



# AIRSERVICES AUSTRALIA

## *Price structure options*

## *Discussion paper*



August 2008

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# 1 FOREWORD

Airservices Australia's current pricing arrangements were established during 2004 and 2005, setting the level of prices for each service through to the end of December 2009. Under the current Long Term Pricing Agreement (LTPA), the last price change was on 1 July 2008; a decrease in enroute prices and some small increases in terminal navigation and aviation rescue and fire fighting (ARFF) charges produced a net price reduction to industry.

These changes were the last in the life of the existing agreement. Our prices are now effectively held constant for the next 18 months.

As we announced at our Waypoint Conference, this year we are rebating \$26.3 m back to industry (\$24.4 m due to continued high levels of activity and \$1.9 m for ARFF services affected by the deferral of regulatory changes). This means that, to date, over the life of the agreement we will have rebated back to industry approximately \$50 m.

Additionally, this year we have pursued a policy of refund where a service has not been provided, as in the case of events where segments of airspace were classified as Traffic Information Broadcast by Aircraft (TIBA).

The current prices and the price path were established after lengthy industry consultation and review by the Australian Competition and Consumer Commission (ACCC).

In the lead-up to the development of a new pricing proposal that extends beyond 2009, we are examining options for the structure, basis and mechanism for future pricing arrangements. We are also tentatively forecasting during the resetting of our prices in 2009 that prices on average will come down. However, the outcome will ultimately depend on the results of the work being undertaken to provide five year forecasts of activity levels, operating costs and asset requirements.

This options discussion paper outlines some of the options that we seek industry comment on. It is not exhaustive: other options may be developed during the industry review of this paper and during industry consultation sessions that we propose to run later this year. Nor is it meant to suggest the actual level of charges beyond 2009; rather, it provides an indicative price and base using existing, known parameters and applying the ACCC 'building block' methodology.

The prices have been created to stimulate discussion between Airservices and those users of services and other stakeholders who wish to ensure:

- there is investment in new technologies and procedures to improve the economic and environmental benefit of aircraft operators; and
- Airservices' services are provided in a cost efficient manner.

In a complex operating environment, it is important that we identify fair and equitable methods for recovering terminal navigation, enroute and ARFF service costs.

This discussion paper sets out a range of material to identify the key issues and provides some quantitative and qualitative evaluations of various elements in the price structure mix.

We want your feedback on the issues raised here and we would like feedback on the questions set out in the 'Purpose of the paper' section. Those questions are also posed at the end of each section, to identify the key issues that are discussed in that section. Your answers will give us a clear understanding of your position on the issue and on how it may affect your business.

We will publish your responses to this discussion paper on our website<sup>1</sup>, unless you tell us that your responses, or parts of them, are an in-confidence submission.

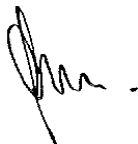
Consultation sessions on the options paper are planned for September and December. We will soon provide further information on the dates, times and locations.

Please send your response (to reach us by close of business on 30 September 2008) to:

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If you have questions on the paper or the process, please do not hesitate to contact myself on 02 6268 4850 (email [andrew.clark@airservicesaustralia.com](mailto:andrew.clark@airservicesaustralia.com)) or Paul Logan, Manager Financial Strategy and Business Performance, on 02 62684241 (email [paul.logan@airservicesaustralia.com](mailto:paul.logan@airservicesaustralia.com)).

Yours sincerely



Andrew Clark  
Chief Financial Officer  
August 2008

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<sup>1</sup> [www.airservicesaustralia.com/pricingproposal](http://www.airservicesaustralia.com/pricingproposal)



## **PART A**

**Purpose of the paper**  
**Pricing options**  
**Risk-sharing arrangements**

## 2 PURPOSE OF THE PAPER

This options discussion paper has been developed to promote discussion on the structure of charging methodologies, revenue drivers and risk-sharing arrangements that Airservices could apply to its services for the next long-term pricing agreement, from January 2010.

The feedback from this paper will give us valuable input on how prices should be structured in the draft pricing proposal that we will develop for release at the end of 2008.

The paper is in three parts to allow readers to determine the level of detail or background they need:

**Part A Purpose of the paper; Pricing options; Risk-sharing**

**Part B Pricing background; Customer and activity demographics; International practice; Economic basis of pricing**

**Part C Appendices**

The remainder of Section 2 gives an overview of the issues raised in the discussion paper, questions that have been posed for feedback, and the process for responding to the paper.

### Part A

#### *Pricing options (Section 3)*

Section 3 discusses the challenge in setting prices in a complex environment that includes prescriptive safety regulation and a diverse customer and stakeholder base with differing sensitivities to price signals.

The section examines opportunities for the disaggregation and differentiation of services to improve price signals, and alternative charging mechanisms and units of charging. The fact that an option or approach is discussed in this paper does not mean that Airservices is endorsing it, or prefers it to another.

Some options have been costed and priced. *Those options have been developed only to provide a sense of the impact of different structural changes and are not a proposal for price change.* The estimated prices have been based on the current cost base, the assets supporting the service, and the current traffic levels. Any new pricing proposal will need to incorporate projections over the life of the new pricing arrangement for operating costs, capital expenditure and traffic volumes. These will be developed over the next few months, in consultation with industry representatives, and then be incorporated into a new long-term pricing proposal that will be presented for comment at the end of this year.

#### *Risk sharing (Section 4)*

Section 4 identifies the challenges in managing the inherent risk of forecasting, how the risk affects different stakeholders, and how it could be managed appropriately.

### Part B

#### *Pricing background (Section 5)*

Section 5 provides an overview of the history of prices for air navigation and ARFF services, as well as the services that are provided.

**Service and customer demographics (Section 6)**

Section 6 gives details on service costs, approaches to cost allocation, trends in aviation activity, as well as who is charged and how much they contribute.

**International Practice (Section 7)**

Section 7 provides an overview of international policies and practices.

**Economic basis of pricing (Section 8)**

Section 8 explores the economic and regulatory regime in which prices are set, how Airservices interprets the requirements, and what principles are relevant for assessing price options.

The section includes an overview of how Airservices’ prices are regulated by the Australian Competition and Consumer Commission (ACCC) under Part VIIA of the *Trade Practices Act 1974*.

The pricing options that are ultimately proposed for implementation will need to be economically efficient and be consistent with a range of regulatory, industry and stakeholder concerns.

**Options paper: the process**

Consultation on this paper will begin in September, with briefing sessions at selected locations across the country and in Singapore for international operators. We will supply further details soon.

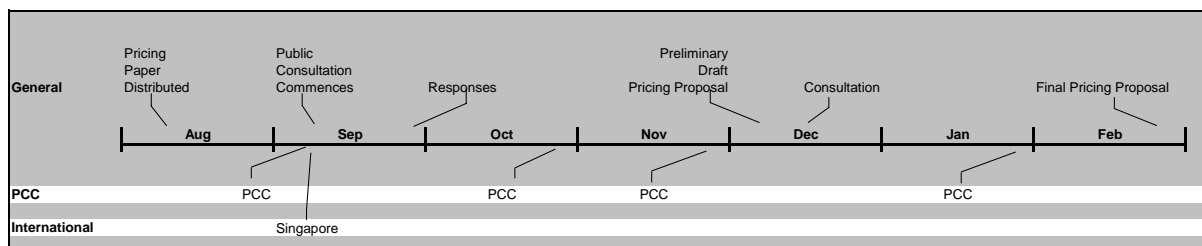
*Responses to the paper are due by 30 September 2008.*

Airservices’ Board will consider the feedback, and a preliminary draft pricing proposal will be developed and issued for public comment in December 2008. Further consultation sessions will be scheduled for December, and feedback will be incorporated into a final pricing proposal in February 2009.

Alongside this consultation process, Airservices will develop the detailed components for the preliminary draft pricing proposal with the assistance of the Pricing Consultative Committee (the proposed members are set out in **Appendix 1**). This will include the development of forecasts for operating costs, capital expenditure, return on capital and traffic volumes. The outcomes of that work will form the basis of the preliminary draft pricing proposal to be distributed for comment in December 2008.

The key dates are set out in Figure 1.

**Figure 1 Timeline for pricing proposal**



The following questions are posed at the end of each section. Responses should be framed to address the questions.

**Charging mechanism**

- 1 What is the appropriate mechanism for Airservices Australia's charges and to what extent is it desirable to allow airlines to negotiate directly with Airservices for the provision of services?
- 2 Do you have a preference for the length of the agreement?

**Charging thresholds**

- 3 What are the appropriate charging thresholds for Airservices' services?
- 4 Is an 'access fee' an appropriate means of charging for smaller operators? If so, what amount would be reasonable, or is the current Light Aircraft Option effective in reducing administrative complexity?

**Pricing for incentives and value**

- 5 How could Airservices objectively measure service quality for reward or penalty?
- 6 Is it desirable for Airservices to commercially negotiate specific value-adding services with customers?

**Units of charge**

- 7 Are weight and distance appropriate bases for charging? If so, should weights and distances be fixed, or vary according to the actual route being flown?

**Enroute**

- 8 For enroute charges, is a change in the charging threshold to target RPT aircraft (as defined for charging purposes) desirable?
- 9 For enroute services, is it desirable to separate the Indian Ocean (or any other piece of oceanic or continental airspace)?

**Terminal navigation**

- 10 For terminal navigation charges, is a change in the charging threshold to target RPT aircraft (as defined for charging purposes) desirable?
- 11 For terminal services, how should the current price caps change over time?
- 12 For terminal services, is any further pooling of costs desirable?

**Aviation Rescue and Fire Fighting**

- 13 For ARFF services, should emergency responses to terminals and airport tenants be separately charged?
- 14 For ARFF services, should the base level charge be automatically adjusted when a new service is introduced?
- 15 For ARFF services, should a change in the category of an airport result in an automatic change in the pricing at that location?

**Risk sharing**

- 16 To what extent is it desirable for airlines to negotiate directly with Airservices for the provision of services?
- 17 What alternative risk-sharing arrangements might the industry wish to pursue?

## 3 PRICING OPTIONS

### 3.1 The pricing challenge

#### 3.1.1 Overview

The key challenge facing Airservices Australia is to establish a charging methodology and pricing structure that enable the pool of air navigation services and ARFF costs to be recovered, while minimising undesirable distortions to airport usage. The ACCC has similarly acknowledged Airservices' 'need to achieve cost recovery while minimising the attendant distortion to allocative efficiency.'<sup>2</sup>

The pursuit of efficient pricing can be at odds with people's concepts of 'fair' pricing. Efficient pricing, just like efficient taxation, is concerned only with minimising the distortion to end users of services. Efficient pricing can require users to help finance services in a manner that is not directly linked to the 'benefits' they derive from using those services.

There are compelling reasons for this apparently counterintuitive suggestion. For example, if recovering the cost of services from those users most likely to benefit results in a dramatic reduction in their demand and there is little or no cost savings to other users, then an economic distortion is created—as the economic value of activity lost in the contraction of one segment is far greater than the value of cost savings achieved in the other. In this circumstance, it may be more efficient to spread cost recovery to all users, irrespective of benefit derived, if that involves a smaller reduction in usage.

Current Civil Aviation Safety Authority regulations, based on International Civil Aviation Organization (ICAO) standards, require the provision of services when passenger or aircraft movements exceed certain thresholds. At relatively low levels of activity at a specific location, just above these thresholds, prices will be significantly higher than at higher volume airports, and indeed may be so high as to preclude the ongoing viability of services at such locations.

On the other hand, it can also be argued that a high price per tonne has little effect on activity at unique or specialised locations, where the trip cost is only part of the overall cost of the visit.

Thus, a key issue to consider in determining the optimal structure of charges, other than the basis of charging (tonnes, passengers or aircraft category), is whether Airservices should continue to set unique prices for each airport (i.e. location-specific pricing) or whether there should be an element of common pricing for similar services provided at different locations.

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<sup>2</sup> ACCC, *Final decision on Airservices Australia price notification*, December 2004, p. 110.

## 3.2 Characteristics of service lines

### 3.2.1 Service line costs

When the current LTPA was being negotiated, overall recovery of costs for Airservices was low and required a modest net price increase of around 6% over the five years to achieve an appropriate rate of return. Underlying this overall level of recovery, enroute services were generating a solid profit, while terminal navigation services and ARFF services were operating at a loss. In particular, regional and general aviation (GA) locations were operating at significant losses.

For regional locations, terminal navigation cost recovery could be achieved through price increases, although they would have to be substantial. However, in the case of GA locations, prices would have needed to increase up to tenfold to reach stand-alone financial sustainability. Consequently, a ‘basin charge’ was developed to recognise the improved safety and efficiency of having a separation of traffic into different locations in a capital city. In addition, overhead and support costs have been allocated on the basis of overall flight activity to reflect a more equitable recovery of those costs across all traffic, thereby moderating the cost impost of largely fixed costs on a regional location, with the primary costs being air traffic controllers and assets actually at the location.

The result of these considerations in the current LTPA was an increase in terminal navigation service prices based on a transition to improved service line cost-recovery over a 5–7 year period. This involved a catch-up in previously capped prices of 16.8%, with maximum annual price increases of 10% per year in any service thereafter. This equated to a maximum cumulative total price increase of 71% for some services over the five-year period.

For ARFF services, while the overall service line required price increases to improve the cost recovery of the service, the single price for base level services was considered the most efficient means for recovering regional location costs.

Supporting this transition to improved levels of terminal navigation and ARFF cost recovery was a cross-subsidy from enroute prices. Rather than reducing the enroute price immediately to a level that generated a level of revenue considered reasonable under the ACCC model, the price was reduced more slowly over the five years to offset the annual shortfall in terminal navigation and ARFF services.

The existing pricing arrangements for each service are set out in **Appendix 2**.

### 3.2.2 Current and ongoing service line profitability

The cost recovery of service lines over the last three years has generally improved against LTPA targets. This has been driven by whole-of-business cost reform to reduce both direct and overhead costs against the LTPA targets and by higher than anticipated activity growth at a number of locations.

As was established under the current LTPA, enroute continues to generate profits that allow ARFF and terminal navigation services to generate less than their full stand alone economic costs. Therefore, there may be opportunities for targeted price reductions in enroute services or a transition to a change in the structure of prices as the profitability of other service lines improves.

The profitability of ARFF as a stand-alone service is moving toward break-even levels (on a full cost allocation basis), and may no longer require the internal subsidy from enroute, as was provided in the current LTPA.

Terminal navigation services as a stand-alone service continues to achieve reasonable levels of cost recovery. However, the recovery levels of segments within the service are mixed:

- Regional locations, which are currently supported by an internal cross-subsidy from enroute, are likely, as a group, to move beyond break-even after the price increase in July 2008 and continued moderate growth in activity each year. Within this group, Coffs Harbour, Albury and Tamworth are still operating at significant losses and would require further price increases ranging from 50% to 400% under the current arrangements to achieve break-even and cover the cost of services provided at those locations (i.e. the air traffic controllers, asset depreciation, maintenance, training etc.).
- The price at military ports remains low as the prices are set to cover the navigation aid services provided at those locations, and do not include the costs of Defence air traffic control services.
- Non-basin radar ports (Cairns, Canberra and Coolangatta) are those locations that have a separate dedicated terminal control unit providing radar approach services. Some locations are achieving sound levels of cost recovery, with some potential for price reductions in the future.
- Basin ports are those co-located airports that operate in a geographic location that segregates larger and smaller aircraft for mutual benefit. In those locations, the General Aviation Aerodrome Procedures (GAAP) airports generate revenues that pay for less than a third of the cost of operating the services there.

### **3.2.3 The price impact at a location**

Prices at a particular location will affect affordability and, ultimately, the viability of services at the location. Elasticity of demand and affordability are hard to quantify, and their determination is an inexact science and depends on a range of other factors including the charging behaviour of the relevant airports.

While prices for many services could be generally considered reasonable from an economic perspective (i.e. they do not inefficiently distort demand), the price of terminal navigation services at regional and GA locations is at a point where demand impacts and affordability are acute issues. This will be an important consideration, and feedback will be important to determine how existing prices impact various businesses and how a change in pricing structure would benefit or harm their ongoing operations.

While price structure will help to deliver more equity in pricing, it is also relevant to consider how the structure will affect the cost of services at various locations.

