 million in 1999-2000. It has returned a dividend over this period of €2.5 million, all occurring in the last 2 years of the available accounts. In the 6 years between 1995 and 2000 it has transferred a total of €25.6 million to contingency reserve. These funds are used as retained earnings to finance its capital expenditure programs. It is noteworthy that the IAA's enacting legislation directs the authority to fund its expenses, including capital expenditure, from its earnings, although it has the ability to borrow subject to the approval of the government.

Table 1: Profit and Loss Account, 1994-2000
€ millions

	1994	1995	1996	1997	1998	1999	2000
Sales	59.2	62.1	67.4	70.9	74.3	76.3	75.5
Cost of sales	-49.0	-50.7	-54.0	-57.4	-59.7	-61.7	-60.8
Gross profit	10.2	11.4	13.4	13.5	14.6	14.6	14.7
Administration Expenses	-5.6	-5.8	-7.9	-8.0	-8.4	-8.3	-8.2
Operating profit - continuing activities (EBIT)	4.5	5.6	5.5	5.4	6.1	6.2	6.5
Interest receivable and similar income	0.7	1.0	0.9	1.3	1.5	1.0	0.5
Interest payable and similar charges	0.0	-0.7					
Profit on ordinary activities before tax	5.2	5.9	6.4	6.7	7.7	7.2	7.0
Tax credit/(charge) on profit on ordinary activities	-3.2	-4.1	-3.1	-2.3	-3.7	0.5	-1.5
Profit for the financial year	2.0	1.8	3.3	4.4	4.0	7.7	5.5
Dividend						-1.3	-1.2
Transfer to contingency reserve		-3.2	-3.2	-4.4	-3.8	-6.5	-4.5
Profit and loss account at beginning of year		2.0	0.7	0.8	0.8	1.0	0.9
Profit and loss account at year end	2.0	0.7	0.8	0.8	1.0	0.9	0.8



The Authority's balance sheet for the years 1994 to 2000 is summarised in Table 2. Its fixed assets fluctuated around about €30 millions during the 6 years from 1994 to 1999, increasing strongly to almost €49 millions in 2000. Its current assets have averaged €33 millions over the 7-year period, comprising €13.4 millions in debtors and €19.7 millions in cash. Its total assets have averaged €65.5 millions, growing by over 30 percent from an average of just under €58 millions in 1994 and 1995 to just under €76 millions in 2000. Its total liabilities have fluctuated around €30 million during the entire period. This has allowed its shareholders' funds to grow steadily by an amount of 91 percent over the period, from an average of €25.6 millions in 1994 and 1995 to just over €49 millions in 2000. The Authority has had no bank or public debt since 1996.

Table 2: Balance Sheet, 1994-2000
€ millions

	1994	1995	1996	1997	1998	1999	2000
Fixed assets							
Tangible assets	34.5	31.5	31.4	30.7	25.3	23.9	48.8
Current assets							
Debtors	13.5	15.0	10.2	12.2	13.7	15.5	13.7
Cash at bank and in hand	6.6	13.9	19.4	24.7	32.2	27.9	13.5
Total current assets	20.0	29.0	29.7	37.0	45.9	43.4	27.2
Total assets	54.6	60.5	61.1	67.6	71.2	67.3	76.0
Creditors: amounts falling due within one year	-20.1	-21.5	-20.8	-24.5	-22.7	-14.8	-18.2
Net current assets (liabilities) working capital	0.0	7.5	8.9	12.5	23.2	28.6	9.0
Creditors: amounts falling due after more than one year	-6.6	-10.3	-10.4	-8.9	-10.2	-7.8	-8.3
Provisions for liabilities and charges							-0.5
Total Liabilities	-29.9	-33.9	-31.2	-33.4	-32.9	-22.6	-26.9
Capital and Reserves							
Called up share capital	22.7	22.7	22.7	22.7	22.7	22.7	22.7
Profit and loss account	2.0	0.7	0.8	0.8	1.0	0.9	0.8
Other reserves		3.2	6.3	10.8	14.6	21.1	25.6
Shareholders' funds	24.7	26.5	29.8	34.3	38.2	44.7	49.0

[3] The Cost of Equity

Three alternative models are available to measure the cost of equity. These are the capital asset pricing model (CAPM), the dividend growth model, and the arbitrage pricing theory model. The CAPM is the best-accepted and most widely used approach. There is an extensive literature on both the theoretical and practical problems related to its usage in many different applications, (see, for example, Harrington (1987), Cochran (1999), and the CAA (2001)).

The CAPM model is written in equation form as follows.

$$E(R_i) = r_f + \beta_i [E(R_m) - r_f] \quad (1)$$

where;

$E(R_i)$ is the expected return on stock i ;

r_f is the risk-free rate of interest;

$E(R_m)$ is the expected return on the market portfolio; and

β_i is the asset's 'beta', representing the systematic risk of stock i .

