Avalon Airport Submission to Air Services Australia Long Term Pricing Agreement July 2016 – June 2021

Prepared with assistance from Webber Quantitative Consulting

1. Introduction

Avalon Airport is operated by Avalon Airport Australia Pty Ltd, a wholly owned subsidiary of Fox Group Holdings Pty Ltd. The airport is located on 1753 hectares and is a 45 minute drive west of Melbourne's central business district and 20 minutes east of Geelong. The airport's geographic location between Melbourne city and Geelong makes it both a capital city airport and an exceptionally well equipped regional airport servicing a large regional catchment area in regional Victoria as well as providing access to significant tourism destinations such as the Great Ocean Road.

2. Scope of the Submission

The objective of this submission is to propose a Terminal Navigation Service (TN) pricing framework and formulation for both Tullamarine (MEL) and Avalon Airports (AVV) that represent an adaptation of the full cost recovery, location specific model. This proposal seeks to present the economic rationale for the adapted or hybrid pricing model and demonstrates that it is consistent with Air Services Australia's key pricing principles and allocative efficiency objectives, and will provide evidence to support this view.

3. Common Terminal Navigation Costs at Avalon and Melbourne Airports

From June 3, 2010, ASA commenced a Class D terminal navigation service provided from a 14m air traffic control tower that was built at AVV in 1977.[1] The tower operates 7 days a week for 14 hours per day. A single instrument landing system is installed on runway 18, with all other runways served by non-precision approaches.[2] Avalon airport runways are 18/36 at a length of 3048m.

The costs of providing terminal navigation services to AVV **under current pricing arrangements** include:

- Operational staff and supplier costs including an average four FTE air traffic controllers manning the tower = $0.8m in 2015;
- operational and corporate business support costs, which are fixed or shared costs relating to air traffic control management and normal business support functions, such as finance and human resources = $0.3m in 2015;
- asset maintenance and management, which relate to the tower and communication assets = $0.8m in 2015; and
- depreciation costs related to the tower and communication assets at AVV = $0.2m in 2015.[3]

[1] ASA also provides Enroute and Aviation Rescue & Fire Fighting services.

[2] The ILS at AVV is not owned, however, by ASA.

[3] Costs relating to navigation equipment such as VOR's, DME's and NBD's are not attributed to the tower function and are recovered through enroute charges as opposed to terminal navigation charges. These costs include property costs such as light, heat, power, rent and maintenance costs, which are directly related to the assets at Avalon. The costs also include some shared service costs such as communications and IT network service costs, asset management support costs and cost of capital recoveries. These costs in total amount to $0.4m per annum.

ASA has indicated to AVV that for the next round of terminal navigation pricing the cost profile of AVV will change. This is because:

- there is an additional allocation of two FTE equivalent air traffic controllers based at the Melbourne Centre that provide ATC services to/from Avalon; and
- additional service asset costs, including air traffic management, communication and surveillance system costs may need to be shared across Melbourne and Avalon airports.

It is our understanding that the majority of the air traffic information and separation functions associated with aircraft movements to and from AVV are delivered from MEL. There are a large number of terminal navigation costs, therefore, that must be shared between AVV and MEL. The following provides more detailed information about the functions of the AVV air traffic control tower and the services provided to AVV by the Melbourne Centre located in MEL:

1. the AVV tower does not 'own' any airspace in terms of normal air traffic control operations;
2. all of the air traffic approach control and departure functions to and from AVV are controlled by the Avalon Approach, which is based within the Melbourne Centre at Tullamarine;
3. the Melbourne Centre provides both air traffic control and technical support staff as well as ATC related infrastructure that provide approach, enroute and departure services at AVV;
4. Avalon Approach is not only used for providing Air Traffic Control separation services for AVV bound aircraft but this function will be consolidated with other sectors when traffic conditions permit on a daily basis which again reinforces the notion of a shared consumption service between the two airports and
5. the only terminal navigation function that is performed by air traffic control at AVV airport is that of tower control, which simply ensures that visual separation and safety standards are being maintained whilst an aircraft is landing or taking off.

AVV is of the view that the level of common resource costs between MEL and AVV as they relate to terminal navigation services is of such significance that this, on its own, is sufficient reason for the airports to be treated as a single airport for the purpose of terminal navigation price determination. As detailed in the submission, there are other forces including current Commonwealth international air access arrangements and price elasticity of demand factors applying to AVV that provide further justification for treating MEL and AVV as a single airport entity for the purpose of determining terminal navigation charges.