The rationale for location-specific pricing was that setting a price at a particular location would bring pressure to bear on the cost base at the location to find the optimal level of resources (human and capital) to supply the service. That has occurred to a large extent—with the existing operational regulations, service/procedures offerings and industrial framework, costs have been minimised to a point where any further gains would be marginal.

However, it is also argued that users should only pay for the services that they use and should not have to make a contribution to services in which they have no interest.

Therefore, significant cost improvements can only be achieved through a combination of:

- changing the regulations
- changing the service offering (e.g. the number and type of air traffic controllers and navigation aids at particular locations)
- using alternative procedural or low-cost technological solutions to provide the required safety net
- changing the terms and conditions under which staff are employed.

Recent and emerging trends in industry activity are also changing the shape and nature of our operations. For example, low-cost carriers seeking to open new low-cost leisure market destinations and developments in the resources sector are potentially leading to the need for new tower and ARFF services at locations with relatively low volumes.

Further, at some locations, passenger numbers are increasing at double-digit rates of growth, with turboprop aircraft being replaced by domestic jet services. The increase in the risk profile becomes significant (i.e. greater volume, more passengers, larger and faster aircraft) and, as a consequence, there is a need to support intermediate and low-cost risk mitigators (such as Unicom), below the threshold levels for tower provision.

### **3.2.4 Cost of services**

In the development of the pricing models to compare the various options set out in this paper, it became apparent that the application of previous costing methodologies based on actual staff and assets can be improved.

In the past, pricing models were based on actual staff and asset costs at a location. However, changes in employment conditions, staff mix and the timing of asset replacement projects combine to create quite different operating, maintenance and depreciation costs and asset values.

To maintain some equity across similar service locations, we are looking to adopt standard costing (**Appendix 3**), which will smooth out any anomalies and provide a cost base that better reflects the level of service and types of assets employed at the particular location. Under this methodology, staff and assets for a similar category of service will be costed to a service at the same rate—for example, a standard salary cost for a controller, a standard maintenance charge per asset type, and networked costs for some supporting assets, such as non-directional beacons.

As an example, the cost base at Alice Springs would have been \$2.9 million but will now be \$2.8 million. With the volume of traffic going through that location, the impact from a pricing perspective is marginal (around a \$0.55 reduction per tonne).

### 3.3 Price structure elements

#### 3.3.1 Pricing mechanism—contract/statutory determination

The first element to consider is the mechanism by which charges are levied and their appropriateness for a future LTPA.

Airservices has two mechanisms available for setting charges for its services:

- under contract
- under a statutory determination in accordance with section 53 of the *Air Services Act 1995*.

Currently, almost all customers are charged under a standard terms and conditions contract. Contracts could take the form of a single ‘public’ terms and conditions contract, or could be formulated as bilateral customer-specific contracts. Specific contracts with customers could be an effective way to allow for tailored, value-added service opportunities if they are used appropriately.

Charges under a statutory determination are more rigidly controlled. The Air Services Act prescribes that these charges are subject to:

- ministerial oversight and approval
- ACCC oversight under Part VIIA of the *Trade Practices Act 1974*
- penalties for late payment
- the option for Airservices to impose a statutory lien over an aircraft for unpaid charges.

#### **Question 1:**

What is the appropriate mechanism for Airservices Australia’s charges and to what extent is it desirable to allow airlines to negotiate directly with Airservices for the provision of services?

The lifetime of any agreement is also important. The industry has previously expressed a strong preference for ‘long-term’ certainty in pricing. The current agreement was established to cover a five-year period. A new agreement should have a lifetime that best aligns with trends in the industry and their possible impacts on pricing. Depending on the robustness of predictions of the impact, it might be appropriate to time the end of the pricing agreement to coincide with a major shift in regulations, operational procedures, industry demographics or technology.

#### **Question 2:**

Do you have a preference for the length of the agreement?

#### 3.3.2 Who should be charged?

This question is often contentious. There is a diversity of opinion about who benefits from the services and who drives the cost of the services.

The charging structure issue is usually assessed according to the following principles:

1. Every customer should pay at least the incremental/avoidable cost associated with their use of the service (e.g. the extra costs Airservices incurs as a result of that flight). This recovers incremental ‘usage related’ costs but will generally not recover fixed ‘usage invariant’ costs—which will require a mark up on incremental costs.
2. Any required mark-ups should be lowest for the most price-sensitive customers, and vice versa; that is, where possible, Airservices should recover a greater proportion of fixed costs from those customers whose demand is relatively insensitive to price.
3. Administration and compliance costs should be minimised—suggesting that, where possible, a simple pricing structure is desirable and the revenues collected from individual, or maybe even groups of customers, should exceed the cost of collecting them.

In the development of the current LTPA, the question of who should be charged was a major issue considered by the ACCC, particularly as it related to aircraft that were not regular passenger transport (RPT)—that is, not aircraft that may carry fare-paying passengers (including charter).

Ultimately, the ACCC’s concern was that demand for non-RPT landings had a higher sensitivity to price (higher elasticity of demand), which reflected a lower valuation per landing on the part of the airline (especially for flight training schools). The ACCC was concerned that charging such landings the same price as RPT landings would lead to a significant reduction in non-RPT activity.

While there is some correlation between maximum take-off weight (MTOW) and RPT passengers, it is clear that there are aircraft up to 15.1 tonnes that do not carry fare-paying passengers. In the final ARFF proposal, the ACCC’s concerns were addressed by setting a tonne threshold, above which it is deemed that those aircraft provide an RPT service. Below the threshold, Airservices determines by enquiry with each airline who is registered to provide or does provide some form of regular passenger service, and charges both groups under the same charging model.

For enroute services, the charging threshold is for aircraft operating part or all of their flight under instrument flight rules (IFR). Aircraft operating a flight under visual flight rules (VFR) are not charged.

For terminal navigation services, there is no charging threshold. All aircraft are charged on the basis of a full stop landing. ‘Touch and go’ operations are not charged on an individual basis.

In considering future options, it is possible to argue that, with some exceptions, non-RPT operations do not result in Airservices incurring ‘usage-related’ costs, that they are acutely price sensitive, and that they incur administrative collection costs that may outweigh the price being paid. Some notable exceptions are for training schools at GA aerodromes, where they are a cost driver for Airservices, and for non-RPT aircraft operating into major airports where their operations affect the overall efficiency of the airports.

While these issues are not clear-cut, where there is some benefit there may be some basis for a simple access fee arrangement that retains the appropriate pricing signals, while keeping administrative costs as low as possible.

**Question 3:**

What are the appropriate charging thresholds for Airservices' services?

**Question 4:**

Is an 'access fee' an appropriate means of charging for smaller operators? If so, what amount would be reasonable, or is the current Light Aircraft Option effective in reducing administrative complexity?

### 3.3.3 Pricing for efficiency and value

A key driver of price structure change is the desire to improve the structural alignment of the current pricing arrangement with defined pricing principles. That is, if we disaggregated (unbundled) services into different service offerings and sought to better differentiate between customers, would we move further towards achieving the objectives of the following pricing principles?

- Prices should have a relationship to the cost of providing services.
- Prices should encourage economically efficient resource use and allocation.
- The charging basis should recognise the key drivers giving rise to the need, or trigger, for investment in new services.

A potentially important rationale for a move to disaggregated services is that it may make implementation of value-based pricing easier.

In this paper, the term 'value-based pricing' denotes a framework within which customers can choose whether to acquire certain 'value-added' services if they believe the benefits of doing so outweigh the additional price charged by Airservices.

There may be long-run advantages if Airservices is also exposed to greater risks associated with the quality of services it can offer. For any organisation to run efficiently, it is desirable that it be rewarded for superior performance and penalised for inferior performance.

Currently, Airservices Australia is exposed to both penalty and sanction for the level of its costs during the pricing period. If Airservices spends less than forecast at the beginning of the pricing period, the difference goes straight to its bottom line, and vice-versa. This is true for all variations in operating costs and, as detailed in Section 3 of this paper, for variations in capital expenditure less than 25% of forecast capital expenditure.

By contrast, Airservices faces little or no financial reward or sanction for improving the quality of its services.

A firm operating in highly competitive markets would have an incentive to improve service quality to protect its customer base from competitors. Similarly, it would only have an incentive to lower costs if that did not compromise service quality at any given price. However, creating similar incentives for a regulated business, such as Airservices, requires modifications to the regulatory regime.

Potential regulatory modifications fall into two categories:

1. Use a formula for measuring service quality and determining how variations in the measured quality should be rewarded or penalised.
2. Limit price regulation to a ‘core’ set of services and allow Airservices to commercially negotiate variations to those services with customers, especially if higher levels of service are required by individual users.

The first option will be constrained by how accurately service quality can be measured by applying a formula, and how easily customers can be convinced that any proposed measurement accurately captures quality of service. The complexity of Airservices Australia’s services might create significant obstacles to this approach.

The second option requires Airservices to define a set of basic services that customers could rely on for air navigation. Assuming that such a set can be defined, the ACCC would set prices for those core services. Customers could then negotiate an incremental price for value-added services. Customers would need to be convinced that setting prices for the basic services would give them enough bargaining power to negotiate improvements in service quality at reasonable prices.

The difficulty in accepting value-based pricing might be a concern that Airservices might abuse its flexibility and set prices at unreasonably high levels. That is, instead of using value-based pricing to fund innovation in new services, Airservices might simply use it to raise profit levels for existing services (or for services that would become available in the normal course of events).

To deal with this problem, customers would require a credible ‘fallback’ if Airservices sets prices unreasonably high. This could be achieved through price regulation for the core set of services, for which the ACCC would set prices, and by allowing the definition of ‘core’ services to change over time to include previously introduced value-added services that have been widely taken up and have become ‘core’.

**Question 5:**

How could Airservices objectively measure service quality for reward or penalty?

**Question 6:**

Is it desirable for Airservices to commercially negotiate specific value-adding services with customers?

### 3.3.4 Units of charging

The final pricing structure element is the unit on which prices are levied.

For terminal navigation and ARFF services, there are three bases of charging that could be considered: weight (e.g. MTOW), passenger numbers, and aircraft category movement. For enroute services, distance could also be used.

### ***Weight***

MTOW, measured in tonnes, is a generally accepted and objective basis of charging for air navigation services. This is due to the correlation between weight and passenger numbers, and the publication of the weight in the aircraft's flight manual.

Airservices captures the necessary aircraft-type data through TAAATS (our air traffic control system) and our tower operations, and each aircraft has a published MTOW. While this is an accurate and easily validated measure, recent activity by some carriers, with the assistance of aircraft manufacturers, has seen operators seeking to use multiple or 'flexi-weight' MTOWs for an individual aircraft on different routes.

Another approach or variant on MTOW charging might be a series of weight-based bands (e.g. all aircraft with MTOWs of < 2 tonnes, 2–5.7 tonnes, 5.7–15.1 tonnes, 15.1–30 tonnes etc) or a more general application of the ARFF categories, and a charge on the basis of the average weight of aircraft in that weight band.

### ***Number of passengers carried***

Passenger-based charging has been proposed in the past, but was considered impractical because of inherent uncertainties, including:

- logistical and commercial sensitivity issues in data collection and data upload (and a consequently higher cost of administering our billing system, which would need to be recovered)
- uncertainty about how to charge appropriately for 'passengers' (e.g. are relocating airline staff or infants 'passengers'?)
- the complexity of determining an appropriate rate when passengers stop at different category ports on the same trip.

### ***Types of Operation***

The provision of air navigation and ARFF services is influenced by how different aircraft characteristics (e.g. category, size, and speed) change the risk profile of the underlying safety risk.

Therefore, the rules aircraft fly under (e.g. IFR/VFR), the equipment they carry, the speed at which they travel, their wake turbulence profile, or the size of the aircraft could also be adopted as a basis of charging.

Charging on the basis of the type of operation could be based on a simple movement charge of \$X per landing or flight, or could incorporate weight to retain the economic efficiency of that type of charging.

### ***Distance***

For enroute services, distance is combined with weight as the basis of charges. The distance used in the formula is based on the shortest distance between two points for each route, regardless of the distance flown by the aircraft.

Distance is relevant in enroute services because longer flights usually use more services. They use more air traffic controller time, and make wider use of the enroute surveillance, communication and navigation aid network.

Future options could use distance, with or without a weight or passenger factor, but with a reference to the category of aircraft or operation (e.g. a flat movement fee for the flight, based on a category of operation.)

**Question 7:**

Are weight and distance appropriate bases for charging? If so, should weights and distances be fixed, or vary according to the actual route being flown?

## 3.4 Service-specific options

### 3.4.1 Enroute services

#### *Segmentation of services*

Enroute services are a large bundle of services, including separation, information and briefing services across the whole flight information region (FIR).

Pricing could be made more efficient, equitable and sensitive to investment decisions by aligning it more closely with costs. This could be achieved by disaggregating services into components with different prices for:

- aircraft separation services in controlled airspace
- traffic information services in uncontrolled airspace
- a network of ground-based navigation aids (e.g. VORs, DMEs and NDBs)
- search and rescue times
- flight planning and flight briefing
- use of flextracks
- aeronautical information services.

#### *Location vs network*

Enroute services are currently a single charge across the Australian FIR. More specific charging would be possible by unbundling the component services into subgroups such as:

- separating services according to whether surveillance is provided (higher level of service) or not provided (lower level of service)
- charging differently for Indian Ocean or oceanic operations in general, where the costs per kilometre are significantly lower than in other airspace blocks
- charging separately in the new service delivery environments—upper airspace, East Coast airspace and regional airspace.

### *Unit vs performance/quality-based pricing*

Enroute charges are currently provided on a per unit basis, with no real performance or quality requirements.

Customers expect the lowest cost for basic safety net services and compliance with regulations. It may be appropriate to consider a base-level charge that is determined by the essential services required for safe operations and by the relevant regulations. This could include basic separation and traffic information services, as well as flight planning and briefing.

Where we can add significant value for customers, beyond the underlying safety priority, by improving fuel efficiency, making arrival times predictable and ensuring that flights are as fast as possible, these services could be charged for separately. Particularly for those services that are tailored for a specific customer and could include the use of flextrack arrangements and, in time, user preferred routes and trajectories.

Other quality-based arrangements could include incentives to move to new technologies to improve overall service efficiency and to allow the removal of older, less efficient technologies, such as ground-based navigation aids.

For enroute services, options for disaggregation to improve price transparency and service differentiation range from a networked, aggregated charge to fully disaggregated, value-based service charges.

### *Costed options*

Two options for enroute services have been costed. The estimated prices are presented in the following table. The formulas used to derive the charges are set out in **Appendix 4**.

These options reflect:

1. The impact on the current price if it is adjusted to reflect current costs, current activity levels, the current asset base and a change in the charging threshold to target RPT aircraft and introduce a nominal access fee for other IFR aircraft, as well as the removal of the cross-subsidy of terminal navigation and ARFF services
2. The additional impact of the separation of the single enroute charge into two charges—one for the Indian Ocean and another for the rest of the FIR.

The two options highlight the potential for a price reduction, even after the introduction of a new ‘oceanic’ charge. The main drivers are lower costs than under the current LTPA, the removal of cross-subsidies for terminal navigation and ARFF, and higher activity levels. However, if terminal navigation and ARFF continue to be cross-subsidised, the enroute prices may need to increase by \$0.05 to \$0.10.

**Table 1 Indicative Enroute Prices**

Description	Current Price as at Jul 08	Adjust for current costs, asset and activity; and new threshold	Adjust for current costs, asset and activity; and new threshold + Introduce Indian Ocean Charge
<b>Charging Threshold</b>	All IFR aircraft charged	< 5.7t - RPT charged / access fee for other IFR 5.7t - 15.1t - RPT charged / access fee for other IFR Over 15.1t - All	< 5.7t - RPT charged / access fee for other IFR 5.7t - 15.1t - RPT charged / access fee for other IFR Over 15.1t - All
<b>Basis of Charge</b>	Square root tonnes per 100 kilometres	Square root tonnes per 100 kilometres	Square root tonnes per 100 kilometres
ENROUTE	\$4.18	\$3.98	\$4.12
INDIAN OCEAN	na	na	\$1.70

Note: RPT for charging purposes is defined as aircraft that may carry passengers for hire (including charter), payment of a fee or purchase of tickets to travel on an aircraft, for the purpose of travelling between different locations or in and out of the same location. An aircraft that only carries crew, crew under instruction or non-paying passengers is not an RPT aircraft.