The CAPM states that the return on equity is equal to the risk free rate, r_f , plus a premium for risk, $\beta_i [E(R_m) - r_f]$. The risk premium is defined as the quantity of risk multiplied by the price of risk. The quantity of risk is measured by the systematic risk of the stock as measured by β_i (the covariance of the stock's return with the return on the overall market), and the price of risk is measured by the equity risk premium, $[E(R_m) - r_f]$. The essential idea behind the model is that in order to invest in equity rather than purchase a risk-free asset, investors expect to earn the risk free rate of interest plus a premium for the risk associated with holding equity.

The CAPM is a theoretical model that is built upon a number of assumptions. These include the following,

- All investors are risk-averse expected utility maximisers,
- Asset quantities are fixed and all assets are divisible and marketable,

- Markets are competitive and frictionless, with costless information simultaneously available to all investors, and
- There are no taxes, regulations, or other restrictions on market behaviour.

Although these assumptions do not hold strictly in real world situations, they can generally be relaxed at the cost of additional complexity in the derivation of the model. The simple form of the CAPM as stated above remains very useful for financial decision-making and utility regulation, because it provides a universally accepted methodology for quantifying and pricing equity risk. It should be noted, however, that the CAPM is an expectational model that does not purport to explain historical stock returns. Important problems arise in implementing the CAPM due to the necessity to estimate its three parameters. In most cases, we have only historical information with which to estimate them.

3.1 The Risk-Free Rate

There are several issues to consider when selecting the most appropriate risk free rate for cost of capital calculations applied to regulated utilities. These are:

1. Which government-issued security should be used?
2. What maturity should be used?
3. Should current rates or historical averages be used?
4. How is the real rate adjusted for the inflation risk premium?

There is an extensive literature on these issues (see, for example, Harrington (1987) (Chapter 5), Weil (1989)). In addition, Kearney and Hutson (2001) provide an extensive discussion in their recent estimate of the risk free rate for Aer Rianta. Given that there is no reason to suppose that the estimate would be any different when calculating the cost of capital for the IAA and for Aer Rianta, the same estimate is used here. A brief summary of the methodology is provided in the next paragraph.

In addressing the first point above, we use a German government bond rate. This is because of Ireland's membership of the eurozone, and also because many

of Ireland's companies and utilities source their financing offshore in euro-denominated public debt markets. Further, it has become standard practice in the markets for European corporate and utility debt to be priced relative to the yields on German government securities. Concerning point 2 (appropriate maturity) we use the 10-year Bund yield as the best benchmark. Kearney and Hutson (2001) present a discussion on whether current rates or historical average rates should be used as a benchmark for the risk-free rate. Because of excessive short-term volatility of current rates, we believe that the use of historical averages is more appropriate for cost of capital calculations, and therefore use a 16-year historical average rate. Lastly, we calculate a real risk-free rate by subtracting the historical average inflation rate and adjusting for an inflation premium.

This yields an estimate of the risk free rate of 2.6%. This estimate lies within the range of estimates reviewed by the CAA (2001) that have been applied in recent regulatory Determinations the UK (see CAA (2001), Table 1), and it is somewhat below the CAA's (2001) suggested range of 2.75%-3.25% which centres on 3%. The main reason for our lower estimate is that ours includes the adjustment for the inflation risk premium. As already mentioned, this is the same estimate that was calculated for Aer Rianta.

3.2 The Equity Risk Premium

The equity risk premium is the return that investors require to induce them to purchase and hold equity rather than risk-free bonds. As the CAPM is an expectational model, the concept of an equity risk premium is also a forward-looking one in the sense that it reflects the expectations of the rate of return that investors require in order to hold risky stock. The equity risk premium cannot be directly observed and it is difficult to measure. An element of judgement, therefore, is required in establishing an appropriate equity risk premium for input into the cost of capital calculation.

As with the risk-free rate of interest, there is no reason to suppose that the estimate of the equity risk premium would be any different for the IAA than for Aer Rianta. Kearney and Hutson's (2001) estimate of the equity risk premium is therefore also applied to the IAA. The appropriate figure for the equity risk premium is 6.0%.

3.3 Beta

A stock's risk can be divided into two parts: systematic and unsystematic (also known as idiosyncratic or stock-specific risk). The equity beta (β) of a stock is its systematic (or market) risk. It is well established in finance theory that only systematic risk is priced by the market – that is, it is only the systematic risk of the stock that investors should expect to be compensated for in terms of additional return. This is because it is easy for investors to diversify their portfolios so that idiosyncratic risk is washed out.