4. Efficient Pricing Principles

In the Long Term Pricing Agreement (LTPA) discussion paper Airservices Australia (ASA) sets out five desired 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;
- prices should be equitable; and
- prices should be simple and transparent and facilitate planning by end users.[4]

ASA also refers to the need to balance these criteria against the necessity to recover cost and to minimise any potential distortions to allocative efficiency, as also recognised by the Australian Competition and Consumer Commission (ACCC) in their response to ASA submissions on the issue of LTPA.[5]

AVV believes that these pricing principles, and the need to minimise consumption distortions while practising full cost recovery, are sound principles. AVV is of the view that that the air traffic control services supplied to the airport, and the underpinning key demographic forces that characterise the airport, are quite unique. The way that the pricing principles and the allocative efficiency mechanism apply to AVV should therefore be quite distinct to the way they are applied to most other secondary airports.

5. Proposed Terminal Navigation Pricing Arrangement for Avalon Airport

AVV believes that terminal navigation pricing at the airport cannot be considered in isolation from (MEL). The principle factors that underpin this perspective include the following:

a. a significant proportion of the daily terminal navigation related ATC services to/from AVV (as previously discussed) are provided by air traffic controllers and supporting infrastructure and technical resources located at the Melbourne Centre at Tullamarine - a joint service consumption prevails;
b. most current Commonwealth international air access arrangements treat MEL and AVV as substitute gateways serving the same market catchment area since international air access rights are negotiated for Melbourne city as a whole and does not consider independent air access privileges to AVV as distinct from MEL;
c. the close proximity of AVV to MEL airport enables easy substitutability or switching of customer travel preferences to MEL from AVV should airfares increase at AVV as a consequence of increases in ASA charges; this consumption distortion is precisely what the ASA pricing framework is seeking to avoid;

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[4] Air Services Australia, *Long Term Pricing Agreement*, July 2016 to June 2021 Discussion Paper page 6.
[5] Ibid pp 6-7.

d. the close proximity of the airports and consequent substitutability also mean that the airline(s) operating to AVV can easily switch capacity to MEL due to increases in operating costs at AVV leading to reduced profitability; this can lead to potential resource allocation efficiency distortions which is another outcome the ASA pricing framework is attempting to avoid;
e. the price elasticity of demand is more pronounced at AVV than Tullamarine since AVV is served by a single low cost carrier carrying principally leisure travellers to one destination. These travellers are significantly more sensitive to any changes in price of the airline ticket than those travellers through MEL who have a choice of multiple destinations and services, a significant proportion of business traffic (who are relatively price inelastic) as well as leisure passengers carried by full service and low cost carriers; and

The hybrid (or adapted) proposed pricing formula as it relates to terminal navigation pricing is therefore an adaptation of the location specific pricing model with total cost allocation as follows:

$$Adapted\ TN\ Price = \frac{Costs\ Directly\ Attributable\ to\ MEL\ \&\ AVV + Network\ Costs\ Allocated\ to\ MEL\ \&\ AVV}{MEL\&AVV\ Maxumum\ Take{-}off\ Weight} \quad (1)$$

The model simply put says that for terminal navigation pricing purposes MEL and AVV should be treated as a single airport entity. The terminal navigation price for that single airport entity is determined by dividing the total terminal navigation costs directly attributable **and** network costs allocated to the combined airports divided by the total movements of MEL and AVV expressed in tonnes (MTOW).

It is our belief that this formula, and the methodology that underpins it, meets each of the pricing principles described in section 2 above:

- prices are directly related to the variable costs at the two airports and any network costs that may be rightfully allocated to them;
- as prices are set at average cost, this is in line with long run competitive pricing, which in turn is consistent with economically efficient resource use and allocation;
- by pricing terminal navigation services competitively at average cost, which in turn is passed-through into competitive average airfares, this will permit maximum growth in the demand for air travel services, which in turn will drive optimal investment decisions as it relates to terminal navigation services, both in terms of the level of investment and the timing of investment (see also section 7);
- prices in this framework are set so that each airport recovers their own costs of production, which is fair and equitable; and
- prices set using a mechanism of cost recovery will only require an estimate of direct variable costs, allocated costs and maximum take-off weight, which can be determined reasonably reliably giving rise to a simple and transparent price.