**Question 8:**

For enroute charges, is a change in the charging threshold to target RPT aircraft (as defined for charging purposes) desirable?

**Question 9:**

For enroute services, is it desirable to separate the Indian Ocean (or any other piece of oceanic or continental airspace)?

### 3.4.2 Terminal navigation services

*Segmentation of services*

Terminal navigation services could be disaggregated into separate tower services and approach services. This would align with ICAO recommendations and could allow a differentiation of customer segments (e.g. no approach for VFR operations). However, instead of increasing efficiency, disaggregation might merely make prices more complex.

The introduction of new services must minimise possible distorting effects on current and future operations from the introduction of a new charge at a location.

*Location vs network*

The current charge is usually airport-specific. However, in the larger capital cities where there are two or more significant airports, prices are averaged across the main airport and secondary airports.

*Unit vs performance/quality-based pricing*

The introduction of value-adding services could be supported through separate, value-based charges for specialised services. The charges would in some way reflect the benefits to customers, such as charges for tailored arrivals.

### *Costed options*

For terminal navigation services, two options have been costed. The estimated prices are presented in the following table. The formulas used to derive the charges are set out in **Appendix 4**.

These options reflect:

1. The impact on the current price if it is adjusted to reflect current costs, current activity levels, the current asset base and a change in the charging threshold to target RPT and training school aircraft only, outside the major capital city airports, with an access fee for all others below 15.1 tonnes.
2. The additional impact of pooling radar approach services as a common service cost among those locations with a dedicated radar approach service (i.e. smoothing the cost of radar approach services across Sydney, Melbourne, Brisbane, Adelaide, Perth, Cairns, Canberra and Coolangatta).

The resulting options highlight the potential for price increases or reductions, depending on how costs, activity and asset values have changed. Price changes might result from changes compared to LTPA cost, asset and activity projections, or from the application of standard costing methodologies. For example, Hobart now has more resources and lower activity than projected under the LTPA, and the standard costing approach has increased its underlying asset costs, thereby requiring an increase in the price. Conversely, the opposite has occurred in Rockhampton and Maroochydore, where prices could potentially decline.

A change in the charging threshold is a way to target the drivers of cost, RPT and training operations. However, a nominal annual access fee could then be used as a charge on all aircraft that would not otherwise be charged.

Price capping at high-cost locations has been retained in these examples. Under the current LTPA, capping is funded through the capital city basin methodology, combined with a subsidy from enroute services. If price caps are to be retained in the final pricing proposal, the enroute price and basin charge impacts will continue.

**Table 2 Indicative Terminal Navigation Prices**

Description	Current Price as at Jul 08	Adjust for current costs, asset and activity; and new threshold	Adjust for current costs, asset and activity; and new threshold + Pooled Radar Approach Services
<b>Charging Threshold</b>	All aircraft charged Min charge for all aircraft at major airports	<b>Major International airports:</b> Min charge and charging for all aircraft  <b>Other airports:</b> < 5.7t - Charge RPT and training schools / access fee for all others  5.7t - 15.1t - RPT and training schools / access fee for all others  Over 15.1t - all aircraft	<b>Major International airports:</b> Min charge and charging for all aircraft  <b>Other airports:</b> < 5.7t - Charge RPT and training schools / access fee for all others  5.7t - 15.1t - RPT and training schools / access fee for all others  Over 15.1t - all aircraft
<b>Basis of Charge</b>	per tonne landed	per tonne landed	per tonne landed
<b>REGIONAL</b>			
ALICE SPRINGS <sup>1</sup>	\$12.69	\$12.69	\$12.69
HOBART	\$9.54	\$10.83	\$10.83
LAUNCESTON	\$12.22	\$11.76	\$11.76
MACKAY	\$12.69	\$12.19	\$12.19
ROCKHAMPTON	\$12.69	\$12.10	\$12.10
MAROOCHYDORE	\$12.69	\$12.16	\$12.16
COFFS HARBOUR <sup>1</sup>	\$12.69	\$12.69	\$12.69
ALBURY <sup>1</sup>	\$12.69	\$12.69	\$12.69
TAMWORTH <sup>1</sup>	\$12.69	\$12.69	\$12.69
HAMILTON ISLAND	\$9.20	\$9.05	\$9.05
<b>CAPITAL CITY BASIN</b>			
PARAFIELD <sup>1</sup>	\$12.69	\$12.69	\$12.69
ADELAIDE	\$11.43	\$11.28	\$8.36
ARCHERFIELD <sup>1</sup>	\$12.69	\$12.69	\$12.69
BRISBANE	\$5.83	\$5.78	\$6.18
MOORABBIN <sup>1</sup>	\$12.69	\$12.69	\$12.69
ESSENDON <sup>1</sup>	\$12.69	\$12.69	\$12.69
MELBOURNE	\$5.06	\$4.96	\$5.92
JANDAKOT <sup>1</sup>	\$12.69	\$12.69	\$12.69
PERTH	\$8.63	\$8.16	\$7.31
BANKSTOWN <sup>1</sup>	\$12.69	\$12.69	\$12.69
CAMDEN <sup>1</sup>	\$12.69	\$12.69	\$12.69
SYDNEY	\$5.57	\$5.46	\$5.86
<b>RADAR APPROACH AIRPORTS</b>			
CAIRNS	\$10.95	\$12.57	\$8.12
CANBERRA	\$12.66	\$11.81	\$10.59
COOLANGATTA	\$10.82	\$10.20	\$10.51
<b>NAVIGATION AID AND INFRASTRUCTURE LOCATIONS<sup>2</sup></b>			
DARWIN	\$2.26	\$3.54	\$3.54
TOWNSVILLE	\$2.94	\$4.64	\$4.64

<sup>1</sup> These locations have price caps under the current pricing arrangement.

<sup>2</sup> Services at Darwin and Townsville where there are no Airservices ATC staff are priced to recover infrastructure costs only. Costs at these locations have increased under the standard costing methodology

Note: RPT for charging purposes is defined as aircraft that may carry passengers for hire (including charter), payment of a fee or purchase of tickets to travel on an aircraft, for the purpose of travelling between different locations or in and out of the same location. An aircraft that only carries crew, crew under instruction or non-paying passengers is not an RPT aircraft.

**Question 10:**

For terminal navigation charges, is a change in the charging threshold to target RPT aircraft (as defined for charging purposes) desirable?

**Question 11:**

For terminal services, how should the current price caps change over time?

**Question 12:**

For terminal services, is any further pooling of costs desirable?

### 3.4.3 ARFF services

#### *Segmentation of services*

At their broadest, ARFF services can be categorised into the type of response and the recipient of that response. ARFF services could then be segmented into:

- responses to aircraft crashes or incidents on or in the vicinity of an aerodrome
- monitoring alarms for all buildings and facilities on the aerodrome
- monitoring building alarms for all aviation-related buildings and facilities in the vicinity of the aerodrome
- responding (where it is reasonable to do so, or on the request of another emergency response agency) to alarms and / or fires that are not aviation-related that occur in the vicinity of the aerodrome
- responding (where it is reasonable to do so, or on the request of another emergency response agency) to first aid emergencies that are not aviation-related that occur in the vicinity of the aerodrome

Therefore, ARFF callouts can be to aircraft, aviation-related buildings, other airport buildings and, potentially, non-aviation-related buildings. A large number of responses are to fire alarms and medical emergencies. Accordingly, there may be scope to consider charging differently for these services, particularly for non-aviation or non-aerodrome related responses. As an example, a separate charge could be levied to the airport or a commercial tenant for fire alarm callouts.

Alarm-monitoring services are currently charged at a flat fee, but not for ‘turnouts’. Metropolitan brigades do not charge for a response where services are required, but they charge for responses to false alarms. Consequently, building owners aim to reduce false alarms through improved fire systems and system maintenance, which improves overall safety, reduces demand on the brigades, and frees up capacity.

The Melbourne Metropolitan Fire Brigade charges \$420 per 15 minutes taken to respond to a false alarm. If Airservices charged at that rate, and assuming a 30-minute average response time, we would be billing \$2.1 million a year for alarm monitoring, compared to the \$0.3 million a year we currently bill. If ARFF had spent 30 minutes responding to each alarm last year, we would have spent 52 (24-hour) days responding to fire alarms.

Though, this is a complex issue, and further work is required to clarify the regulatory issues and assess how such a change could be implemented.

#### *Location vs network*

Current ARFF services are based on the principle that the service is to cover 95% of the travelling public. As a result, the current charging arrangement uses a national charge for all aircraft up to and including category 6.

Above that base price, category 7 aircraft or above pay a category-based charge for a particular location.

Under the current LTPA, the national base-level price is not adjusted when a new service is introduced, and the location category charges are not adjusted if a location changes category.

### ***Unit vs performance/quality-based pricing***

Performance-based pricing in ARFF services could be based on overall levels of operational readiness, with rewards for achieving key performance indicators that relate to providing certain categories of readiness at appropriate times.

While this is unlikely to be achieved through current movement-based charges, it may be possible to introduce specific customer contracts to implement such reward mechanisms.

### ***Costed options***

For ARFF services, an option has been costed to identify the impact of current levels of costs, assets and activity, the introduction of category 10 services and new locations on the current price. The estimated prices are presented in the following tables; the formula for deriving the charges is in **Appendix 4**.

These options reflect:

1. The impact on the current price if it is adjusted to reflect current costs, current activity levels and the current asset base, as well as the removal of the enroute subsidy.
2. The additional impact of introducing a category 10 charge and a new service (Broome).

The outcome of these changes is a potential need to increase the national base-level category 6 charge from \$1.81 to \$1.91. This mainly reflects the impact of the removal of the enroute subsidy, and the inclusion of a new service at Broome.

Other changes in the higher category prices mainly reflect differences between current activity levels for those categories at those locations and the levels projected in the LTPA. For example, higher growth in Adelaide for category 8 and 9 and in Perth for category 9 operations could lead to a reduction in these prices, while lower activity in Cairns could result in price increases.

A notional new category 10 service price has been included in the following price table. However, it has been set at the category 9 price because further work is needed to forecast category 10 activity at the relevant locations to determine whether that price should be higher than the category 9 price. Given the low volumes of activity and incremental cost for category 10 services, it is likely that the price for category 10 services will be higher than the category 9 price.

#### ***Question 13:***

For ARFF services, should emergency responses to terminals and airport tenants be charged separately?

#### ***Question 14:***

For ARFF services, should the base-level charge be adjusted automatically when a new service is introduced?

#### ***Question 15:***

For ARFF services, should a change in the category of an airport result in an automatic change in the pricing at that location?

**Table 3 Indicative ARFF Prices (1)**

Description	Current Price as at Jul 08	Adjust for current costs, asset and activity	Adjust for current costs, asset and activity + Category 10 Charges + New Location
Option Description	Price as at Jul 2008	Estimated price using current cost, asset and activity base	
Charging Threshold	< 5.7t - No charge 5.7t - 15.1t - only RPT Over 15.1t - all aircraft Min charge at major airports	< 5.7t - No charge 5.7t - 15.1t - only RPT Over 15.1t - all aircraft Min charge at major airports	< 5.7t - No charge 5.7t - 15.1t - only RPT Over 15.1t - all aircraft Min charge at major airports
Basis of Charge	per tonne landed	per tonne landed	per tonne landed
<b>ADELAIDE</b>			
Category 10	\$9.12	-	\$7.11
Category 9	\$9.12	\$7.11	\$7.11
Category 8	\$9.12	\$7.11	\$7.11
Category 7	\$2.33	\$2.51	\$2.51
Category 6	\$1.81	\$1.91	\$1.91
<b>ALICE SPRINGS</b>			
Category 10	\$1.81	-	\$1.91
Category 9	\$1.81	\$1.91	\$1.91
Category 8	\$1.81	\$1.91	\$1.91
Category 7	\$1.81	\$1.91	\$1.91
Category 6	\$1.81	\$1.91	\$1.91
<b>AVALON</b>			
Category 10	\$1.81	-	\$1.91
Category 9	\$1.81	\$1.91	\$1.91
Category 8	\$1.81	\$1.91	\$1.91
Category 7	\$1.81	\$1.91	\$1.91
Category 6	\$1.81	\$1.91	\$1.91
<b>BRISBANE</b>			
Category 10	\$3.70	-	\$4.56
Category 9	\$3.70	\$4.56	\$4.56
Category 8	\$2.62	\$2.95	\$2.95
Category 7	\$1.93	\$2.13	\$2.13
Category 6	\$1.81	\$1.91	\$1.91
<b>BROOME</b>			
Category 10	-	-	\$1.91
Category 9	-	-	\$1.91
Category 8	-	-	\$1.91
Category 7	-	-	\$1.91
Category 6	-	-	\$1.91
<b>CAIRNS</b>			
Category 10	\$4.76	-	\$6.25
Category 9	\$4.76	\$6.25	\$6.25
Category 8	\$4.76	\$6.25	\$6.25
Category 7	\$2.29	\$2.86	\$2.86
Category 6	\$1.81	\$1.91	\$1.91
<b>CANBERRA</b>			
Category 10	\$7.91	-	\$5.02
Category 9	\$7.91	\$5.02	\$5.02
Category 8	\$7.91	\$5.02	\$5.02
Category 7	\$7.91	\$5.02	\$5.02
Category 6	\$1.81	\$1.91	\$1.91
<b>COOLANGATTA</b>			
Category 10	\$4.01	-	\$4.24
Category 9	\$4.01	\$4.24	\$4.24
Category 8	\$4.01	\$4.24	\$4.24
Category 7	\$4.01	\$4.24	\$4.24
Category 6	\$1.81	\$1.91	\$1.91
<b>DARWIN</b>			
Category 10	\$16.06	-	\$14.53
Category 9	\$16.06	\$14.53	\$14.53
Category 8	\$16.06	\$14.53	\$14.53
Category 7	\$3.39	\$4.35	\$4.35
Category 6	\$1.81	\$1.91	\$1.91
<b>HAMILTON ISLAND</b>			
Category 10	\$1.81	-	\$1.91
Category 9	\$1.81	\$1.91	\$1.91
Category 8	\$1.81	\$1.91	\$1.91
Category 7	\$1.81	\$1.91	\$1.91
Category 6	\$1.81	\$1.91	\$1.91

Note: RPT for charging purposes is defined as aircraft that may carry passengers for hire (including charter), payment of a fee or purchase of tickets to travel on an aircraft, for the purpose of travelling between different locations or in and out of the same location. An aircraft that only carries crew, crew under instruction or non-paying passengers is not an RPT aircraft.