Equity beta is usually estimated using simple regression techniques that require a sufficient time-series of stock price data. This technique cannot be used the IAA as it is an unlisted company. Instead, we must seek a comparator company that is listed. This is the approach adopted by the CAA (2000a), who used BAA and Railtrack as suitable comparator companies. We use a similar approach, with some differences. *First*, we do not use Railtrack as a comparator company because it is less relevant to the Irish economy. We use three comparator

companies: Aer Rianta, BAA and NATS. *Second*, we use the estimate of Aer Rianta's equity beta from Kearney and Hutson (2001), which was derived by estimating BAA's equity beta and making the appropriate adjustments.¹⁰

To estimate equity beta we first need an estimate of the IAA's asset beta. The asset beta for the IAA is estimated on the basis of the similarities and differences between the business risks facing the IAA and the three chosen comparator companies, Aer Rianta, BAA and NATS. There are many similarities in the business risks facing these four companies. They are all airport-related companies, and face similar regulatory and volume risks, the latter occurring to the extent that passenger traffic is correlated with air traffic. There are differences between the airports and the traffic control organisations, however, because the former are more capital intensive; they have larger proportions of commercial revenues; and the air traffic control companies arguably face more technological risk due to their high-technology assets. Further, we do not believe that the fundamentals of airport and air-traffic control organisations have been permanently altered by the events of September 11th, 2001 (see section 4.1 'The debt premium' for a detailed discussion of this issue). Taking these considerations into account, and noting that the estimated asset betas for Aer Rianta (see Kearney and Hutson (2001)), BAA (see MMC (1996)) and NATS (see CAA (2000a)) are, respectively, .0.50, 0.50, and 0.65, we estimate the IAA's asset beta as 0.65.

To obtain an equity beta for use in the CAPM, the asset beta must go through a process of 're-gearing' according to the IAA's capital structure. In previous regulatory Determinations there has been some confusion about whether the

¹⁰ The details of this approach are discussed in Kearney and Hutson (2001), and is summarised as follows.

1. Monthly data from a 5-year time period on two stock market indices, the FTSE 100 index and the Dow Jones European index, is used to estimate BAA's equity beta. BAA's beta was estimated at 0.80 when the FTSE 100 is used, and 0.66 when the Dow Jones European index is used. We take the midpoint of these two as our recommended equity beta for BAA – which is 0.73.

2. BAA's estimated equity is 'de-gearred', producing an *asset beta*, which is the beta for an equivalent company that has no debt in its capital structure. This gives an estimated asset beta for BAA of 0.50.

3. The asset beta for Aer Rianta is adjusted for any differences in business risk between BAA and Aer Rianta. The operational and business risks of these companies are not sufficiently different to warrant significant adjustment. Both are in a very strong competitive position in their respective markets, they have similar passenger profiles, they are similarly rated by Standard and Poor's (with BAA rated AA- and Aer Rianta AA+), both companies have a high proportion of non-aeronautical revenues. The estimated asset beta for Aer Rianta is consequently the same as for BAA, that is, 0.50. The resulting equity beta for Aer Rianta is 0.93 after adjustment for gearing.

regulated company's actual or 'optimal' capital structure ought to be used in this exercise. Naturally, this is of less relevance the closer the actual capital structure is to its optimal level. In the case of the IAA, however, the difference is likely to be significant, because the company has no debt. This follows from the enacting (and subsequent) legislation for the Authority as well as from its tendency to fund its capital investment programmes almost entirely from retained earnings in the form of contingency reserves. In spite of this, however, and in keeping with the assumed capital structure in the recent NATS Determination, we assume an optimal gearing ratio structure for the IAA of 50% (see section [5] below for a further discussion of gearing). Our calculations of the IAA's WACC will be produced under the alternative gearing ratios of 50% and 0%.

To determine the IAA's equity beta from its asset beta, we also need the appropriate corporate tax rate. The projected tax rates for Ireland are 16% in 2002, declining to 12.5% in 2003 and thereafter. The average tax rate for the 5-year period from 2002 to 2006 is consequently 13.2%.

With the assumed optimal debt-to-assets ratio for the IAA of 50%, the optimal debt-to-equity ratio is consequently 1, and the company's estimated equity beta is as follows.

$$\beta_{equity} = \beta_{asset} \left(1 + (1 - T_c) \frac{D}{E} \right) \quad (2)$$

$$\begin{aligned} \beta_{equity} &= 0.65(1 + (1 - 0.132)1) \\ &= 1.2 \end{aligned}$$

Our recommended equity beta for the IAA with an assumed optimal gearing of 50% is consequently 1.2. This is marginally higher than the 1.1 figure estimated by the CAA (2000a) for NATS. If the Authority's actual gearing of 0% is assumed, the equity beta is equal to the asset beta, which will be 0.65.

[4] The Cost of Debt

The cost of debt component for the weighted average cost of capital (WACC) calculation is easier to estimate than the cost of equity component. While the cost of equity is not observable and must be estimated by some economic model, the cost of debt for many companies is more readily available. If the company in question has publicly traded debt outstanding, the common method for estimating the nominal cost of debt is to take the current market yield on that debt. If the real cost of debt is required, as it is in this case, the yield spread over benchmark is the best estimate of the debt premium. This is then added to the estimated real risk-free rate of interest.

