



# Evaluation Services: Air New Zealand Underwrite

*Economic Effects - Summary Report*

August 2016

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(Rarotonga)**  
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## Executive Summary

The Cook Islands Government (CIG) underwrites some of the air routes connecting the Island with tourist markets. These agreements provide for two weekly flights: Los Angeles (LAX) to/from Rarotonga and Sydney (SYD) to/from Rarotonga. The CIG commissioned an independent assessment of the underwrite agreements to understand the economic effects that they are delivering. As part of the assessment, the financial performance of the routes as well as the contracts underpinning the underwrites were assessed<sup>1</sup>. As part of the overall assessment, the economic effects of the underwrites were assessed. The economic assessment used the financial performance and costs as inputs, and estimated the total (flow-on) economic effects of the visitor spending on the Cook Island economy. While the economic effects are influenced by the performance of the routes, specifically the tourist visits that are facilitated. This summary report outlines the economic effects.

### **The services are delivering positive effects**

The analysis shows that the two underwritten services has a positive effect for the Cook Islands economy, arising from the net additional spending by overseas visitors. These effects mean the economy is larger in GDP terms and that the benefits (economic impacts) outweigh the costs of the underwrites. The longer term outlook for the economic effects are positive.

#### **LAX-RAR service**

The effects of the underwrite for the Los Angeles service are clearly positive, delivering:

- GDP of \$11.5m
- \$5.7m<sup>2</sup> in income and
- Supporting employment of 78 persons.

While that current net positive effect is expected to decrease in the short term as underwrite costs increase with the introduction of the Boeing 777-200 (B772). However, over the medium term, the outlook is positive with net benefits returning from 2017 even if low market growth and an appreciating NZ dollar impacts on the total return. Nevertheless, there are risks<sup>3</sup> associated with the shift to the B772 that could affect the value of the underwrite and this could reduce the net benefit to the Cook Islands.

#### **SY-RAR service**

The net economic effects of the Sydney underwrite are more marginal. The average outcome across the 2014-2015 period showed a net negative effect of -\$1.1m in GDP terms, although the outcomes for 2016 and 2017 are expected to be net positive. The positive effects are due to the expected growth in visitor numbers and the anticipated reduction in the underwrite amount. The increase in aircraft costs (assuming introduction of the B772 in FY 2018) is expected to result in a net negative outcome in the short-medium term (2018 and possibly 2019). The medium growth outlook suggests small net positive effect from 2019, or 2019-2020 in a low growth future.

For both services, the costs of the underwrite are expected to decrease over time, based on the steady growth observed in arrival numbers (4.8 per cent per annum over the 2010-2016 period), and anticipated in the future. The introduction of the B772 aircraft will improve service levels and make the flights to the Cook Islands more attractive to visitors, including from the availability of premium

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<sup>1</sup> These two components are subject to strict confidentiality clauses and are not included in this summary report.

<sup>2</sup> Income is a portion of GDP.

<sup>3</sup> Such as price movements arising from exchange rate fluctuations and/or shifts in the price of fuel.

economy and genuine business class seating. However, changing to the B772 will change the cost structures of the underwrite and introduce higher costs to the underwrite.

### **...and the outlook is positive**

The visitor growth outlook is important. The underwrite costs are directly related to load factors which drive aircraft revenue, and filling more seats, especially in the premium economy and business class sections, is an important requirement. These factors affect the cost of the underwrite.

The New Zealand, Australia, USA and Asia markets have shown strong growth over the 2010-2016 period, and the B772 service is expected to have positive effects on visitor numbers from these markets. It is also expected to have positive effects on the European market which declined substantially between 2000 and 2010.

**Underlying demand growth indicates that, while the net costs of the underwrite will increase in the short term, there is considerable upside potential.**

### **...but there are risks and challenges...**

Nevertheless, there are significant challenges in the short and medium term. The B772 aircraft will be more expensive to operate, and the costs of the underwrites will increase, probably substantially, in the short term. The growth trends are not guarantees that everything will be fine and that the economic outcomes will be positive over the short term.

The cost of the underwrites is substantial, and require a significant proportion of government revenue. It is important to recognise that, even though the net effects on the economy are largely positive, the underwrite on this service still represents a very large direct cost to community, and any initiative which can reduce the cost – particularly through marketing and product strategies to generate additional revenue for the air services – will have direct positive effects for the economy and community.

The potential for economic impacts to turn negative highlights the importance of actively ‘working the underwrite’ and maximising the outcomes. There are no silver bullets which will reduce the net costs in one hit, and the nature of tourism (the aggregate outcome of many decisions by individuals and groups), is such that improvements will arise from the combined effects of many small gains, based on consistent focus and effort.