**Table 4 Indicative ARFF Prices (2)**

Description	Current Price as at Jul 08	Adjust for current costs, asset and activity	Adjust for current costs, asset and activity + Category 10 Charges + New Location
Option Description	Price as at Jul 2008	Estimated price using current cost, asset and activity base	
Charging Threshold	< 5.7t - No charge 5.7t - 15.1t - only RPT Over 15.1t - all aircraft Min charge at major airports	< 5.7t - No charge 5.7t - 15.1t - only RPT Over 15.1t - all aircraft Min charge at major airports	< 5.7t - No charge 5.7t - 15.1t - only RPT Over 15.1t - all aircraft Min charge at major airports
Basis of Charge	per tonne landed	per tonne landed	per tonne landed
<b>HOBART</b>			
Category 10	\$6.73	-	\$5.63
Category 9	\$6.73	\$5.63	\$5.63
Category 8	\$6.73	\$5.63	\$5.63
Category 7	\$6.73	\$5.63	\$5.63
Category 6	\$1.81	\$1.91	\$1.91
<b>LAUNCESTON</b>			
Category 10	\$1.81	-	\$1.91
Category 9	\$1.81	\$1.91	\$1.91
Category 8	\$1.81	\$1.91	\$1.91
Category 7	\$1.81	\$1.91	\$1.91
Category 6	\$1.81	\$1.91	\$1.91
<b>MACKAY</b>			
Category 10	\$1.81	-	\$1.91
Category 9	\$1.81	\$1.91	\$1.91
Category 8	\$1.81	\$1.91	\$1.91
Category 7	\$1.81	\$1.91	\$1.91
Category 6	\$1.81	\$1.91	\$1.91
<b>MAROOCHYDORE</b>			
Category 10	\$1.81	-	\$1.91
Category 9	\$1.81	\$1.91	\$1.91
Category 8	\$1.81	\$1.91	\$1.91
Category 7	\$1.81	\$1.91	\$1.91
Category 6	\$1.81	\$1.91	\$1.91
<b>MELBOURNE</b>			
Category 10	\$3.03	-	\$3.23
Category 9	\$3.03	\$3.23	\$3.23
Category 8	\$2.29	\$2.48	\$2.48
Category 7	\$1.89	\$2.04	\$2.04
Category 6	\$1.81	\$1.91	\$1.91
<b>PERTH</b>			
Category 10	\$5.08	-	\$4.12
Category 9	\$5.08	\$4.12	\$4.12
Category 8	\$3.01	\$2.96	\$2.96
Category 7	\$2.01	\$2.16	\$2.16
Category 6	\$1.81	\$1.91	\$1.91
<b>ROCKHAMPTON</b>			
Category 10	\$1.81	-	\$1.91
Category 9	\$1.81	\$1.91	\$1.91
Category 8	\$1.81	\$1.91	\$1.91
Category 7	\$1.81	\$1.91	\$1.91
Category 6	\$1.81	\$1.91	\$1.91
<b>SYDNEY</b>			
Category 10	\$2.45	-	\$2.61
Category 9	\$2.45	\$2.61	\$2.61
Category 8	\$2.08	\$2.22	\$2.22
Category 7	\$1.86	\$1.99	\$1.99
Category 6	\$1.81	\$1.91	\$1.91
<b>TOWNSVILLE</b>			
Category 10	\$8.47	-	\$8.59
Category 9	\$8.47	\$8.59	\$8.59
Category 8	\$8.47	\$8.59	\$8.59
Category 7	\$8.47	\$8.59	\$8.59
Category 6	\$1.81	\$1.91	\$1.91
<b>YULARA</b>			
Category 10	\$1.81	-	\$1.91
Category 9	\$1.81	\$1.91	\$1.91
Category 8	\$1.81	\$1.91	\$1.91
Category 7	\$1.81	\$1.91	\$1.91
Category 6	\$1.81	\$1.91	\$1.91

Note: RPT for charging purposes is defined as aircraft that may carry passengers for hire (including charter), payment of a fee or purchase of tickets to travel on an aircraft, for the purpose of travelling between different locations or in and out of the same location. An aircraft that only carries crew, crew under instruction or non-paying passengers is not an RPT aircraft.

## 4 RISK SHARING

### 4.1 Overview

The current regulatory arrangements involve establishing per unit prices at each airport for five years based on an assessment of location-specific costs and forecast location-specific volumes. Unit prices are essentially the former divided by the latter.

The current arrangements also allow for the level of prices to be adjusted if total volumes differ from forecast by more than 5% per year in the aggregate. However, it is important to understand that this is not an automatic adjustment to prices and is not carried out by adjusting prices at each airport to reflect variations from forecast volumes at that airport.

Rather, any adjustment would only be triggered by the percentage change in aggregate volumes at *all* airports. In effect, the adjustment ensures that Airservices Australia's total revenues do not vary materially from estimates of its total costs as a result of volume forecasting errors. The adjustment does not ensure that revenues at each airport do not vary significantly from estimates of costs at that airport.

A consequence of the current arrangements is that (airlines landing at) individual airports face the 'risk' that errors in the volume forecast for the facility will not be reflected in price changes until the beginning of the next regulatory price review.

In addition to the volume triggers, during the long-term price notification process Airservices provided a five-year pricing plan that gave certainty for users and contained elements of risk share based on activity or performance in the delivery of infrastructure.

Prices can be reviewed and adjusted if:

- new regulatory or customer requirements call for a change in service levels that results in a net change in costs
  - actual capex as a result of revised priorities and/or timing is expected to differ from the forecast level by 50% or more within a single year, or by 25% cumulatively (i.e. less than a 75% performance against program)
- or
- aggregate activity levels deviate above or below forecast levels by 10% or more within a 60-day period and/or by 5% in a financial year.

### 4.2 Future options for risk-sharing arrangements

Given the strong activity growth, the risk-sharing arrangement has not been tested in a downturn, but a new pricing arrangement should also consider whether and how downside risk could be better managed.

Further exploration of risk-sharing arrangements would also need to assess whether they:

- will distort prices for non-contracted purchasers
- simplify administration arrangements

- provide a true risk share.

It might be possible to negotiate directly with airlines. If both an airline and Airservices agree that an alternative pricing structure is more efficient (involves superior economic incentives and/or allocation of risks), then the airline could choose to pay according to a mutually agreed pricing structure for an agreed period as a single fixed charge or as a single fixed charge plus a uniform price.

For example, Airline ABC and Airservices could agree that, rather than paying the current regulated prices, it would be more efficient if it paid for example:

- a fixed annual charge of \$20 million  
and/or
- a uniform price per tonne at all locations, which is substantially lower than the current average per tonne charge.

Such a pricing structure may be more attractive to both parties because:

- Airline ABC would have an increased incentive to land at all airports and especially at smaller regional airports where terminal navigation and ARFF charges per tonne are high (where the marginal cost to Airservices of an extra landing is close to zero)
- Airservices' revenues will have less exposure to volume variations, as its per tonne prices would be lower (although it would face the risk that Airline ABC took market share from other airlines, resulting in a loss of revenue to Airservices equal to the difference in the regulated and negotiated per tonne charge on that gained market share).

It is also possible that, rather than negotiating an Australia-wide agreement, an airline may negotiate prices at a particular location (or set of locations).

Given that 98% of Airservices' revenue is generated from fewer than 50 customers (representing 1.5% of the total number of customers), a direct contractual arrangement based on a lump sum fee would reduce administrative costs.

***Question 16:***

To what extent is it desirable for airlines to negotiate directly with Airservices for the provision of services?

***Question 17:***

What alternative risk-sharing arrangements might the industry wish to pursue?



## **PART B**

**Pricing background**  
**Customer and activity demographics**  
**International practice**  
**Economic basis of pricing**

## 5 PRICING BACKGROUND

### 5.1 Pricing history

This section reviews pricing history from before the 1980s to the post-9/11 era.

#### 5.1.1 Pre 1980s

For the past 60 years, the Australian Government has sought to recover the cost of air navigation facilities and services from the aviation industry. This initially took the form of a partial recovery, but the government affirmed a policy of full cost recovery in 1961.

Despite that policy, costs were discounted substantially (25%–50%) until the late 1980s, in recognition of various community benefits generated by providing these services.

In 1983, the government commissioned an independent inquiry, headed by Henry Bosch, into aviation cost-recovery. The Bosch report found much fault with the costing and pricing of airways services, mainly related to the lack of connection between charges and costs.

#### 5.1.2 1980s

Following the Bosch report, service line pricing structures, which broadly form the basis of the current service line charges, were introduced late in the 1980s to promote ‘user pays’ principles. There were four forms of charging:

- **Terminal Navigation Charge:** A single network price for tower-related services, based on the MTOW of the aircraft landing at control towered airports. The charge applied to all avtur-fuelled aircraft and to avgas-fuelled aircraft at capital city primary airports only.
- **Enroute Charge:** A single network price based on the square root of the MTOW of the aircraft and the distance flown for services provided in flight planning and in-flight operations. The charge applied to all avtur-fuelled aircraft.
- **Avgas Excise:** An excise (expressed as cents per litre) was applied to all avgas fuel purchased in Australia and was automatically remitted to Airservices (previously CAA). The charge was based on the estimated cost of providing air navigation services to GA operators and was considered to be the most administratively feasible solution for those operators.
- **Rescue and Firefighting Service Charge:** A single network price based on the MTOW of the aircraft landing at airports with an ARFF service. The charge applied to all avtur- and avgas-fuelled aircraft weighing more than 2.5 tonnes.

#### 5.1.3 1990s

In the 1990s, Airservices reviewed the economic efficiency of these charges, taking into consideration the government’s then-new National Competition Policy, emerging changes in the ACCC’s methods of price regulation (e.g. CPI–X) and the perceived inequities of network cross-subsidies and poorly targeted fuel levies.

As a result of that review, Airservices removed the fuel levy and network-based terminal navigation and ARFF charges to introduce location-specific charging arrangements for ARFF

(in 1997) and terminal navigation (in 1998). The change was strongly challenged by GA operators (mainly flying training operators), but was endorsed by the ACCC with support from airlines and the Aircraft Owners and Pilots Association. The ACCC decided that, on balance, the new charging method promoted better incentives for efficient investment by Airservices and moved closer to user-pays principles. These charges were also supported by the government, which provided a \$9 million per year subsidy to cap the prices at GA and regional airports.

The new charges were then reviewed and adjusted on an annual basis to achieve a target revenue amount. Prices reduced on average across these services as result of consistent revenue growth and cost reduction strategies under the organisation's business transformation program.

#### **5.1.4 Post-9/11**

In June 2003, Airservices notified the ACCC of its intention to temporarily increase prices following the terrorist attacks of 11 September 2001, the collapse of Ansett, the Iraq War and the outbreak of SARS (sudden acute respiratory syndrome).

The ACCC objected to the increase on the basis that it did not address the commission's preference for a longer term arrangement. The ACCC encouraged Airservices to consult stakeholders to resolve questions about capital expenditure, efficiency targets and activity forecasts.

Airservices began extensive consultations in August 2003, with a view to establishing a longer term pricing path. The process involved the formation of a committee from a cross-section of international, major domestic airlines, regional airlines, industry associations, representatives from airports and the general aviation industry.

The committee agreed to adopt the ACCC's 'building block' model to determine an 'allowable revenue', approved the use of independent consultants to determine key parameters, and agreed that five years was the appropriate length for the agreement. The committee then progressively worked through each element and, through detailed analysis and the work of independent consultants, agreed:

- the target return on capital
- the capital value of existing assets
- the forecast costs by service and location
- the proposed capital expenditure program
- the forecast activity levels.

Airservices recognised that representatives of regional and GA operators had been difficult to engage in the consultation process and were not satisfactorily represented by the committee. Consequently, an extensive consultation begun in June 2004 included on-airport public meetings, and a website was established to publish detailed location-specific cost and activity information. More than 600 submissions were received in response to the consultation.

The prime concern expressed by the regional and GA operators was that a transition to full location-specific pricing based on fully allocated costs was untenable and would result in

business closures and dysfunctional behaviour at smaller locations. Respondents believed that these services should instead be funded from either government subsidy; community service obligations; a return to full network pricing; the introduction of network pricing within each metropolitan city basin; or a return to the fuel levy system that existed before the introduction of location-specific pricing in 1998–99.

The resulting pricing proposal sought to balance these concerns in a viable pricing strategy that also reflected the parameters agreed to by the committee. In particular, the proposed pricing path featured:

- a phasing in of higher prices, offsetting the impact of the expiration of the government subsidy for regional and GA tower services in June 2005
- a revised cost-allocation methodology for overhead and distributed costs based on aviation activity levels that takes into account users' capacity to pay
- the adoption of a 'basin' concept, in which the primary capital city airports subsidise the co-located GA aerodromes to maintain the overall efficiency of the airports in that basin.

Additionally, it was agreed that prices could be reviewed during the course of the agreement to share the risk for changed regulatory or customer requirements and substantial capital expenditure or activity-level variations.

The ACCC endorsed the terminal navigation and enroute services prices for introduction on 1 January 2005. While the ACCC agreed to the overall 'allowable revenue' for ARFF services, it objected to the prices, expressing concern about the efficiency of the basis for imposing ARFF charges. In particular, the price charged to smaller operators at those airports where an ARFF service exists or will exist did not appear to be related to the impact of those operators on Airservices' costs.

This then led to further detailed consultation with industry during 2005, when Airservices developed a charging methodology options paper, which was provided to the ACCC, customers and stakeholders on 22 August 2005. That options paper reviewed three charging options, the basis of charging and a range of risk-share arrangements. Ultimately, the preferred model adopted was a hybrid ('base level service charge plus incremental category charge') for aircraft with MTOW greater than 5.7 tonnes. That model was most likely to promote allocative efficiency and address the objections previously raised by the ACCC.

The ACCC endorsed the new model on the basis that there was no competition for ARFF services and that, therefore, on balance the proposed model provided a more economically efficient outcome than the previous simple weight-based location-specific charge. This underscored the difficulty of resolving a complex array of stakeholder impacts arising from safety regulation requirements for services that do not consider how the service should be funded.

In addition, the current ARFF prices have introduced the differentiation of fare-receiving aircraft operators (between 15.1 tonnes and 5.7 tonnes, only commercial operators pay), from private operators and those operators below 5.7 tonnes (who incur no charge).

## 5.2 Existing prices and structure

### 5.2.1 Overview

Airservices Australia's prices are currently segmented into three services: enroute, terminal navigation and ARFF.

### 5.2.2 Enroute services

Enroute services primarily cover the separation of aircraft and traffic information services outside tower and approach airspace. The services include:

- aircraft separation in controlled airspace using VHF and HF communications
  - under radar surveillance
  - under ADS-B
  - where no surveillance technologies are available (procedural)
- traffic information in uncontrolled airspace using VHF and HF communications
  - under radar surveillance
  - under ADS-B
  - where no surveillance technologies are available
- a network of ground-based navigation aids at locations where no terminal navigation services are provided, including VORs, DMEs and NDBs
- search and rescue times
- alerting
- flight planning
- flight briefing
- flextracks
- aeronautical information services
  - procedure design
  - authorship of written publications (e.g. aeronautical information publications)
  - cartography for maps and charts.

Aircraft flights that operate under IFR at any time during the flight are charged for enroute services. Aircraft flying VFR fly free of charge.

The charge is based on a combination of the aircraft's MTOW and the shortest fixed distance designated for each route. The formula for the charge is:

$$\text{Aircraft} < 20 \text{ tonnes:} \quad \text{Charge} = \text{Price} \times \text{MTOW} \times \text{Distance} / 100$$

$$\text{Aircraft} > 20 \text{ tonnes:} \quad \text{Charge} = \text{Price} \times \sqrt{\text{MTOW}} \times \text{Distance} / 100$$

It is a single charge that applies across the whole Australian FIR. The differentiation between the two formulas is to reflect the correlation between aircraft weight and passengers on

board. For aircraft less than 20 tonnes, there has tended to be a linear correlation, while for aircraft greater than 20 tonnes there tends to be a better correlation with the square root function.

Current prices out to the end of 2009, as well as where and when these services are provided, are set out in **Appendix 2**.

### **5.2.3 Terminal navigation**

Terminal navigation services primarily cover services in tower and approach airspace to aircraft arriving at a location where a tower service is in operation. The services include:

- separation services in:
  - tower airspace
    - under radar surveillance
    - under visual surveillance
  - approach airspace
    - under radar surveillance
    - under procedural rules where there are no surveillance technologies
- surface movement
  - separation in runway, taxiway and manoeuvring area
  - traffic information in apron areas
- navigation aids at the airport, including ILS, VOR, DME, NDB
- traffic information
- automatic terminal information service
- briefing services
- aeronautical information services
  - NOTAM
  - procedures design
  - document authorship
  - cartography for maps and charts.

All IFR and VFR flights are charged for a full-stop landing at a location where there is a tower open for operations.

Where circuit training is being conducted, a single landing charge applies when the aircraft lands after its training session; each ‘touch and go’ is not charged.

The charge also applies for practice instrument approaches.

Where an aircraft lands within a control zone, but not at the aerodrome, 50% of the charge applies. This is mainly applied for helicopter operations and for aircraft operating at closely or co-located runway strips (e.g. 50% of the charges at Hobart apply at Cambridge).

Ultralight aircraft are not charged.

The charge is based on the MTOW of the aircraft. The formula for the charge is:

$$\text{Charge} = \text{Price} \times \text{MTOW}$$

The charges for terminal navigation are a combination of location-specific and ‘basin’ charges. The basin applies to major and GAAP airports within a major capital city basin—the charges at the major airport help to cover the cost of the smaller airports (e.g. Kingsford Smith supports Bankstown and Camden; Tullamarine supports Essendon and Moorabbin). This method reflects the greater efficiency of having multiple airports segregating traffic into more homogeneous traffic types to reduce the complexity of the services and improve overall safety.