We also believe that the Avalon terminal navigation price calculated using formula (1) above gives rise to a more efficient allocation of resources and minimises any distortionary impact on the consumption of air services in the Melbourne catchment. The following sections will explain why this is the case, and provide supporting evidence to support the methodology at (1) in more detail.

6. Demand Elasticity and Airport Demographics

6.1 Terminal Navigation Charges and Airfares

Airfares are set by airlines over a medium to long run horizon after taking into consideration the following three forces:

- the cost of supplying aviation services;
- the airfare elasticity of demand; and
- the intensity and extent of competition, which will be a function of the number and type of competitors as well as the degree of product differentiation between competitors.

Terminal navigation charges influence average airfares by influencing the cost of supplying aviation services. If AVV terminal navigation charges are increased this will result in higher airline costs in the case of AVV operations which will be passed through into higher average airfares. Higher average airfares in turn will result in lower AVV airport demand or passenger movements. The more price elastic is passenger demand for AVV airport services, the stronger the demand reaction to higher AVV airport and airline costs and the greater the distortion to air travel consumption caused by higher terminal navigation charges.

While there is little direct, quantitative evidence of the elasticity of AVV airport and airline demand to a change in AVV airfares, there is a significant amount of supporting or indirect evidence to suggest that AVV demand is likely to be highly elastic to the average airfare. The remainder of this section will describe the key airport demographics that provide evidence in support of this fare elastic demand proposition.

6.2 Evidence Supporting Elastic AVV Demand

6.2.1 Airport Proximity

The first demographic characteristic relates to the location of AVV in relation to MEL from the perspective of an air travel customer. Avalon airport is 52 kilometres south west of MEL representing an estimated 45 minute drive time. AVV is closer to a tier 1 (or major gateway) Australian airport than any other secondary airport in Australia – refer to Table 1 below.

Table 1: Proximity of Secondary Airports to Tier 1 or Major Gateway Airports in Australia

Airport	Next Closest Major Airport	Distance (km)
Avalon	Melbourne Tullamarine	52
Ballina	Brisbane	167
Sunshine Coast	Brisbane	87
Gold Coast	Brisbane	95
Toowoomba	Brisbane	120
Launceston	Hobart	145
Canberra	Sydney	236
Coffs Harbour	Sydney	442
Port Macquarie	Sydney	320
Geraldton	Perth	369
Bathurst	Sydney	153
Busselton	Perth	202

As indicated in Table 1, behind AVV and MEL in terms of airport proximity is the Sunshine Coast to Brisbane, which are 87 km apart, Gold Coast airport to Brisbane, which is 95km and Toowoomba to Brisbane, which is 120km.

The very close proximity of MEL and AVV airports means that, from a passenger demand perspective, an increase in the total cost of using and flying from AVV airport relative to MEL airport will result in a switch from using AVV airport to MEL airport.[6] For example, if terminal navigation charges increase at AVV more than they increase at MEL, then this will cause a switch from using AVV to using MEL because of the very close proximity of the two airports and the fact that MEL offers the same services to Sydney as does AVV (see also section 6.2.3 and 6.2.4 below). The strength of this **airport** (as opposed to **airline**) competition is likely to be unique in the Australian aviation industry given the very close proximity of the two airports and the fact that they effectively compete for the patronage of the same population catchment.

From an airline perspective, as opposed to a passenger perspective, an increase in the cost of supplying air travel services to AVV relative to MEL will lead to a reduction in earnings at AVV relative to MEL.[7] The weaker earnings at AVV compared to MEL will either lead to a switch in some of that capacity from AVV to MEL, or it will result in capacity at AVV growing at a slower pace than capacity at MEL. The airline is able to easily switch capacity from AVV to MEL because of the close proximity of MEL to AVV, which in turn means that the capacity is essentially drawing from the same population catchment. The switch in capacity from AVV to MEL will reduce passenger volumes at AVV and increase passenger volumes at MEL because of the strong linkage between airline capacity and passenger movements.

The fact that MEL and AVV airports are effectively in competition, or are close substitutes, is also consistent with most of the current Commonwealth international air access arrangements between Australia and other sovereign states. These arrangements determine limits on international air access to major Australian gateway ports including Sydney, Melbourne, Perth and Brisbane from different foreign countries. In the majority of negotiated outcomes MEL & AVV airports are seen as substitute gateways serving a common market catchment area.

The fact that MEL and AVV airports are so closely located drives highly elastic demand at AVV by virtue of the fact that an increase in costs at AVV that generates higher AVV fares means that there will be a significant shift out of AVV and into MEL, which is considered a very close substitute.