4.1 *The debt premium*

It is well understood that, in order to hold corporate debt, investors must be offered a premium over and above the return on the risk-free asset in order to compensate them for the additional risk associated with corporate debt. The debt premium is therefore commensurate with the likelihood that the company will default on its debt obligations. It is determined by both the business and financial risk of the company, and is usually determined by fundamental analysis of the company and its industry.

If a company's debt is rated by one of the ratings agencies (such as Moodys, Standard and Poor's and Fitch) but does not have public debt, the debt premium can be estimated by examining the debt premiums of other similar companies with the same rating. If a company has no existing debt or if its debt is not rated, comparisons can be made with other (rated) companies in the same industry, and adjustments to their costs of debt made on the basis of relative fundamentals. A helpful benchmark, for example, might be CAA's (2001) estimate of BAA's debt premium of 140 to 145 basis points.

A more appropriate benchmark, however, is the debt premium applicable to Aer Rianta. Kearney and Hutson (2001) estimated their debt premium direct from the market yield on Aer Rianta's 10-year Euro-denominated bond issue, at 113

basis points. This debt premium is consistent with Standard & Poor's assessment of Aer Rianta's debt rating as A+/Stable/A-1. This rating was based on the company's currently strong financial position and business fundamentals, coupled with equally strong projections for the future.

An important issue to address, however, is whether or not there have been any significant, permanent changes to airport debt premiums since the publication of Kearney and Hutson in August 2001. In particular, have the fundamentals of airport and air traffic control operations significantly deteriorated since the events of September 11, 2001? The ratings agencies argue that they have not. Standard and Poor's did not alter the credit ratings for either Aer Rianta or BAA in the wake of September 11th. Both Standard and Poor's and the credit rating agency Fitch argue that, while airline debt has been downgraded, airports revenues are not exposed to the downturn in air travel to the extent that airlines are. This is explained by Standard and Poor's (2001):

"The decision to take no rating action on the European airports directly after the events is a result of the following factors:

- Airport ratings incorporate cyclical traffic movements;
- Airports have some flexibility to defer capital investments in case of lower-than-forecast passenger numbers, thereby limiting financial effects;
- Most airports have sufficient financial headroom to cope with lower-than-forecast passenger numbers for at least the next year; and
- Historical evidence indicates that after a recession or an international incident (such as the Gulf War), airline traffic recovers relatively quickly."

[Standard and Poor's, (2001)]

In summary, therefore, we estimate the IAA's real cost of debt as our risk-free rate estimate of 2.6% plus 120 basis points for the debt premium. The resulting real cost of debt estimate for the IAA is 3.8%.

[5] Gearing

The weightings applied to the estimates of the cost of debt and equity in the WACC should ideally be based on the firm's optimal capital structure. The term 'optimal' capital structure is based on the fact that, as the interest payments on debt are tax deductible, raising the quantity of debt in the capital structure adds to company value. The 'optimal' capital structure gives a level of debt at which the tax benefits of debt begin to be outweighed by the costs of financial distress caused by difficulties associated with servicing high debt obligations. The problem with the concept, however, is that the 'optimal' capital structure is difficult to determine, and there is no guiding theory as to how to estimate it. Furthermore, in countries like Ireland where there is a low corporate tax rate, or where a dividend imputation system reduces the tax benefit of debt, the concept of an 'optimal' capital structure is less important to company value.

In the case of the IAA the difference between assuming the current gearing ratio and some optimal gearing ratio is likely to be significant because the Authority has no debt. As stated previously, this follows from the enacting (and subsequent) legislation for the Authority as well as from its tendency to fund its capital investment programmes almost entirely from retained earnings in the form of contingency reserves. Some evidence of what might constitute an optimal gearing ratio for the IAA is available from the actual gearing ratio of NATS (56%, accounts dated 31st March, 2001) together with that assumed by the CAA (50%) in its recent Determination (see ERG (2000a)).

Our preferred approach to estimating the appropriate gearing for the IAA WACC calculation is to provide figures using both an assumed 50 percent gearing and the actual gearing of 0 percent.

[6] The Weighted Average Cost of Capital

A summary of our findings for the WACC and its components can be found in Table 3. In the final cost of capital estimation, we follow the methodology adopted by the CAA (2001). The CAA uses estimates of the real cost of equity and the real cost of debt in the following equations.

Post-tax WACC:

$$WACC_{post-tax} = \frac{D}{D+E} (r_f + \rho)(1-t_c) + \frac{E}{D+E} (r_f + [ERP]\beta) \quad (3)$$

Pre-tax WACC:

$$WACC_{pre-tax} = \frac{D}{D+E} (r_f + \rho) + \frac{\frac{E}{D+E} (r_f + [ERP]\beta)}{(1-t_c)} \quad (4)$$

where D = total debt
 E = total equity
 r_f = the real risk-free rate of interest
 ρ = the debt premium
 t_c = the corporate tax rate
 ERP = the equity risk premium
 β = equity beta

The expression $(r_f + \rho)$ is the company's real return on debt, and $(r_f + [ERP]\beta)$ is the company's real return on equity using the CAPM.