Current prices out to the end of 2009, as well as where and when these services are provided, are set out in **Appendix 2**.

#### **5.2.4 Aviation rescue and fire fighting**

Airservices’ ARFF services include the following services:

- responses to aircraft crashes or incidents on or in the vicinity of an aerodrome
- monitoring alarms for all buildings and facilities on the aerodrome
- monitoring building alarms for all aviation-related buildings and facilities in the vicinity of the aerodrome
- responding (where it is reasonable to do so, or on the request of another emergency response agency) to alarms and / or fires that are not aviation-related that occur in the vicinity of the aerodrome
- responding (where it is reasonable to do so, or on the request of another emergency response agency) to first aid emergencies that are not aviation-related that occur in the vicinity of the aerodrome

In some major locations there are dedicated resources for non-airside responses to ensure that airside responses are always ready and available.

ARFF charges are based on a combination of the category and the MTOW of the aircraft.

The category of the aircraft is in accordance with the ICAO classification that is determined from the length and width of the fuselage of the aircraft. This category is also linked to the resources (staff and fire retardant) that must be available to respond to an emergency.

There are no ARFF charges for aircraft with MTOW less than 5.7 tonnes.

Charges apply for all aircraft over 15.1 tonnes and only RPT aircraft with MTOW between 5.7 and 15.1 tonnes.

The charges for category 6 aircraft and below are based on a single nationwide charge that assumes services below this level are in place to cover all fare-paying passengers.



Charges for category 7 and above are location-specific and reflect the additional cost that is incurred at that location to service each larger category of aircraft.

The charge is based on the MTOW of the aircraft. The formula for the charge is:

$$\text{Charge} = \text{Price (for relevant aircraft category)} \times \text{MTOW}$$

Current prices out to the end of 2009, as well as where and when these services are provided, are set out in **Appendix 2**.

## 6 CUSTOMER AND ACTIVITY DEMOGRAPHICS

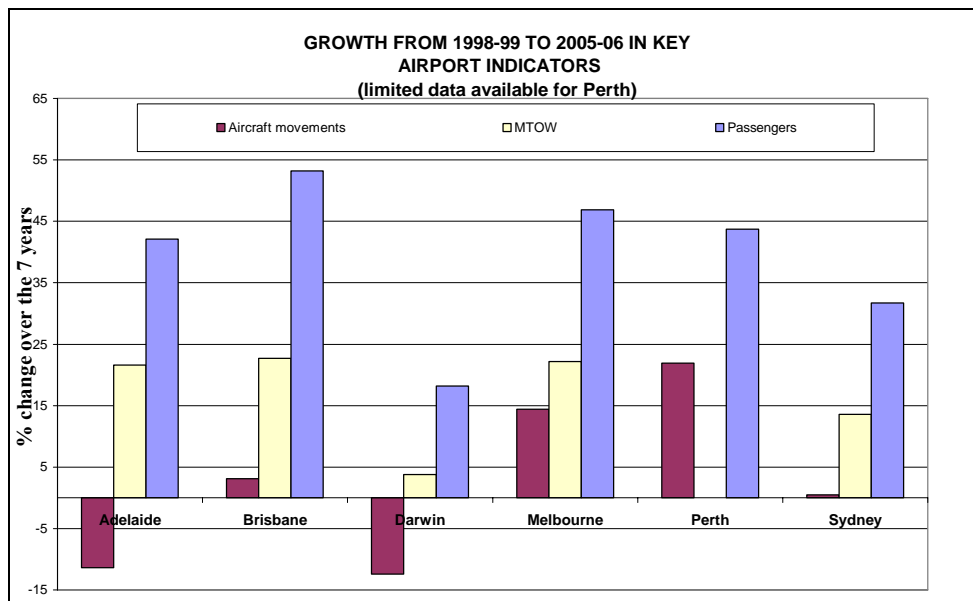
### 6.1 Activity trends—movements/weight/passengers

The industry is changing over time with the introduction of more efficient aircraft that can be turned around quickly, as operators seek to increase the productivity of their fleets and flight crews.

In the past, the impact of Airservices prices on regular public transport jet operations was not considered material, as there was a relatively homogeneous service offering from most airlines, with moderate passenger load factors and high yield. With the entry of low-cost operators, passenger load factors have increased 10%–20% and yield has been squeezed, with a resulting increase in the sensitivity of those operations to all support costs, including Airservices' charges.

As can be seen from Figure 2, the growing use of larger, more efficient aircraft (i.e. aircraft with a lower weight per passenger) and higher load factors have delivered significant growth in passenger numbers, with only moderate growth in MTOW and a marginal increase in the number of flights. Figure 2 shows the total percentage change over the period from 1998–99 to 2005–06 for aircraft movements, landed weight (MTOW) and passengers.

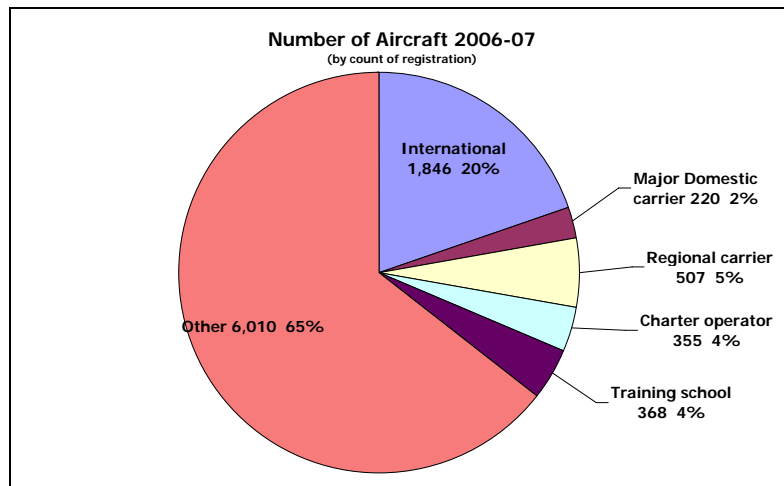
**Figure 2 Growth in key airport indicators**



### 6.2 Aircraft

There are some 9,300 aircraft on the Airservices aircraft billing system. In addition, there are another 3,000 aircraft that appear on the Civil Aviation Safety Authority register and more than 2,000 ultralight aircraft that do not incur any Airservices charges. Figure 3 shows the estimated number of these aircraft by type of operation.

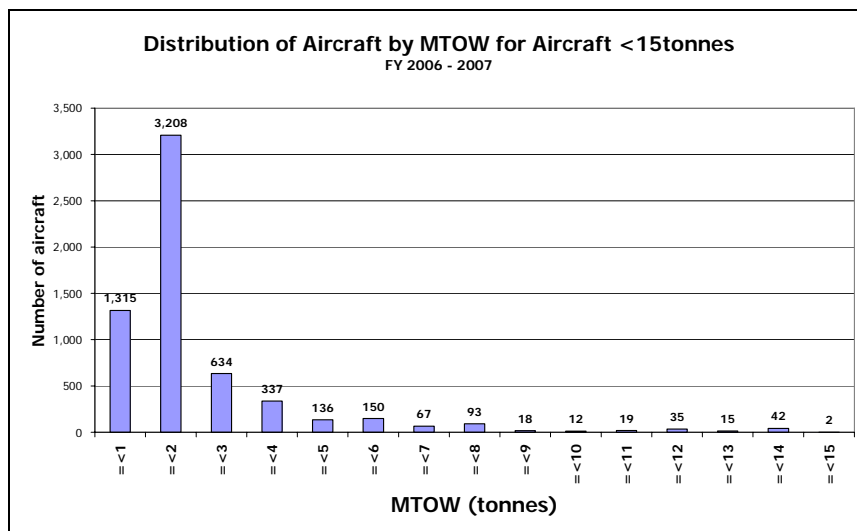
**Figure 3** Number of aircraft, 2006–07



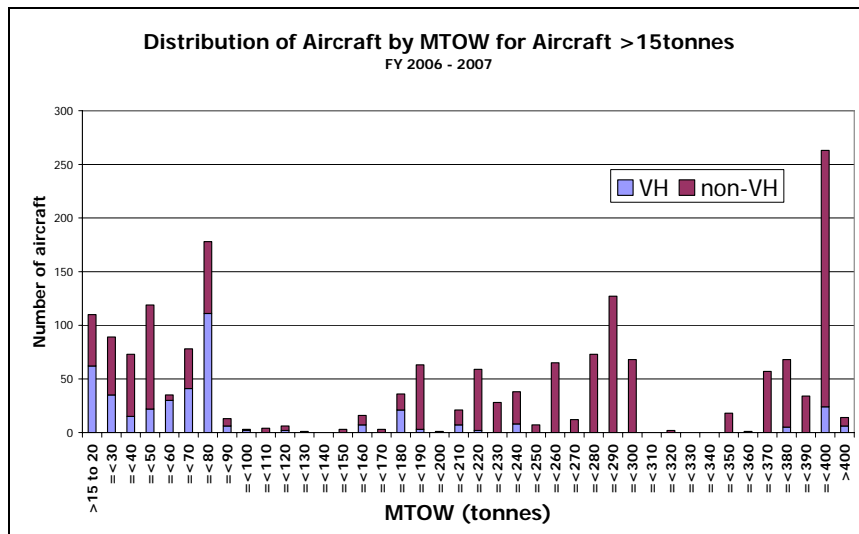
These aircraft range in weight from 0.27 tonnes to 413 tonnes (or 565 tonnes, if the A380 is included). Their distribution across the weight spectrum is concentrated into a number of broad general categories (as highlighted in Figures 4 and 5):

- GA (less than 5.7 tonnes)
- small regional airline and charter operators (5.7 tonnes to 15 tonnes)
- medium sized regional RPT airline operations (15 tonnes to 50 tonnes)
- large domestic RPT airline operations (60 tonnes to 100 tonnes)
- medium sized international RPT operations (150 tonnes to 300 tonnes)
- large international RPT operations (350 tonnes +).

**Figure 4** Aircraft distribution, by MTOW (< 15 tonnes)



**Figure 5 Aircraft distribution, by MTOW (> 15 tonnes)**



The smaller aircraft also make up a larger proportion of flight activity by number of flights, mainly reflecting high-frequency circuit training concentrated at GAAP locations. This is highlighted in Figure 6, which shows aircraft flight activity by broad MTOW groupings:

**Figure 6 Number of flights, by broad MTOW groupings (September quarter, 2007)**



While the frequency of flights is lower for larger aircraft, they contribute most of our revenues. Of those aircraft weighing more than 15.1 tonnes (mostly RPT), 2,573 aircraft<sup>3</sup> contribute \$671 million towards the total revenue of \$679 million (i.e. 98.8%). Around 400 aircraft weigh between 15.1 tonnes and 5.7 tonnes (these are mainly regional airline operators and charters). Training schools (as best we can identify them) are estimated to comprise around 368 aircraft, paying charges of around \$2.4 million per year, mainly at GAAP locations. An estimated 6,010 aircraft below 5.7 tonnes (and not flown by significant training

<sup>3</sup> Note: The use of different aircraft by international carriers for the same route overstates this representation; that is, the international carriers use the same type of aircraft each week/month, but schedule different aircraft, which are counted based on numbers of registrations.

schools), representing 65% of the total billable aircraft, are mainly aeromedical and private aircraft operating out of regional and GAAP locations; they contribute \$4.0 million.

The significance of these customer demographics was clear during the analysis of the ARFF pricing framework, where it was apparent that the large bulk of our costs was driven by the entry and operation of large RPT aircraft (predominantly the three large domestic carriers) on all regional routes and international aircraft into major hubs.

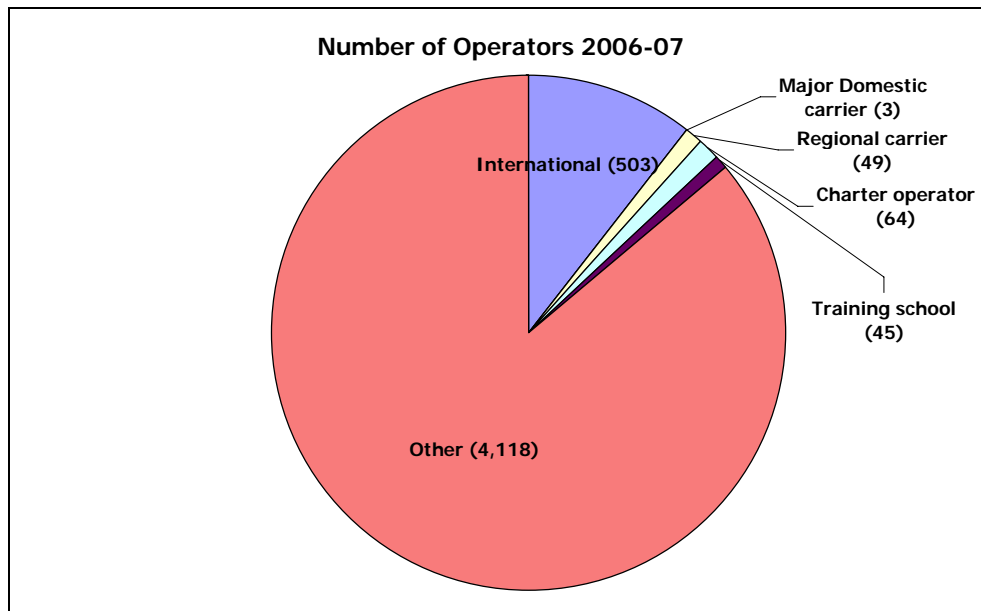
Given this demographic, it becomes apparent that in a number of locations the need for our services would be avoided, but for the larger carriers. This reflects the underpinning principles of the establishment criteria for both tower and ARFF services that are designed mainly to protect fare-paying passenger movements. There may be arguments, as were adopted in the ARFF pricing structure, to create weight-based thresholds for terminal navigation and enroute services, under which no charges or limited charging applies.

This argument does not hold true all the time, as in the case of GAAP aerodromes where services are established for other risk-based factors (e.g. numbers of aircraft operating in circuits).

### 6.3 Customers

The total number of billable customers (company groups and individuals) is only 4,782, compared to the number of billable aircraft of 9,300. Of those customers, the vast are light aircraft operators (see Figure 7).

**Figure 7 Number of operators, 2006–07**



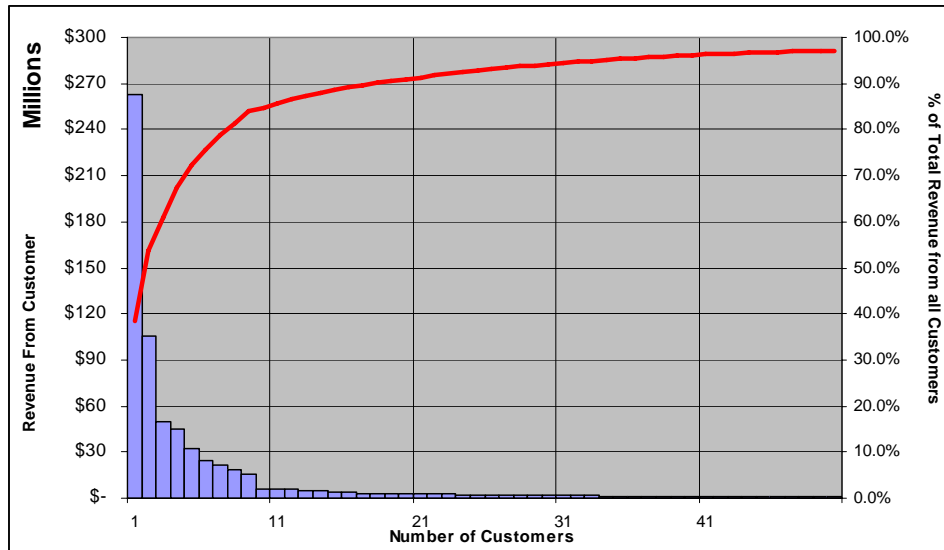
Conversely, revenues are generated predominantly from large airlines (see Table 5). Of Airservices’ customer base, the top 10 customers generate 86% of revenue and the top 40 almost 97%. While their operations are fewer and less frequent than light aircraft operations, international, major domestic and regional carriers produce 98.8% of revenue.