6.2.2 Exclusive Low Cost Carrier Services

Another important demographic characteristic of AVV airport is that it is exclusively operated by a single low cost carrier (LCC), Jetstar. Low cost carriers supply services to the segment of the air travel market that is most airfare sensitive, or places the highest priority on airfares. A similar magnitude increase in fares by low cost carriers and full service carriers will result in low cost carrier

[6] The total cost of using AVV airport will not only include the airfare but also the explicit costs of travel to and from the airport, the opportunity or time costs associated with travel to and from the airport, and the cost of using the airport's facilities, such as car parking, the amenities and retail shops inside the building.

[7] There are a number of airline costs that vary by port, including landing charges, route and terminal navigation charges, ground handling, airport staff (check-in, sales, customer service) and airport lounges. Increases in any of these costs can increase the cost of one airport relative to others.

demand falling by more than full service carrier demand.[8] It follows that AVV airport demand, which is derived from airline demand, will be highly sensitive to movements in airfares because it only supplies services from low cost carriers.

It is also the case that terminal navigation charges are likely to be a higher percentage of total airline costs for low cost carriers than for full service carriers. When terminal navigation charges increase this is likely to result in low cost carriers reducing capacity by more than full service carriers. Airport capacity supplied to AVV is likely to fall by more than capacity at most other airports because most other airports are serviced by a mix of both full service and low cost carriers rather than exclusively by low cost carriers as is the case for AVV. For example, of the other secondary airports in Australia in terms of regular passenger transport services:

- Gold Coast airport domestic services are supplied by Qantas, Virgin, Tigerair and Jetstar (two full service carriers and two low cost carriers);
- Sunshine coast airport domestic services are supplied by Virgin, Jetstar and Alliance Airlines (one full service carrier, one low cost carrier and one regional carrier);
- Ballina airport is supplied by Virgin, Jetstar and Rex Express (one full service carrier, one low cost carrier and one regional carrier);
- Darwin airport domestic services are supplied by Qantas, Virgin, Jetstar and Air North (two full service carriers, one low cost carrier and one regional carrier);
- Cairns airport domestic services are supplied by Qantas, QantasLink, Tiger, Jetstar, Virgin, Air North and Skyrtrans (two full service carriers, two low cost carriers and two regional carriers);
- Canberra airport is supplied by Qantas, Qantaslink and Virgin Australia Regional Airlines (one full service carrier and two regional carriers);
- Hobart airport is supplied by Qantas, QantasLink, Jetstar and Virgin (two full service carriers, one regional carrier and one low cost carrier);
- Launceston airport is supplied by Qantaslink, Virgin and Jetstar (one full service carrier, one regional carrier and one low cost carrier);
- Mackay airport is supplied by QantasLink, Virgin and Jetstar (one full service carrier, one regional carrier and one low cost carrier); and
- Rockhampton airport is supplied by QantasLink and Virgin Australia (one regional carrier and one full service carrier).

6.2.3 Single Route

Avalon airport provides the opportunity to fly non-stop to only one city, which is Sydney. This is as opposed to MEL which provides the opportunity to fly non-stop to a large number of domestic and international city pairs. The fact that AVV supplies services to just one city pair means that it will be more price sensitive than most other secondary airports.

[8] The airfare elasticities of demand of full service carriers versus low cost carriers, and business versus leisure travel, are described in some detail in the IATA report, *Air Travel Demand*: *Measuring the Responsiveness of Air Travel Demand to Changes in Prices and Income*, IATA Economic Briefing Number 9. This article is available at the web address https://www.iata.org/whatwedo/Documents/economics/air_travel_demand.pdf.

To understand why this is the case, consider an increase in fares from both MEL and AVV to Sydney, perhaps generated because of an increase in the costs of providing services at Sydney airport. In response, some holiday passengers from Melbourne decide to travel to Brisbane, Perth, Adelaide or Hobart instead of Sydney. As AVV does not supply aviation services for these passengers there will be substitution of some passengers from AVV to MEL airport, since MEL airport does supply services to Brisbane, Perth, Adelaide and Hobart. The substitution from AVV to MEL airport because MEL offers a wider network coverage generates more sensitive demand to price at AVV.