Inserting our estimates of the inputs to the WACC calculations provides our estimates of the IAA's cost of capital follows:

Assuming gearing of 50 percent:

Post-tax WACC:

$$\begin{aligned} WACC_{post-tax} &= \frac{D}{D+E} (r_f + \rho)(1 - t_c) + \frac{E}{D+E} (r_f + [ERP]\beta) \\ &= 0.5(2.6 + 1.2)(1 - .132) + 0.5(2.6 + [6]1.2) \\ &= 6.5 \end{aligned} \quad (3')$$

Pre-tax WACC:

$$\begin{aligned} WACC_{post-tax} &= \frac{D}{D+E} (r_f + \rho) + \frac{\frac{E}{D+E} (r_f + [ERP]\beta)}{(1 - t_c)} \\ &= 0.5(2.6 + 1.2) + \frac{0.5(2.6 + [6]1.2)}{(1 - .132)} \\ &= 7.5 \end{aligned} \quad (4')$$

Assuming gearing of 0 percent:

A gearing level of zero implies 100 percent equity finance. The WACC, therefore, is simply the required return on equity.

$$\begin{aligned} WACC &= (r_f + [ERP]\beta) \\ &= (2.6 + [6]0.65) \\ &= 6.5 \end{aligned} \quad (5)$$

In summary, assuming an optimal gearing ratio of 50 percent for the IAA, our recommended post-tax WACC is equal to 6.5 percent. Assuming an optimal gearing ratio of 0 percent, our recommended post-tax WACC is also equal to 6.5 percent.

The fact that the recommended post-tax WACC is the same as the WACC with zero gearing is coincidental. The return on equity component in the post-tax WACC is higher than in the zero-debt WACC because it is calculated using the considerably larger 'geared' beta. This is largely offset by the after-tax cost of debt (with rounding to 1 decimal place).

Table 3
Estimates of WACC for the IAA

Parameter	Estimate based on assumed optimal gearing of 50%	Estimate based on the IAA's actual gearing of 0%
<u>Cost of equity</u>		
Real risk-free rate	2.6%	2.6%
Equity risk premium	6.0%	6.0%
Asset beta	0.65	0.65
Equity beta	1.2	0.65
<i>Real cost of equity</i>	9.8%	6.5%
<u>Cost of debt</u>		
Real risk-free rate	2.6%	2.6%
Debt premium	1.2%	1.2%
<i>Real cost of debt</i>	3.8%	3.8%
<u>Gearing</u>	50%	0%
Corporate tax rate	13.2%	na
Post-tax WACC	6.5%	6.5%
Pre-tax WACC	7.5%	na
See text for explanation of the derivation of each component of the WACC estimates. Note that with 0% gearing, the pre-tax WACC and post-tax WACC are the same.		

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6. REPORT ON THE STATUTORY REPRESENTATIONS AND THE COMMISSION'S RESPONSES

6.1 Traffic Forecasts and the Determination

6.1.1 IAA and IATA

Since there are no reliable short to medium term forecasts of traffic levels in light of September 11, the Commission should delay the implementation of any price Determination until reliable forecasts are available.

The Commission rejects this representation. The Commission acknowledges that there is uncertainty as to the reliability of existing traffic forecasts after the events of 11 September 2001. However, the Act does not permit the Commission to delay the making of its Determination on aviation terminal services charges (ATSC). Accordingly, the Commission must make its Determination and does so on the basis of information available to it at this time.

The Commission acknowledges that the Authority has been helpful to the Commission on this issue. The Authority has provided the Commission with its own best estimates of traffic forecasts in the short term. The Authority has also provided the Commission with the most recent traffic forecasts (which are of a very preliminary nature) from Eurocontrol.

6.2 Scope of Aviation Terminal Services Charges

6.2.1 IAA

Any extension of the applicable distance, for terminal navigation services purposes, beyond the 20km radius, for the purposes of charging for terminal services, would be out of line with what applies generally in Europe, may be unacceptable to Eurocontrol and could extend the terminal navigation services area at Dublin well into United Kingdom airspace.

The Commission should not oblige the Authority to comply with charging principles that differed in a material way from those principles in the EUROCONTROL Multilateral Agreement.

For the reasons given in the section of this report which discusses the scope of aviation terminal services, the Commission does not consider it necessary for the purposes of this Determination to consider the application of the '20km rule'.

6.2.2 IATA

The "20 km rule" should only be applied for charging purposes and not for cost-allocation purposes.

Application of the "20 km rule" implies that only the tower and landing aids-related costs are being included in the TNC cost base, but not necessarily the associated approach and departure costs. This leads to the unjustified subsidisation of TNC by en route users. (According to IATA, this was identified by the recent Price Waterhouse Coopers (PwC) Study into European TNC on behalf of the European Commission.)