**Table 5 2006–07 revenue**

Customer segment	Revenue	%
International airlines (inc. Qantas Intl)	\$318.07 m	46.7%
Major domestic airlines	\$301.42 m	44.4%
Regional carriers (inc. Qantas regionals)	\$51.77 m	7.6%
Charter operations (estimate)	\$2.41 m	0.4%
Training schools (estimate)	\$1.78 m	0.3%
GA (less than 5.7 t)	\$4.04 m	0.6%
Total	\$679.49 m	

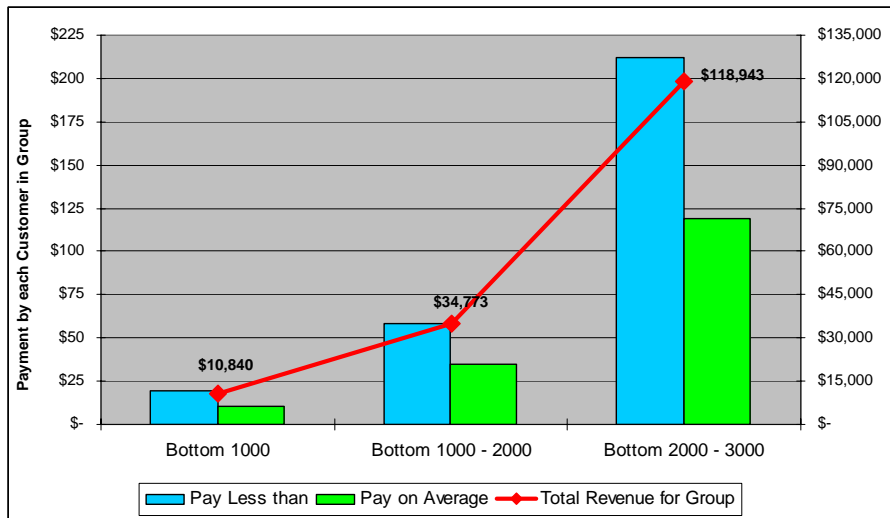
This is significant for our billing arrangements, especially in the light of the trend in Figure 8. After the first nine customers, the contributions of individual customers fall away quickly.

**Figure 8 Revenue per customer, all operators**



At the other extreme, around 2,000 customers *together* pay less than \$50,000 per year. Out of the total customer base of 9,300, 33% of our billable customers contribute only \$120,000 per year to our revenue (as shown in Figure 9). These customers use our services infrequently and are mainly transport (i.e. not training) flights. In this segment, 1,674 operators pay less than \$250 per year; of those, 833 pay less than \$50 per year.

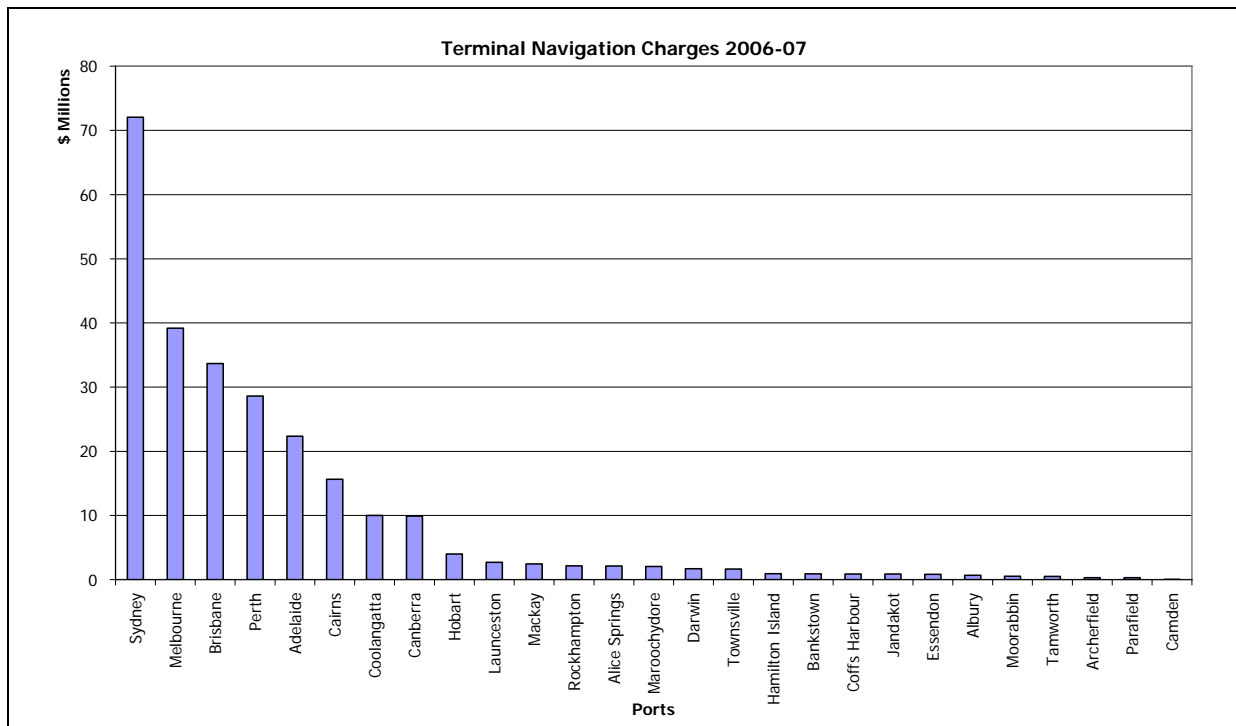
**Figure 9 Revenue per customer, smaller operators**



## 6.4 Airports

Ninety per cent of terminal navigation revenues are generated at the top eight airports (Sydney–Canberra in Figure 10). This is significant for pricing structure and cross-subsidisation, particularly for basin and ARFF category-based pricing.

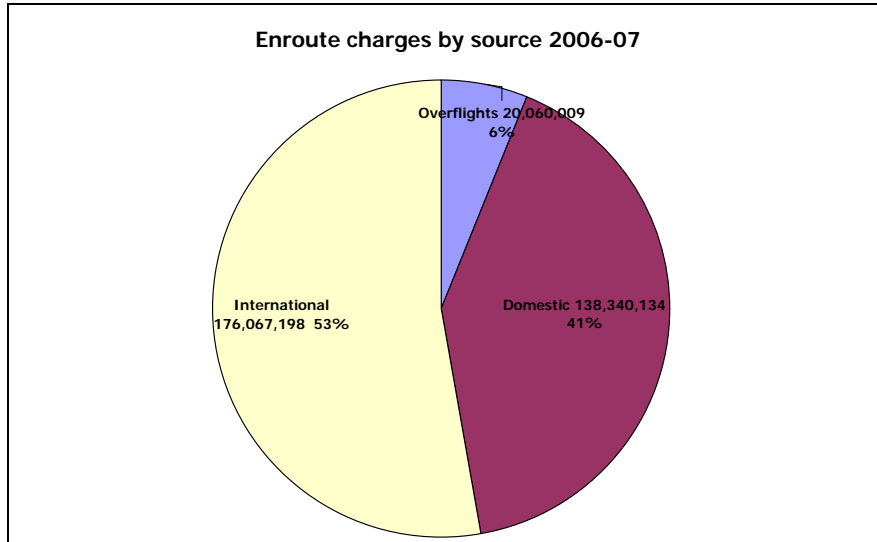
**Figure 10 Terminal navigation charges, 2006–07**



## 6.5 Enroute

International operations contribute more than 60% of enroute revenues, as shown in Figure 11. Note that revenues from international carriers operating on domestic legs (e.g. Melbourne–Sydney) are classified as domestic enroute revenues in Figure 11.

**Figure 11 Enroute charges, by source, 2006–07**



## **7 INTERNATIONAL PRACTICE**

### **7.1 Guidelines from the International Civil Aviation Organization**

A key principle of ICAO is that foreign-based international carriers be treated the same as domestically based international carriers in pricing and access to aeronautical services.

ICAO recommends that the following principles be applied when establishing the cost basis for air navigation services charges:

- The cost of services to be shared is the full cost of providing the services, including appropriate amounts for cost of capital, depreciation of assets, and the costs of maintenance, operation, management and administration.
- The costs of air navigation services provided during the approach and aerodrome phase of aircraft operations should be identified separately.

ICAO acknowledges that air navigation services may produce enough revenue to exceed all direct and indirect operating costs and so provide for a reasonable return on assets including a contribution to necessary capital improvements.

ICAO recommends an equitable allocation of the costs of air navigation services among aeronautical users, and that costs be allocated so that no user is burdened with costs that are not attributable to it. This equates to ‘user pays’.

ANSP charges should not be imposed in a way that discourages the use of facilities and services necessary for safety, or discourages the introduction of new aids and techniques. Any charging system should take into account the cost of providing air navigation services, the effectiveness of the services, and the financial situation of the users and the providers. ICAO also considers that there should be a gradual progression to full cost-recovery.

For enroute charges, ICAO recommends that charges be based on the great circle distances or other commonly agreed distance flown and the aircraft weight. The aircraft weight should be applied using a weight scale with broad intervals, which should be standardised as far as possible. The weight scale should take into account, less than proportionally, the relative productive capacities of the different aircraft types concerned.

### **7.2 International Air Transport Association**

International Air Transport Association policy on setting user charges for ANSPs is broadly consistent with ICAO principles: transparency, consultation, cost-relatedness, absence of cross-subsidisation, and non-discrimination between different types of users.

### **7.3 Other air navigation service providers**

The way aviation charges are determined by various ANSPs reflects the legislative framework in the particular country, various political and historical factors, and the relative efficiency of the ANSP. Making comparisons between ANSPs is difficult, and some methods for calculating aviation charges are much more complex than others.

In general, MTOW is the key determinant of aviation charges. The complexity and weight categories applied vary significantly between ANSPs. For enroute charges, virtually all ANSPs charge according to the MTOW and the distance travelled within the flight information region.

The treatment of general aviation differs substantially between ANSPs. Typically, ANSPs encourage GA not to use major airports, and they usually price services in a ‘less than commercial’ manner.

Table 6 summarises the charging regimes for large commercial ANSPs. More detailed analysis is set out in **Appendix 5**.

**Table 6 Charging regimes, large commercial ANSPs**

<b>Country</b>	<b>Terminal navigation</b>	<b>Enroute</b>	<b>Network or location</b>
Australia: Airservices Australia	MTOW. Rates vary between airports.	MTOW and distance	Predominantly location
New Zealand: Airways Corp NZ	MTOW. Rates vary between airports. One rate for a range of non-major airports.	MTOW and distance	Combination of network and location
Canada: NavCanada	MTOW	MTOW and distance plus communication charges and a flat North Atlantic facilities charge	Network
South Africa: ATNS	MTOW, and whether or not landing at Johannesburg International Airport.	MTOW and distance, and country in which flight originated	Predominantly network-based, with some allowance for different charges at Johannesburg
Germany: Deutsche Flugsicherung	MTOW	MTOW and distance	Network
United Kingdom: NATS	MTOW. Rates vary between airports.	MTOW and distance (for Shanwick FIR a flat fee per flight plan)	Predominantly location

Note: Some European and UK tower services are provided by private airport operators.

## 8 ECONOMIC BASIS OF PRICING

### 8.1 Price regulation by the ACCC

Airservices Australia's prices for enroute, terminal navigation and ARFF services are subject to ACCC review under Part VIIA of the *Trade Practices Act 1974*.

Under those arrangements, the ACCC must have particular regard to:

- the need to maintain investment and employment, including the influence of profitability on investment and employment
- the need to discourage a person who is in a position to substantially influence a market for goods or services from taking advantage of that power in setting prices
- the need to discourage cost increases arising from increases in wages and changes in conditions of employment inconsistent with principles established by relevant industrial tribunals.

Any consideration of these criteria is subject to any direction issued by the government.

The ACCC has advised that, in interpreting these provisions and obtaining an appropriate balance, it will assess the relative economic efficiency of the proposed prices, encompassing the following elements:

- *productive efficiency*, which occurs when firms produce goods or services at least cost
- *allocative efficiency*, which occurs when resources are used in areas where they provide the greatest value to society as a whole
- *dynamic efficiency*, which occurs when firms have appropriate incentives to invest, innovate and improve quality or reduce costs over time.

In applying this framework, the ACCC considers that the criteria can generally be met by economically efficient prices that reflect an efficient cost base and a reasonable rate of return on capital.

Underpinning this is the ACCC's current 'building block' approach (see **Appendix 6**), which sets total revenues equal to the sum of:

- a return *on* assets—calculated as the regulated asset base (RAB) times the weighted average cost of capital (WACC)
- a return *of* assets (depreciation of the RAB)
- operating expenses and tax.

The value of the RAB reflects a historical valuation of Airservices' assets, with new capital expenditure being added to it and depreciation being deducted. The RAB is adjusted for inflation over time. To set total revenues on a forward-looking basis, Airservices must forecast both future operating expenses and future capital expenditure (as the latter effects the forecast value of the RAB).

The building block approach determines total revenues. However, Airservices needs to have a methodology for determining how to recover those revenues in prices. Specifically, we must determine:

- what activities are charged (e.g. do we have separate charges for terminal navigation, enroute and ARFF services?)
- how those activities are charged (e.g. do we charge on the basis of MTOW, passengers, flight, aircraft category, MTOW/km, etc.?)
- which activities are charged the most or the least (e.g. what percentage of total building block revenues do we recover from terminal navigation versus enroute services?)
- the forecast sales of activities (so that prices can be calibrated to provide Airservices with its required revenue).

## **8.2 Airservices' approach to pricing**

In assessing the feasibility and viability of various alternative approaches to pricing, Airservices considers the following issues to be relevant.

- Prices should encourage economically efficient resource allocation:
  - Overall prices should seek to cover costs and provide an acceptable rate of return.
  - The price for a particular service should cover its direct or marginal cost, and preferably make a contribution to overheads and return. How much of a contribution to overheads should depend on the sensitivity of the activity to prices charged (the least price-sensitive activities should make the greatest contribution to overheads).
  - Safety, our No. 1 priority, must not be compromised by our pricing arrangements (e.g. our pricing structure should not discourage airlines from making their operations more safe).
  - Prices should be set to encourage the efficient allocation of, and investment in, resources by Airservices, the airlines and airports. This includes incentives for the adoption of emerging technologies and the need to provide Airservices with reserves to meet future capital investment.
  - The charging basis should recognise the key drivers giving rise to the need (or trigger) for the service.
  - Prices subject to economic regulation by the ACCC must meet the regulator's criteria.
- Prices should conform to reasonable notions of fairness (e.g. the allocation of overhead costs among customers should not be capricious).



# **PART C**

# **Appendixes**

## **Appendix 1: Pricing Consultative Committee**

The proposed Pricing Consultative Committee will be established to include broad industry representation. The committee mirrors the Industry Steering Committee established during the development of the existing LTPA:

- Board of Airline Representatives Australia
- International Air Transport Association
- Regional Aviation Association of Australia
- Royal Federation of Aero Clubs of Australia
- Australian Airports Association
- Qantas
- Jetstar
- Virgin Blue
- Regional Express
- Tiger Airways
- Emirates
- Air New Zealand.

## Appendix 2: Current prices

### Enroute prices

If all or any part of a flight operates under IFR, the enroute charge for the whole flight in an Australian FIR is:

For aircraft with an MTOW up to 20 tonnes:

$$\text{Rate} \times \text{distance} \times \text{weight in tonnes} / 100$$

For aircraft with an MTOW of 20 tonnes or more:

$$\text{Rate} \times \text{distance} \times \sqrt{\text{weight in tonnes}} / 100$$

Where the **Rate** is:

MTOW	From 1 January 2005	From 1 July 2005	From 1 July 2006	From 1 July 2007	From 1 July 2008
20 tonnes or more	4.42	4.37	4.26	4.22	4.18
Up to 20 tonnes	0.99	0.98	0.95	0.94	0.93

## Terminal navigation prices

The charge for terminal navigation facilities and services when a control service is available is for each:

- landing
  - practice instrument approach
- or
- practice instrument approach immediately followed by a landing, at an aerodrome with a control service for an aircraft with an MTOW of 5.7 tonnes or more.