6.2.4 Sector Length and Fare Importance

The city pair AVV-SYD also involves a relatively short sector length for travel of 756km. The average sector length for travel involving MEL airport is likely to be significantly higher because it supplies services to both long domestic sectors (such as Perth, Brisbane and Darwin) and international sectors (such as Los Angeles, Singapore and Hong Kong).

The average airfare is typically a higher proportion of total travel spend in the case of relatively short sectors because the average length of stay is usually much shorter for travel over short distance as there is more weekend and day return travel. When the average airfare is a higher proportion of total travel spend, the sensitivity of air travel demand to a change in the average airfare is greater. IATA also provides evidence to support the view that short haul demand is more elastic to the average airfare than long haul demand.[9]

6.2.5 Fare Offer Comparisons

The sensitivity of demand to the average airfare in the case of AVV travel can also be seen by comparing fare offers at both AVV and MEL airports. Refer to Tables 2 and 3 below.

Table 2: Jetstar Timetable and Starter Fares for Avalon Services to Sydney (One-way)

Flight Number	Departure Time	Arrival Time	Travel Time	Starter Fare*
JQ 602	AVV 06:00	SYD 07:25	1hr 25 mins	$55
JQ 612	AVV 09:15	SYD 10:40	1hr 25 mins	$55
JQ 616	AVV 15:05	SYD: 16:30	1hr 25 mins	$79
JQ 618	AVV 18:20	SYD 19:45	1hr 25 mins	$59
JQ 626	AVV 20:40	SYD 22:05	1hr 25 mins	$55

*For a Booking date of April 16, 2015 and departure date May 18, 2015

Table 2 presents a range of information associated with Jetstar flights on AVV to Sydney services, including the flight number, the departure and arrival times, the time length of the trip and the Starter Fare that is offered by Jetstar. The fare information is retrieved from a booking date of April 16, 2015 and a departure date of May 18, 2015. The length of this booking horizon would suggest that the fare offer information, which was retrieved from the Jetstar website, is a lead-in fare or one of the lower fare classes. The Starter Fare in the case of Jetstar AVV services to Sydney varied between $55 and $79 for a one-way trip.

Table 3 below presents similar information for Jetstar services from MEL.

Table 3: Jetstar Timetable and Starter Fares for Melbourne Services to Sydney (One-way)

[9] Ibid page 8.

	Departure Time	Arrival Time	Travel Time	Starter Fare*
JQ 502	MEL 07:35	SYD 09:00	1hr 25 mins	$125
JQ 504	MEL 08:05	SYD 09:30	1hr 25 mins	$105
JQ 506	MEL 09:20	SYD: 10:45	1hr 25 mins	$105
JQ 508	MEL 10:50	SYD 12:15	1hr 25 mins	$85
JQ 510	MEL 11:50	SYD 13:15	1hr 25 mins	$95
JQ 516	MEL 13:05	SYD 14:30	1hr 25 mins	$95
JQ 514	MEL 15:20	SYD 16:45	1hr 25 mins	$95
JQ 526	MEL 17:20	SYD 18:45	1hr 25 mins	$85
`JQ 524	MEL 18:30	SYD 19:55	1hr 25 mins	$85
JQ 530	MEL: 19:40	SYD 21:05	1hr 25 mins	$85
JQ 528	MEL: 20:35	SYD 22:00	1hr 25 mins	$75

*For a Booking date of April 16, 2015 and departure date May 18, 2015

We can see in the case of MEL services to Sydney in Table 3 that Jetstar offers a wider variety of service frequencies and the Starter Fares are significantly higher at between $75 and $125. The lowest starter fare is therefore $20 higher at MEL and the highest starter fare is $46 higher at MEL.

The higher starter fares for Melbourne services may be partly attributable to the fact that there are some port related costs (such as landing charges, baggage handling, and other airport staff) that are more expensive at MEL than at AVV. The material difference in the lowest and highest starter fares however, more reflects the fact that AVV passenger demand is more airfare sensitive than MEL passenger demand. This follows from the fact that airlines understand that the fare elasticity of demand is an important parameter in determining the extent to which prices can be marked-up above cost, and that the more sensitive demand is to the average airfare the weaker is the ability to mark-up fares above cost.

7. Pricing Methodology and Efficient Investment

A component of the terminal navigation price will be used to fund the investment in tower and navigation aid infrastructure which are required in the provision of the following services:

- Air traffic separation services in the air;
- surface movement and separation of aircraft on the ground; and
- safe and efficient navigation of aircraft in the airspace around the airport vicinity

To deliver the right investment incentives the component of the terminal navigation price that pertains to capital costs must be set at levels that recover those costs.