For the reasons given in the section of this report which discusses the scope of aviation terminal services, the Commission does not consider it necessary for the purposes of this Determination to consider the application of the '20km rule'.

6.3 Statutory Objective

6.3.1 IATA

The Commission's key obligations "to facilitate the development and operation of cost-effective terminal services" and to ensure that "prices are cost-reflective" cannot be adequately addressed unless transparent and justified cost-allocation is established. (In this context, IATA refer to the stated intention of the PwC study for the European Commission "that our proposals are intended to end a

number of the hidden cross-subsidies and examples of discrimination that are inherent in the existing charging system. At present these flights are cross-subsidised by other flights through a number of means including disproportionately low terminal and ANS charges in many States, and uniform charges across all airports. Abolition of these cross-subsidies will result in fairer competition between airlines and between other transport modes.”)

IATA requested a breakdown of TNC costs during its last charges consultation with the Authority in February 2000. From the information provided at the time it was noted: -

- Tonnage was increasing more than movements
- Depreciation and interest costs were decreasing in contrast to those for the en route cost base, which were increasing.
- No MET or AIS costs were allocated to TNC cost base

Cost-allocation keys and details were provided on the allocation of capital and operational costs, but the overall impression was that en route was subsidising TNC.

The Commission accepts the representation to the extent that it states that the statutory objective cannot be met if there is a cross-subsidy built into the charging structure. The Commission also accepts the representation in that in the existing charging structure ATS is being priced at a level below the cost of providing the service. The Determination sets a new maximum level of ATSC which is aimed at facilitating the full recovery of costs of this service. Cost recovery is to be implemented over the course of the Determination.

The Commission also notes that it has no jurisdiction over en route charges. In addition, the Commission’s power over ATSC is limited to setting maximum charges -- it does not set these charges and it cannot direct the Authority to raise its charges.

6.4 Statutory Factor (a) – Eurocontrol & ICAO Charging Principles

6.4.1 IAA

The Authority, Eurocontrol and the airline community strongly favours the principle that aircraft weight be taken into account in the charging structure, rather than a movement-based formula.

The Commission accepts the representation as a statement of the position of the Authority and the aviation community in general. The Commission does not propose to move away from a weight-based methodology for the calculation of ATSC.

6.4.2 IATA

The Association fully supports the principle that aircraft weight should be taken into account, but less than in direct proportion. IATA would be very concerned if a move to a movement-based charge were considered. The current weight-based formula is generally accepted as a good trade-off between cost-relatedness and ability to pay.

Not only is marginal cost pricing difficult to implement for aviation charging, but is ineffective in addressing capacity problems and may result in discriminatory practices.

The Commission accepts the representation as a statement of the position of IATA and the aviation community in general. The Commission does not propose to move away from a weight-based methodology for the calculation of ATSC.

The Commission rejects the representation of IATA on marginal cost pricing as a general principle. The Commission itself has used marginal cost pricing as a principle in the setting of certain airport charges. However, the Commission has not come to a conclusion for the purposes of this Determination that marginal cost pricing would promote the

fulfilment of the statutory objective. Accordingly, the Commission has not made any express provision for marginal cost pricing here.

6.5 Statutory Factor (b) – Investment

6.5.1 IAA

Current investment in new systems and expansions of capacity should be seen in the context of:

- The historic failure by air navigation service providers to ensure adequate long term air traffic management (ATM) capacity to meet more rapidly generating market demand;
- The Authority's identified strategic need, in the context of the EU Single European Sky, to capitalise on market opportunities.

The Commission accepts the representation. Provision has been made in the Determination for the Authority to maintain and enhance the safety and quality of the ATM services provided by the Authority. This includes resources for the Authority to upgrade its ATM system to enable it to provide increases in capacity, to achieve increases in productivity and safety as well as to comply with its international commitments under the European Air Traffic Management Programme managed by Eurocontrol. Therefore, the Authority should be well equipped to take advantage of whatever market opportunities and challenges are presented to it providing its customers with reliable, efficient and cost effective TNC systems.

6.6 Statutory Factor (c) – Efficient & Effective Use of Resources

6.6.1 IAA

Studies carried out by the Performance Review Commission of Eurocontrol showed that the Authority's costs were 20% lower than expected in 1998 and 22% lower than expected in 1999. Based on cost drivers such as distance flown, traffic density, average route length, percentage of overflights and time in the system, these studies clearly demonstrate that the Authority is making efficient and effective use of its resources.

The Commission broadly accepts this representation. It notes that, on the basis of a statistical model relating the costs of ATC service provision to certain explanatory variables, the Authority's costs of *en route* services are significantly below those of the other service providers in the study. As regards the charges levied for *terminal* services, information quoted in the Airport and Air Navigation Charges Manual for terminal navigation services in the UK suggest that the Authority's terminal services charges are lower than those of UK providers of such services, though the statistical study of en route costs did indicate the UK's to be much higher than average. The Commission notes that the Authority has made significant efforts to reduce its cost base since September 11th 2001 and to freeze its charges following the recent decline in its traffic and the decline in its forecast traffic growth. Accordingly, the Commission believes that the Authority is attempting to provide a cost effective service to its customers in a difficult trading environment.