<b>Aerodrome</b>	<b>From 1 January 2005 \$/ tonne</b>	<b>From 1 July 2005 \$/ tonne</b>	<b>From 1 July 2006 \$/ tonne</b>	<b>From 1 July 2007 \$/ tonne</b>	<b>From 1 July 2008 \$/ tonne</b>
Adelaide	11.38	11.43	11.43	11.43	11.43
Alice Springs	8.67	9.54	10.49	11.54	12.69
Albury	8.67	9.54	10.49	11.54	12.69
Bankstown	8.67	9.54	10.49	11.54	12.69
Brisbane	5.79	5.83	5.83	5.83	5.83
Cairns	10.22	10.95	10.95	10.95	10.95
Camden	8.67	9.54	10.49	11.54	12.69
Canberra	11.10	12.21	12.66	12.66	12.66
Coffs Harbour	8.67	9.54	10.49	11.54	12.69
Coolangatta	10.82	10.82	10.82	10.82	10.82
Darwin	3.10	2.89	2.68	2.47	2.26
Essendon	8.67	9.54	10.49	11.54	12.69
Hamilton Island	6.28	6.91	7.60	8.36	9.20
Hobart	8.67	9.54	9.54	9.54	9.54
Jandakot	8.67	9.54	10.49	11.54	12.69
Launceston	8.67	9.54	10.49	11.54	12.22
Mackay	8.67	9.54	10.49	11.54	12.69
Maroochydore	8.67	9.54	10.49	11.54	12.69
Melbourne	4.03	4.43	4.87	5.06	5.06
Moorabbin	8.67	9.54	10.49	11.54	12.69
Parafield	8.67	9.54	10.49	11.54	12.69
Perth	8.63	8.63	8.63	8.63	8.63
Rockhampton	8.67	9.54	10.49	11.54	12.69
Sydney	5.57	5.57	5.57	5.57	5.57
Tamworth	8.67	9.54	10.49	11.54	12.69
Townsville	4.40	4.03	3.67	3.30	2.94

## Aviation rescue and fire fighting prices

The charge per tonne for ARFF facilities and services is for ‘target aircraft’ with an MTOW between 5.7 tonnes and 15.1 tonnes and all aircraft with an MTOW of 15.1 tonnes or more for each ICAO aircraft category type. The charge is for each:

- landing
- practice instrument approach
- or
- practice instrument approach immediately followed by a landing

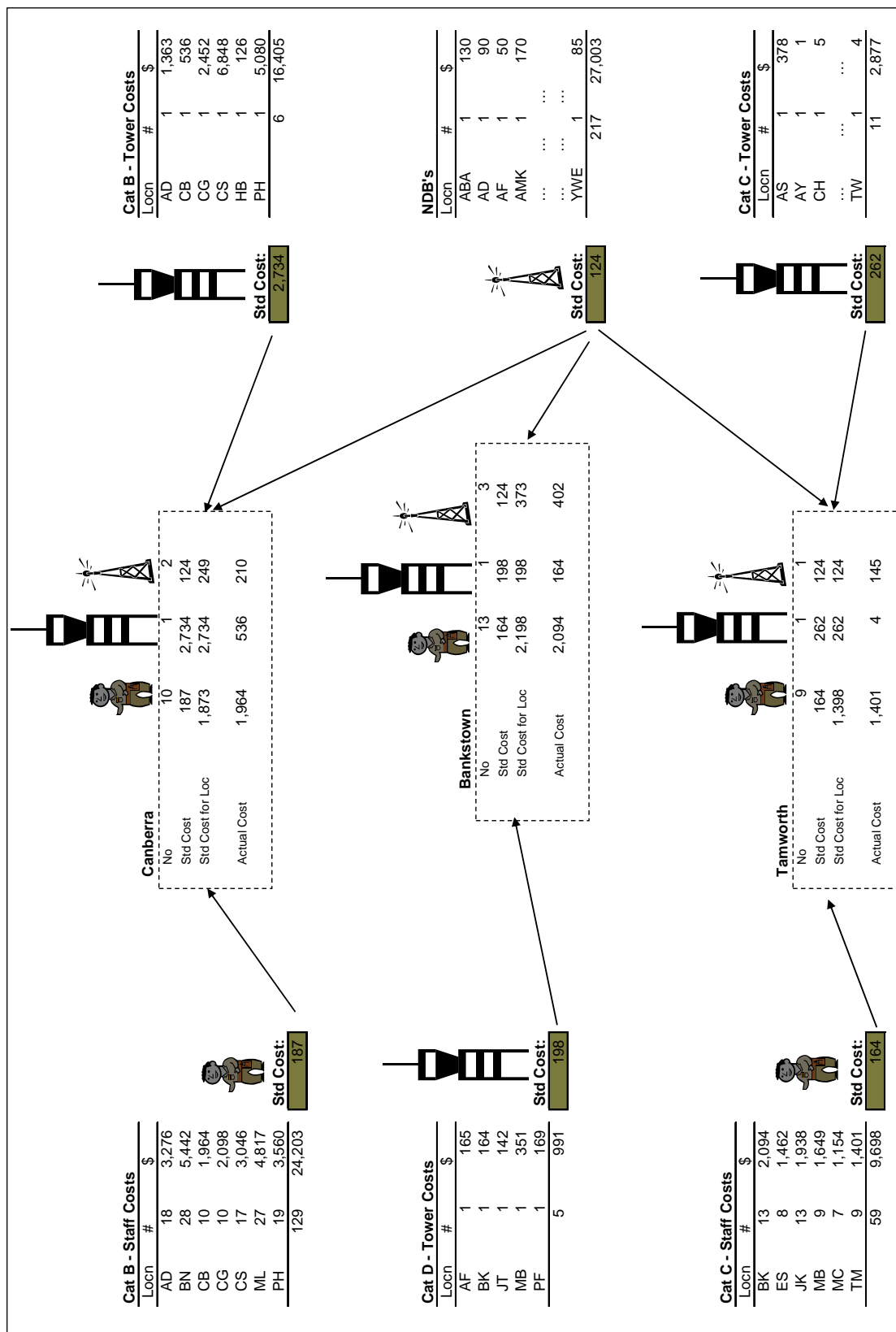
where ‘target aircraft’ refers to those aircraft that are deemed to be RPT aircraft with an MTOW between 5.7 tonnes and 15.1 tonnes.

For charging purposes, ‘RPT aircraft’ is defined as an aircraft that may carry passengers for hire (including charter), payment of a fee or purchase of tickets to travel on an aircraft, for the purpose of travelling between different locations or in and out of the same location. An aircraft that only carries crew, crew under instruction or non-paying passengers is not an RPT aircraft.

### Price per tonne from 1 July 2008

ARFF location	Aircraft category			
ARFF	9	8	7	6 (and below)
Adelaide	9.12	9.12	2.33	1.81
Alice Springs	1.81	1.81	1.81	1.81
Avalon	1.81	1.81	1.81	1.81
Brisbane	3.70	2.62	1.93	1.81
Cairns	4.76	4.76	2.29	1.81
Canberra	7.91	7.91	7.91	1.81
Coolangatta	4.01	4.01	4.01	1.81
Darwin	16.06	16.06	3.39	1.81
Hamilton Island	1.81	1.81	1.81	1.81
Hobart	6.73	6.73	6.73	1.81
Launceston	1.81	1.81	1.81	1.81
Mackay	1.81	1.81	1.81	1.81
Maroochydore	1.81	1.81	1.81	1.81
Melbourne	3.03	2.29	1.89	1.81
Perth	5.08	3.01	2.01	1.81
Rockhampton	1.81	1.81	1.81	1.81
Sydney	2.45	2.08	1.86	1.81
Townsville	8.47	8.47	8.47	1.81
Yulara	1.81	1.81	1.81	1.81

## Appendix 3: Standard costing approach



## Appendix 4: Revenue pool formula

### Enroute

#### 1. Single Enroute Charge

$$ER_p = \frac{MAR_{ER}}{\left(\sqrt{FT_{ER}} \times (DIST \div 100)\right)}$$

Where:

- $ER_p$  is the Enroute Price
- $MAR_{ER}$  is the maximum allowable revenue for the Enroute Service
- $\sqrt{FT_{ER}}$  represents the forecast summation of the square root of the MTOW of each aircraft that is liable for enroute charges. This is represented more precisely by  $\sqrt{FT_{ER}} = \sum_{i=0}^{i=n} \sqrt{MTOW_{ER_i}}$  where  $i$  is the flight and  $MTOW_{ER_i}$  is the enroute MTOW for the respective flight
- $DIST$  is the forecast distance flown

#### 2. Two Enroute Charges: Indian Ocean and Domestic (non-Indian Ocean component of Australia's FIR)

The price of enroute services provided within the Indian Ocean component of Australia's FIR is given below:

$$IER_p = \frac{MAR_{IER}}{\left(\sqrt{FT_{IER}} \times (DIST_i \div 100)\right)}$$

Where:

- $IER_p$  is the Indian Ocean Enroute Price for flights in the Indian Ocean component of Australia's FIR.
- $MAR_{IER}$  is the maximum allowable revenue for the attributable to the Indian Ocean Enroute Service
- $\sqrt{FT_{IER}}$  represents the forecast summation of the square root of the MTOW of each aircraft that is liable for enroute charges in the Indian Ocean component of Australia's FIR. This is represented more precisely by  $\sum_{i=0}^{i=n} \sqrt{MTOW_{IER_i}}$  where " $i$ " is the flight and  $MTOW_{IER_i}$  is the enroute MTOW for the respective flight in the Indian Ocean component of Australia's FIR.
- $DIST_i$  is the forecast distance flown within the Indian Ocean component of Australia's FIR.

The price of enroute services in the non-Indian Ocean component of Australia’s FIR (or Domestic component of Australia’s FIR) is given below:

$$DER_P = \left( \frac{MAR_{DER}}{\sqrt{FT_{DER}} \times (DIST_D \div 100)} \right)$$

Where:

- $DER_P$  is the Domestic Enroute Price for flights in the Domestic component of Australia’s FIR (or non-Indian Ocean component of Australia’s FIR)
- $MAR_{DER}$  is the maximum allowable revenue attributable to the Enroute Service provided within the Domestic component of Australia’s FIR (or non-Indian Ocean component of Australia’s FIR)
- $\sqrt{FT_{DER}}$  represents the forecast summation of the square root of the MTOW of each aircraft that is liable for enroute charges in the Domestic component of Australia’s FIR .

This is represented more precisely by  $\sum_{i=0}^{i=n} \sqrt{MTOW_{DER_i}}$  where “i” is the flight and

$MTOW_{DER}$  is the enroute MTOW for the respective flight in the Domestic component of Australia’s FIR.

- $DIST_D$  is the forecast distance flown within the Domestic component of Australia’s FIR

## Terminal Navigation

### 1. Current Price

The price per tonne of maximum take-off weight (MTOW) is calculated according to the following formula:

$$P_A = \frac{MAR_A}{FT_A}$$

Where:

- $P_A$  is the price per tonne of MTOW for all aircraft landing at airport A.
- $MAR_A$  is the currently estimated maximum allowable revenue ( $MAR_A$ ) at airport A which is also equal to location specific costs plus an allocation of TN costs that are common across airports; and
- $FT_A$  is the forecast tonnes landed at airport A.

Note, that General Aviation Approach Procedures (GAAP) airports have been consolidated into a ‘basin’ (“B”).

For example, Parafield has been consolidated with Adelaide Airport into an ‘Adelaide Basin’. Furthermore, increases in Parafield’s prices have been capped at 10% per year. The prices in the capital city basin (Adelaide) have been adjusted to recoup the shortfall in Parafield’s MAR. See following:

$$P_{CC} = \frac{MAR_{NCC} + MAR_{CC} - R}{FT_{CC}}$$

Where:

- $P_{CC}$  is the capital city location price within in a basin
- $MAR_{NCC}$  is the maximum allowable revenue for the GAAP airport consolidated in the basin (where NCC refers to the “non-capital city” aerodrome in the basin)
- $MAR_{CC}$  is the maximum allowable revenue for the Capital city location consolidated in the basin
- R is the revenue to be recouped from the GAAP location at it’s capped price
- $FT_{CC}$  is the forecast tonnes for the capital city location within the basin

## 2. Pooled Approach

Formulae are as per 1, *Current Price*. However, Allowable Revenue for Approach services have been pooled and reallocated across radar locations based on the proportion of tonnes landed.

Allowable Revenue at a Radar Location:

$$MAR_{RL} = TWR_{MAR} + APP_{PMAR}$$

Where:

- $MAR_{RL}$  is the maximum allowable revenue at radar locations (these locations currently include Adelaide, Brisbane, Cairns, Canberra, Coolangatta, Melbourne, Perth and Sydney).
- $TWR_{MAR}$  is the maximum allowable revenue for the tower portion of a location’s service provision
- $APP_{PMAR}$  is the maximum allowable revenue at a the radar location based on the pooling of approach service costs:

$$APP_{MAR} = AMAR \times \left( \frac{RL_{TA}}{ARL_T} \right)$$

Where:

- AMAR is the sum of maximum allowable revenue for approach services at all radar location
- $RL_{TA}$  is the forecast tonnes landed at Radar Location A
- $ARL_T$  is the sum of the forecast tonnes landed at all Radar Locations

## Aviation, Rescue and Fire Fighting (ARFF)

The base level component price per tonne of MTOW is calculated according to the following formulae:

$$P_6 = \frac{\text{Cat}_6 \text{MAR}_6}{\text{FT}_{1+}}$$

Where:

- $P_6$  is the price per tonne of MTOW for all Category 6 (and below) aircraft. This excludes aircraft weighing less than 15.1 tonnes. Aircraft operators with aircraft that have an MTOW that is less than 15.1 tonnes but greater than 5.7 tonnes are included if the aircraft is used for regular passenger transport;
- $\text{Cat}_6 \text{MAR}_6$  is AsA's estimate of the Maximum Allowable Revenue (MAR) of providing Category 6 ARFF services. This is calculated as per "Table 1" below; and
- $\text{FT}_{1+}$  is the total forecast tonnes landed for all aircraft. This excludes aircraft weighing less than 15.1 tonnes. Aircraft operators with aircraft that have an MTOW that is less than 15.1 tonnes but greater than 5.7 tonnes are included if the aircraft is used for regular passenger transport.