Conceptually, the addition to the terminal navigation price, *P* to recover the cost of a new terminal navigation investment, *K*, over the life of the investment *N*, for each time period *t* over the life of the investment must be such that the present discounted value of the additional terminal navigation payments by the airport(s) in question is greater than or equal to the terminal navigation capital cost:

$$\sum_{i=0}^{N} \frac{P_{t+i} \times Q_{t+i}}{(1+r)^{i+1}} \geq K_t \qquad (2)$$

where *Q* is the maximum take-off weight in tonnes landed at the relevant airport(s) and *r* is the cost of capital or the discount rate.

It is difficult to determine the addition to the terminal navigation price and the way that it is escalated in the future, that is required to ensure this condition is satisfied for two main reasons:

1. the Q_{t+i} or the future level of airport demand are unknown and must be forecast;
2. the addition to the terminal navigation price and the way that that it is escalated over the life of the asset will influence airline unit costs and thus average airfares, which will in turn influence the Q_{t+i} or the demand for the relevant aerodrome(s).

As a result of the difficulty posed by 2. above the addition to the terminal navigation price that is required for equation (2) to hold depends on the elasticity of airport demand to change in the terminal navigation price. The more elastic is the demand for the airport services to a change in the terminal navigation price the greater the risks associated with setting terminal navigation charges too high to recover any investment in terminal navigation infrastructure, and the more heightened are the chances that terminal navigation assets are left stranded.

In the case of AVV, the risk of stranding and under recovery of investment will be significantly higher if AVV is treated as a stand-alone airport and not combined with MEL for the purpose of computing terminal navigation charges. This is because the demand for AVV airport services is highly elastic to a change in terminal navigation charges by virtue of the high levels of substitutability between MEL and AVV, as described in some detail in section 6 above. If the formula described by (1) above is not used to compute AVV terminal navigation charges then this raises the risk that the differential between AVV and MEL terminal navigation charges will lead to significant substitution in passenger movements from AVV to MEL, which heightens the chance that services are effectively ceased at AVV, and AVV terminal navigation assets become stranded. Conversely, if the formula at (1) is used and AVV and MEL are effectively treated as a single airport and a single passenger catchment for the purpose of computing terminal navigation charges, this significantly reduces the chances of wholesale substitution in passenger movements from AVV to MEL and the chance that AVV terminal navigation assets are stranded.

It may be argued that a differential between AVV and MEL terminal navigation charges may be too small to give rise to any material substitution between the two airports. While passengers are unlikely to react in any material way to a \$1 to \$5 differential in fares caused by a difference in terminal navigation charges, airlines will most certainly react to such a differential by shifting airline capacity. This is because the airline margins associated with AVV airport are so low that even a very small differential in terminal navigation charges will lead to a significant difference in earnings across the airports, which in turn provides incentives to switch capacity from one airport to the other.

8. Using the Pricing Principles to Justify the Methodology

The information presented in sections 4 through to 7 can be used to demonstrate how the terminal navigation pricing formula (1) meets the key pricing principles presented in section 2.

The first point to note is that the existence of significant common terminal navigation costs at Avalon and Melbourne Tullamarine airports means that to price in a way that best reflects costs requires Avalon and Melbourne airport terminal navigation costs to be combined. This combined cost information is then used to construct a terminal navigation charge that is common to both airports. The alternative involves using an activity driver to somehow allocate the common costs between AVV and MEL however this is likely to introduce unnecessary complications into the terminal navigation price calculation and may indeed result in a set of prices that do not necessarily reflect costs.

The second point of note is that the demand for air travel at AVV is more sensitive to the average airfare than the demand for air travel at MEL. This means that if the terminal navigation charge at MEL is set lower than the terminal navigation charge at AVV then this will lead to a significant flow of passengers out of AVV and into MEL and an increased chance of terminal navigation assets being stranded at AVV. This consumption distortion is precisely the outcome that ASA terminal navigation pricing is attempting to avoid since it is likely to give rise to allocative inefficiency.

To avoid any possibility of air services consumption distortion it is imperative that both MEL and AVV charge the same terminal navigation price. For the terminal navigation charge to also be productively efficient, it is also required that the charge recovers cost. To set a price that is uniform across MEL and AVV at the same time as recovers costs requires a pricing formula such as that presented at equation (1) above.