6.6.2 IATA

Information from the Eurocontrol Productivity Review Commission (PRC) should be used with caution for the purpose of evaluating efficiency. Comparisons may be flawed if the reports relate to en route, and, as concluded in the PwC Study into European Terminal Navigation Charges (TNC), it is believed that en route is subsidising TNC in most countries.

Terminal charges have been reduced by almost 50% since the Authority assumed responsibility for the charging from Aer Rianta in 1996. While some of this may be attributable to volume increase, we believe that a significant contribution has also come from efficiency and productivity improvements.

The Commission accepts the first part of this representation and has interpreted the Eurocontrol statistical study cautiously. While the comparability of the costs of different service providers is supported by the broad homogeneity of TNC services, hidden cross-subsidies, applied differently in different countries, could act to undermine comparability. The Commission accepts the second part of this representation.

6.7 Statutory Factor (d) – The Authority's Income

6.7.1 IAA

The Authority's en route charges are determined by the Authority and not by Eurocontrol, under the ICAO charging policies which provide for 100% cost recovery and are set in consultation with the consumers and their representative organisations.

In so far as this representation is intended to mean that the Authority can determine its costs and use its own cost figures when applying the Eurocontrol charging principles, the Commission accepts this representation as it understands that this is the intended effect of the Eurocontrol principles.

In so far as this representation is intended to mean that the Authority can act autonomously in the calculation of en-route charges, the Commission does not accept this representation. The Irish Aviation Authority is bound to comply with the Eurocontrol principles. The Eurocontrol principles in relation to en-route charges are based on the execution of a treaty, namely the Multi-lateral Agreement Relating to Route Charges of 1981, to which Ireland is a signatory. Furthermore,

the actual principles of Eurocontrol are adopted and implemented by the contracting states to this treaty and are binding on the contracting states.

6.7.2 IATA

It would be unjustified to consider subsidising TNC charges from en route income, especially as an element of discriminatory cross-subsidy evidently already exists.

The Commission accepts the representation to the extent that it states that the statutory objective cannot be met if there is a cross-subsidy built into the charging structure. This Determination sets a new maximum level of ATSC which is aimed at facilitating the full recovery of costs of these services. The Commission also notes that it has no jurisdiction over en route charges. In addition, the Commission's power over ATSC is limited to setting maximum charges -- it does not set these charges and it cannot direct the Authority to raise its charges.

6.8. Statutory Factor (e) – Operating and Other costs

6.8.1 IATA

With regard to MET costs, IATA understands that some 50% of the total Irish MET costs, or almost Euro 7m, is currently allocated to civil aviation. This is significantly and unjustifiably higher than the average allocation to civil aviation in many other European States, which averages around 20-25%.

IATA is concerned that 100% of this amount is allocated to the en route cost base and charges.

The Commission accepts the representation only to the extent that the allocation of MET costs in such a way as to price the level of ATS below cost is inconsistent with the statutory factor. The Commission notes that some portion of MET costs must be allocated to ATSC. Therefore, the Commission proposes to provide that 20% of MET costs be allocated

by the Authority to ATSC, with such amount to be phased in during the course of the Determination. The 20% allocation of MET costs to ATSC is more consistent with international practice and more consistent with a charging regime based on cost recovery.

The Commission also notes that it has no jurisdiction over the MET costs. Such costs are incurred by way of a levy by the MET on the Authority.

6.9 Statutory Factor (f) – Level of Quality and the Reasonable Interests of Users

6.9.1 IAA

The Authority has received feedback from its customer care programme and other customer consultation processes that it actively supports, indicating that terminal services customers are satisfied with the present service levels and charges. The Authority is always willing to react to issues that are of concern to its customers.

There are effectively no departure delays at State Airports attributable to the Authority. (Authority provides evidence in its response to Annex III of the Commission's Draft Determination.)

There is no agreed methodology enabling delays in terminal areas to be accurately attributed to the various service providers. Work is in progress on this matter in EUROCONTROL. Until such time as this work has been completed, it is most unlikely that generally acceptable performance indicators will emerge that can be used for benchmarking purposes. Data does not exist, the systems needed to record that data do not exist and, therefore, the production of reliable indicators is not possible.

The Commission accepts the representation to the extent that it notes that the Authority has implemented its own service quality programme. The Commission also accepts the representation to the extent that it

notes that the selection and monitoring of performance indicators for ATS may be problematic. However, the Commission does not accept the representation to the extent that it implies that performance standards should only be put in place by Eurocontrol.

6.9.2 IATA

In the context of the incentive to reduce quality in order to increase profitably under price regulation, the necessary quality levels can be ensured through the application of appropriate service standards. These standards should be basic, and established through consultation with users. The Authority should maintain a dialogue on these standards, which will allow them to evolve and develop as required.