In the case of aircraft classified in ARFF Categories greater than 6 the formulas specified below are applicable.

$$P_{7A} = \frac{\text{Cat}_{7A} \text{MAR}_{7A}}{\text{FT}_{7+A}} + P_{6A}$$

Where:

- $P_{7A}$  is the price per tonne of MTOW for all Category 7 aircraft landing at airport A;
- $\text{Cat}_{7A} \text{MAR}_{7A}$  is AsA's estimate of the incremental MAR of providing Category 7 services rather than Category 6 services at airport A. This is calculated as per table below; and
- $\text{FT}_{7+A}$  is the forecast tonnes landed of all Category 7 and above aircraft at airport A (excluding aircraft weighing less than 15.1 tonnes unless the aircraft is used for Regular Passenger Transport).

$$P_{8A} = \frac{\text{Cat}_{8A} \text{MAR}_{8A}}{\text{FT}_{8+A}} + P_{7A}$$

Where:

- $P_{8A}$  is the price per tonne of MTOW for all Category 8 aircraft landing at airport A;
- $\text{Cat}_{8A} \text{MAR}_{8A}$  is AsA's estimate of the incremental MAR of providing Category 8 services rather than Category 7 services at airport A. This is calculated as per table below; and
- $\text{FT}_{8+A}$  is the forecast tonnes landed of all Category 8 and above aircraft at airport A (excluding aircraft weighing less than 15.1 tonnes unless the aircraft is used for Regular Passenger Transport).



$$P_{9A} = \frac{\text{Cat}_{9A}\text{MAR}_{9A}}{\text{FT}_{9+A}} + P_{8A}$$

Where:

- $P_{9A}$  is the price per tonne of MTOW for all Category 9 aircraft landing at airport A;
- $\text{Cat}_{9A}\text{MAR}_{9A}$  is AsA's estimate of the incremental MAR of providing Category 9 services rather than Category 8 services at airport A. This is calculated as per table below; and
- $\text{FT}_{9+A}$  is the forecast tonnes landed of all Category 9 and above aircraft at airport A (excluding aircraft weighing less than 15.1 tonnes unless the aircraft is used for Regular Passenger Transport).

$$P_{10A} = \frac{\text{Cat}_{10A}\text{MAR}_{10A}}{\text{FT}_{10}} + P_{9A}$$

Where:

- $P_{10A}$  is the price per tonne of MTOW for all Category 10 aircraft landing at airport A;
- $\text{Cat}_{10A}\text{MAR}_{10A}$  is AsA's estimate of the incremental MAR of providing Category 10 services rather than Category 9 services at airport A. This is calculated as per table below; and
- $\text{FT}_{10}$  is the forecast tonnes landed of all Category 10 aircraft at airport A



Table 1

If Airport A is a Category 10 Station	
Maximum Allowable Revenue (MAR) of providing Category 10 services <b>(Cat<sub>10A</sub> MAR)</b>	Incremental MAR of providing Category 10 services (rather than Category 9 services) <b>(Cat<sub>8A</sub> MAR)</b>
$MAR_A \times \left[ \frac{AverageMAR_{10}}{AverageMAR_0} \right]$	$MAR_A \times \left[ \frac{AverageMAR_{10} - AverageMAR_9}{AverageMAR_0} \right]$
Incremental MAR of providing Category 9 services (rather than Category 8 services) <b>(Cat<sub>9A</sub> MAR)</b>	Incremental MAR of providing Category 8 services (rather than Category 7 services) <b>(Cat<sub>8A</sub> MAR)</b>
$MAR_A \times \left[ \frac{AverageMAR_9 - AverageMAR_8}{AverageMAR_0} \right]$	$MAR_A \times \left[ \frac{AverageMAR_8 - AverageMAR_7}{AverageMAR_0} \right]$
Incremental MAR of providing Category 7 services (rather than Category 6 services) <b>(Cat<sub>7A</sub> MAR)</b>	Incremental MAR of providing Category 6 services (rather than no services) <b>(Cat<sub>6A</sub> MAR)</b>
$MAR_A \times \left[ \frac{AverageMAR_7 - AverageMAR_6}{AverageMAR_0} \right]$	$MAR_A \times \left[ \frac{AverageMAR_6}{AverageMAR_0} \right]$
If Airport A is a Category 9 Station	
Incremental MAR of providing Category 9 services (rather than Category 8 services) <b>(Cat<sub>9A</sub> MAR)</b>	Incremental MAR of providing Category 8 services (rather than Category 7 services) <b>(Cat<sub>8A</sub> MAR)</b>
$MAR_A \times \left[ \frac{AverageMAR_9 - AverageMAR_8}{AverageMAR_8} \right]$	$MAR_A \times \left[ \frac{AverageMAR_8 - AverageMAR_7}{AverageMAR_7} \right]$
Incremental MAR of providing Category 7 services (rather than Category 6 services) <b>(Cat<sub>7A</sub> MAR)</b>	Incremental MAR of providing Category 6 services (rather than no services) <b>(Cat<sub>6A</sub> MAR)</b>
$MAR_A \times \left[ \frac{AverageMAR_7 - AverageMAR_6}{AverageMAR_6} \right]$	$MAR_A \times \left[ \frac{AverageMAR_6}{AverageMAR_6} \right]$
If Airport A is a Category 8 Station	
Incremental MAR of providing Category 9 services (rather than Category 8 services) <b>(Cat<sub>9A</sub> MAR)</b>	Incremental MAR of providing Category 8 services (rather than Category 7 services) <b>(Cat<sub>8A</sub> MAR)</b>
Nil	$MAR_A \times \left[ \frac{AverageMAR_8 - AverageMAR_7}{AverageMAR_7} \right]$
Incremental MAR of providing Category 7 services (rather than Category 6 services) <b>(Cat<sub>7A</sub> MAR)</b>	Incremental MAR of providing Category 6 services (rather than no services) <b>(Cat<sub>6A</sub> MAR)</b>
$MAR_A \times \left[ \frac{AverageMAR_7 - AverageMAR_6}{AverageMAR_6} \right]$	$MAR_A \times \left[ \frac{AverageMAR_6}{AverageMAR_6} \right]$
If Airport A is a Category 7 Station	
Incremental MAR of providing Category 9 services (rather than Category 8 services) <b>(Cat<sub>9A</sub> MAR)</b>	Incremental MAR of providing Category 8 services (rather than Category 7 services) <b>(Cat<sub>8A</sub> MAR)</b>
Nil	Nil
Incremental MAR of providing Category 7 services (rather than Category 6 services) <b>(Cat<sub>7A</sub> MAR)</b>	Incremental MAR of providing Category 6 services (rather than no services) <b>(Cat<sub>6A</sub> MAR)</b>
$MAR_A \times \left[ \frac{AverageMAR_7 - AverageMAR_6}{AverageMAR_6} \right]$	$MAR_A \times \left[ \frac{AverageMAR_6}{AverageMAR_6} \right]$
If Airport A is a Category 6 Station	
Incremental MAR of providing Category 9 services (rather than Category 8 services) <b>(Cat<sub>9A</sub> MAR)</b>	Incremental MAR of providing Category 8 services (rather than Category 7 services) <b>(Cat<sub>8A</sub> MAR)</b>
Nil	Nil
Incremental MAR of providing Category 7 services (rather than Category 6 services) <b>(Cat<sub>7A</sub> MAR)</b>	Incremental MAR of providing Category 6 services (rather than no services) <b>(Cat<sub>6A</sub> MAR)</b>
Nil	$MAR_A \times \left[ \frac{AverageMAR_6}{AverageMAR_6} \right] = MAR_A$

Where:

$$\text{AverageMAR}_6 = \frac{\text{Total MAR of all Category 6 Stations}}{\text{Number of Category 6 Stations}}$$

$$\text{AverageMAR}_7 = \frac{\text{Total MAR of all Category 7 Stations}}{\text{Number of Category 7 Stations}}$$

$$\text{AverageMAR}_8 = \frac{\text{Total MAR of all Category 8 Stations}}{\text{Number of Category 8 Stations}}$$

$$\text{AverageMAR}_9 = \frac{\text{Total MAR of all Category 9 Stations}}{\text{Number of Category 9 Stations}}$$

$$\text{AverageMAR}_{10} = \frac{\text{Total MAR of all Category 10 Stations}}{\text{Number of Category 10 Stations}}$$

## Appendix 5: Price regulation in different environments

This appendix details research conducted during 2007 highlighting features of the pricing environments for several ANSPs

### NAV Canada

Nav Canada charges cannot be at a level that, based on reasonable and prudent projections, would generate revenues exceeding the corporation's current and future financial requirements in relation to the provision of civil air navigation services.

The charging system is divided into three main categories for terminal and enroute services:

- annual and quarterly charges for aircraft weighing three tonnes or less
- daily charges for aircraft over three tonnes
- movement-based charges for terminal and enroute services for aircraft over three tonnes.

In addition, there are movement-based charges for oceanic services.

The more relevant charges are movement-based charges. Movement-based charges are composed of terminal navigation charges and enroute charges.

The terminal services are charged at a base rate of C\$20.23 consistently across the entire network. There is no distinction between terminal locations. The terminal charge is calculated by multiplying the base rate by the MTOW to the power of 0.85.

Enroute charges are calculated using MTOW, distance travelled and a base rate. The square root of the MTOW is multiplied by the base rate of C\$0.03589, multiplied by the distance travelled.

Oceanic charges are made up of a North Atlantic enroute facilities charge (NAT) of C\$97.12, which applies to aeroplanes transiting the Gander Oceanic FIR (which is part of the North Atlantic region) and a communications charge for position reporting. The communications charge is C\$61.00 for voice and C\$22.96 for a data link.

### Airways Corporation New Zealand

Airways Corporation New Zealand (ACNZ) has a well-developed pricing structure, which is divided into six weight categories. The weight categories capture ultralights, general aviation and all other aeroplanes. Aircraft with an MTOW less than two tonnes are excluded from a variety of charges.

ACNZ applies aerodrome weight charges to a specific list of airports and has a generic charge for all other airports. There are five approach weight charges: Auckland, Wellington, Christchurch, attended domestic airports and unattended domestic airports.

ACNZ has two broad sources of revenue. ACNZ aviation charges can be derived from within the New Zealand FIR (NZZC) as well as from the New Zealand Oceanic FIR (NZZO). The NZZO covers a distance beyond the NZZC.

Charges within the NZZC apply to either VFR or IFR operations. For VFR, aircraft operators are liable to an aerodrome charge calculated according to a base rate plus a weight charge. The weight charge is a dollar rate multiplied by MTOW (less 2,000 kg). In addition, there are charges for lodging a visual flight plan.

For airline operators within the NZZC using IFR, there are three charges: an aerodrome charge, an approach charge and an enroute domestic charge. Both the aerodrome and approach charges are a function of a base charge plus a weight charge (less 2,000 kg). The enroute domestic charge equals a base charge plus a weight charge. The base charge is arrived at by multiplying a rate by the distance travelled in nautical miles. The weight charge is arrived at in the following manner: a dollar rate is multiplied by the square root of the weight (less 2,000 kg) multiplied by the distance in nautical miles (nm) divided by 100.

For airlines operating in the NZZO, rates vary between three broad weight categories: under 2,000 kg, between 2,000 kg and 30,000 kg, and over 30,000 kg. There is a minimum charge of NZ\$15.00. In the same way the domestic enroute charge is calculated, the oceanic enroute charge is made up of a base charge plus a weight charge. The oceanic distance is the distance from the boundary of the FIR less 150 nm.

ACNZ has an innovative approach to charging aviation services for the GA sector. A 'ticket option' can be adopted by GA operators, who effectively prepay for a number of 'units' that can be applied for various aviation charges. Once the units have been expended, the aircraft operator receives a statement on how the units were utilised, and then has the option of buying more units.

## **Deutsche Flugsicherung (Germany)**

Deutsche Flugsicherung (DFS) provides air navigation services for the German Government as outlined in Germany's Aviation Act. The incurred costs must be covered by charges, reimbursements and other forms of revenue. The DFS pricing system is straightforward and applied across the network irrespective of the landing or departure airport. There are two weight categories: above and below 2 tonnes. A value added tax (VAT), calculated at a rate of 19%, is added to the charges calculated by DFS.

Terminal charges are levied by the ANSP for services and facilities for aircraft during take-off and landing at German airports. Route charges are collected by Eurocontrol for enroute air navigation services and facilities and then transferred to DFS.

The terminal charge is calculated by multiplying the unit rate by the square root of one-fiftieth of the MTOW. Where the MTOW is less than 2 tonnes, a flat charge of €10.20 plus VAT is incurred. The unit rate for terminal navigation for 2007 was €160.07 for IFR flights and MTOW over 2 tonnes. For VFR flights and MTOW over 2 tonnes, the unit rate was €64.03.

Enroute charges are calculated by multiplying the unit rate by the square root of one-fiftieth of the MTOW multiplied by the square root of one-hundredth of the distance travelled in

kilometres. Invoices for route charges are prepared in euros and issued by the Central Route Charges Office of Eurocontrol in Brussels as a single charge per flight. The revenue is then transferred to DFS. Apart from including the costs incurred to DFS, the cost base also includes the costs of Eurocontrol and aeronautical meteorological services financed from the German federal budget.

## **Air Traffic Navigation Services (South Africa)**

Air Traffic Navigation Services (ATNS) aviation charges comprised enroute charges, approach charges and annual air traffic service charges.

ATNS calculates enroute charges using a complicated formula that incorporates three weight categories. There is no enroute charge for aircraft with an MTOW under 2.8 tonnes. The other two weight categories are for aircraft with an MTOW between 2.8 tonnes and 8.5 tonnes, and planes with an MTOW greater than 8.5 tonnes.

The formula takes into account such factors as the country the flight originates in or is flying to, whether the flight is an overflight, whether the flight is wholly within South African airspace, and the MTOW of the plane. The calculation does not apply the square root of the MTOW, as is generally the case. However, the MTOW is reduced by either 2.0 tonnes for small airplanes liable for enroute charges or 5.7 tonnes for planes with MTOW over 8.5 tonnes.

Approach charges are also influenced by the country in which the flight originated, whether the flight was within South African airspace, and the MTOW of the plane. For aircraft under 2.0 tonnes, there is a minimum charge of R20.59 if the landing is at Johannesburg International Airport. If the plane weighs between 2.0 and 2.8 tonnes, a charge is calculated as a function of the MTOW less 2.0 tonnes. Where a plane with an MTOW less than 2.8 tonnes approaches an airport other than Johannesburg International, there is no charge.

Approach charges to a controlled airport apply for all airplanes with MTOW of 2.8 tonnes. The charge is a function of the MTOW adjusted by either 2.0 tonnes (for planes with MTOW less than 8.5 tonnes) or 5.7 tonnes (for planes with MTOW over 8.5 tonnes).

Aircraft operators are also subject to an annual air traffic charge. Aircraft with MTOW less than 0.9 tonnes do not attract a charge. If the plane's MTOW is over 0.9 tonnes but less than 2.0 tonnes, the charge is R250.00. If MTOW exceeds 2.8 tonnes, the charge is R2,000.00.

## **NATS (United Kingdom)**

NATS (formerly National Air Traffic Services) provides air traffic control services at 15 of the UK's biggest airports and enroute air traffic services for aircraft flying through UK airspace. NATS is a public-private partnership between the Airline Group, a consortium of seven UK airlines (which holds 42%), NATS staff (who hold 5%), UK airport operator BAA Limited (4%), and the British Government (49%).

NATS is split into two companies:

- *NATS En-Route Ltd* is intensively regulated by the Civil Aviation Authority. It has a monopoly of civilian enroute air traffic control over the UK and is subject to price caps.

The Civil Aviation Authority takes productivity increases into account when determining prospective price increases.

- *NATS Services Ltd* competes in the open market for air traffic control contracts at airports in the UK and overseas. It provides services to Heathrow, Gatwick, Glasgow and Belfast airports, among many others. There is limited information on the company's charges for services at airports that it services.

According to information available from the ICAO, air navigation service charges at Heathrow, Gatwick and Stansted are based on a two-tier charging system. Airline operators are charged different rates depending on whether the plane's MTOW is over or under 100 tonnes. For all three airports, NATS Services Ltd earns £1.42 per tonne if the MTOW is under 100 tonnes or £0.58 per tonne if the MTOW is greater. The charges for air navigation services at Aberdeen, Edinburgh and Glasgow are on a flat per tonne basis, with no threshold MTOW.

There are two sources of enroute revenue for NATS En-Route Ltd. These include the Shanwick Oceanic Control Area and the UK FIR, which falls within the Eurocontrol charging area.

MTOW and distance are incorporated in the calculation of enroute charges for both areas. For enroute charges derived from Eurocontrol, a rate of €80.81 is multiplied by the distance factor (one-hundredth of the distance travelled) and multiplied by a weight factor (the square root of one-fiftieth of the aircraft's MTOW in tonnes). The distance calculation deducts 20 kilometres at each landing and arrival airport, which is consistent with the practice of many ANSPs. Enroute charges attributable to the Shanwick Oceanic Control Area (North Atlantic) are £56.44 for each flight for which a flight plan is filed.

## Appendix 6: Building block formula

As part of the process to set a five-year pricing path for Airservices Australia's enroute, terminal navigation and ARFF services, Airservices and the aviation industry have agreed to apply the ACCC's 'building block' formula to determine the level of revenue that Airservices is entitled to recoup.

Essentially, the building block methodology allows Airservices to recoup its running costs plus an element of profit based on a weighted average cost of capital for its infrastructure, with minor adjustments for gearing and taxation imputation.

The formula is:

$$\text{Allowable revenue} = A \times B + C + ((A \times B - A \times D \times E) \times (F + F^2 + F^3 + F^4 + F^5))$$

where:

A = average written-down value of assets, based on a depreciated optimised replacement value

B = weighted average cost of capital

C = costs

D = gearing (%)

E = interest

F = tax rate (including imputation).

In essence, a price is derived by dividing a locations activity (tonnes) into the locations' allowable revenue.

## **Appendix 7: Abbreviations and acronyms**

ADS-B	Automatic Dependent Surveillance – Broadcast
ACCC	Australian Competition and Consumer Commission
DME	distance measuring equipment
ICAO	International Civil Aviation Organization
IFR	instrument flight rules
ILS	instrument landing system
LTPA	Long Term Pricing Agreement
MTOW	maximum take-off weight
NDB	non-directional beacon
RAB	regulated asset base
VFR	visual flight rules
VOR	VHF Omni Range
WACC	weighted average cost of capital