The Commission accepts the representation by IATA. However, the quality of service provided by the Authority during the period of the Determination will be taken into account by the Commission in any review.

6.10 Statutory Factor (g) – Cost Competitiveness with respect to International Practice

6.10.1 IAA

The Authority is one of the most cost-effective service providers not only in the area covered by the Eurocontrol Multilateral Agreement but also globally. It has consistently succeeded in maintaining a low en route charge and has a cost base some 22 per cent lower than predicted by the Eurocontrol PRC.

There is less comparative information available on terminal charges but the Authority's are significantly lower than those at comparable airports in the United Kingdom where terminal services have been open to competition for many years.

The Authority has consistently been one of the best value-for-money providers within the Eurocontrol charging area. The Authority took over direct billing for

terminal services on 1 January 1996 and since then has reduced the terminal rate by over 49% from €1.97 to €1 per tonne by 2001.

Insofar and only insofar as the Eurocontrol statistical model (albeit relating the en route costs), the charges quoted in the Air Navigation Charges Manual, and the statements on behalf of international users (IATA) that the IAA's efficiency is satisfactory, support the above representation, it is accepted by the Commission.

The Authority strongly refutes the applicability of the CAA ERG conclusion (cited in the Commission's draft ATSC Determination) about cost efficiency improvements by regulated firms during the 1990s, particularly in the light of its performance to date. The operations, performance and track record of the Authority have delivered significant benefits and cost savings to its airline customers since it was established in 1994, without any independent economic regulation. The Authority's focus on enhanced services, cost-competitiveness and value for money was recognised in 1998 by IATA when it presented the Authority with the IATA Partnership in Productivity Eagle Award.

The Commission rejects the first sentence of this representation insofar as it asserts that the productivity improvements of state-owned (and former state-owned) utilities in other jurisdictions are no guide to the scope for increased productivity in Irish state-owned companies. The Commission accepts the remainder of the representation. Furthermore, the Commission notes that, since the events of September 11th 2001, the Authority has made significant efforts to reduce its cost base and to freeze its charges following the recent decline in its traffic and the decline in its forecast traffic growth. Accordingly, the Commission believes that the Authority is attempting to provide an internationally cost effective service to its customers.

6.10.2 IATA

Benchmarking exercises for cost-competitiveness and operational efficiency purposes are very interesting, but not necessarily meaningful. Comparisons are

difficult in view the lack of a harmonised system. For charging and value for money purposes we find it more meaningful and relevant to compare the year-on-year performance of the individual provider. Traffic and financial data inputs are used to show the historical development and to derive basic yearly performance and productivity indicators (PPI).

The Commission rejects this representation insofar as it argues that year-on-year performance is a sufficient indicator of international cost performance. Year-on-year measures have a role to play in the assessment of changes in competitiveness but on their own they do not take account of levels of efficiency which are more fundamental than efficiency changes.

6.11 Draft Determination

6.11.1 IAA

The definition adopted in the draft Determination of “number of service units” is a significant cause for concern for the Authority, requiring the charging of each individual aircraft on the basis of its specific weight. This would present logistical implementation difficulties, particularly in relation to large airline fleets, would increase complexity in determining billing weight, would add cost to the process and could necessitate the removal of the billing activities from Eurocontrol and the establishment of alternative arrangements.

The Commission notes the Authority’s concerns with respect to the draft Determination, and points out that this Determination takes the form of a maximum limit on overall ATSC revenue, it does not set charges nor prescribe any particular charging structure. Accordingly, the Authority may continue to set charges according to its current practice or change to a different charging methodology, as it sees fit, provided that the average charge per tonne satisfies the Commission’s Determination.

6.12 Explanatory Memorandum

6.12.1 IAA

The Authority believes that the Commission's preliminary view that the Authority's charges fall below the average cost of providing aviation terminal services was formed without taking into account the way in which the cost recovery mechanism operates, particularly in relation to the over-recovery of costs in a previous year.

The Commission rejects this representation. The fundamental reason for the Commission's view that the Authority is not achieving full cost recovery relates to the allocation of MET costs rather than the operation of the cost recovery mechanism.

6.12.2 IATA

The Commission has identified that the Authority's TNC charges fall below the average cost of providing the service. IATA presumes that this has taken into consideration the possible impact of the adjustment mechanism on the cost base. If so, then the Commission's finding may be as a result of incorrect cost-allocation between en route and TNC.

Should the Commission decide to subsequently raise the maximum TNC to a level where the costs of provision of aviation TNS charges would be fully recovered, we would also like assurance that the appropriate compensating reduction will be made to the Authority's en route cost base.

The Commission accepts the first part of this representation insofar as it itself has concerns about the allocation of costs to terminal services charges. The Commission rejects the second part of the representation as it has no powers to require the Authority to change its en route charges, whether to offset any cross-subsidy or for some other reason.