### **The services deliver strategic values**

In addition to the generally positive effects on the economy, there are strategic values from maintaining the direct services from Los Angeles and Sydney. These relate to:

- a. the importance of having **direct links with key markets**, especially the USA and other northern hemisphere markets through the Los Angeles service;
- b. **market security** by seeking to extend the breadth of the market base, at a time when a single market - New Zealand - accounts for two-thirds of visitor numbers;
- c. maintaining and **broadening the visitor base and the product base**, especially through demand from northern hemisphere long-haul travellers many of whom position higher in the market, with demands for higher end accommodation and visitor experience in addition to flight seating;

- d. **expanding the Sydney market** through the direct link, given that Sydney offers the largest single population mass within 8,000 km of the Cook Islands;
- e. the **benefits of higher quality aircraft** whose higher service levels (especially business and premium economy) will mean the Cook Islands is more attractive as a destination, especially for the long-haul Los Angeles service.

### **Looking forward, there are some suggested focus areas**

In our view, it is important to take a medium-long term perspective when evaluating the underwrites. The next two years are a period in which there will be a quantum change from the introduction of the B772, with a consequent negative shift in economic effects likely in the short-medium term. This is because the underwrite costs will rise as a step change, whereas any increase in passenger numbers will take some time to build up. However, while that shift will increase the costs, it will not alter the underlying fundamentals, which are the strategic reasons for maintaining the air links.

Based on our assessment, the underwrites are delivering benefits but there is room for improvement to lift their effectiveness, efficiency and long term sustainability. Over the medium term the focus should be on limiting the costs of the underwrite, and increasing the numbers of visitors and their fare revenue. Such effort is required both directly through the CIG and AirNZ relationship, and also through the related marketing effort, including by AirNZ and CITC.

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## Abbreviations

Air NZ	Air New Zealand
AKL	Auckland
AMPS	AirPoints Marketing Programme System
BTIB	Business Trade Investment Board
Bxxx	Boeing
CIEM	Cook Islands Economic Model
CIG	Cook Islands Government
CITC	Cook Islands Trading Company
GDP	Gross Domestic Product
HHG	Hillhouse Group
IO	Input Output (model)
LAX	Los Angeles
M.E	Market Economics Ltd.
MFEM	Ministry of Finance and Economic Management
RAR	Rarotonga
SYD	Sydney
USA	United States of America
VA	Value Added

# 1 Introduction

The Cook Islands Government (CIG) is working to increase access for tourism to the Cook Islands by underwriting direct flights from selected markets – particularly the North American and European markets, and some Australian markets. To this end, the Government is underwriting two key routes: Los Angeles and Rarotonga (the route is RAR-LAX-RAR), and Rarotonga and Sydney (SYD-RAR-SYD). The CIG has commissioned Market Economics, Hillhouse Group and Astral Aviation Consultants to review the underwrite agreements to ensure that they are delivering ‘value for money’ and generating positive economic impacts.

The focus of this evaluation is on fiscal and economic effects of the underwrite agreements. This assessment covers the January 2014 – December 2015 period, that is, two full calendar years.

The assessment considered two parts – the first part of the assessment reviewed the contract, identifying areas where it could be improved to support the tourism industry and the economy as a whole. The second part examined the extent to which the underwrites have contributed to economic activity on the Cook Islands through greater tourist arrivals. The CIG will be using the evaluation to inform its expenditure on the underwrite over the medium term.

This report is a summary of the economic effects of the underwrite services and it does not contain or present details on any of the confidential information. Details of these important matters have been presented to the CIG in a separate report. This report summarises the economic effects of the agreements.

## 1.1 Approach

We used Cook Island specific datasets and sources including the national accounts (GDP information), population data, visitor surveys and arrival/departure figures and we engaged in key stakeholder interviews. Next we used the available data and developed an economic model of the Cook Islands economy. This *Cook Islands Economy Model* (CIEM) was based on an input-output (IO) modelling structure.<sup>4</sup> This model explains the relationships between economic sectors, their production activities, employment and how they use inputs to produce goods and services.

We used the model to estimate the economic values associated with tourist spending (related to the underwrite), how that spending flows through the economy and how much economic value is generated. For example, the Cook Islands’ tourism sector forms a core part of the economy. Any effects on the sector are in turn felt across the whole community. To function, the tourism sector relies on air linkages. Any changes to air linkages and subsequently total visitors and visitor spending, would be felt across tourism sector, the supporting economic sectors and, consequently, the communities through changes in employment opportunities and income. Environmental outcomes are beyond the scope of this research.

The economic evaluation covers:

1. The **direct** effects from the underwritten services, in terms of the numbers and types of visitors who use the services inbound or outbound, or both, and the expenditure of these visitors in the Cook Islands economy;

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<sup>4</sup> During the development of the economic model, we made a number of assumptions. The assumptions were deliberately conservative and therefore, the results presented in the report err on the side of caution. The end result is that the model is not as sensitive to overall (net) changes. We used information generated by M.E as part of other studies in the Pacific (including information collected from [www.worldmrio.com](http://www.worldmrio.com)).



2. The **effects** of that expenditure *within the economy*, as measured through the *Cook Islands Economy Model*, an Input-Output model of the economy which has been developed for this project. This model tracks:
  - a. The *direct expenditure* and the associated value added to the economy,
  - b. The *indirect expenditure* for businesses which service those activities selling directly to visitors, and
  - c. The *induced effects*, from the spending by those employed in economy.
3. The economic effects of a **counterfactual** scenario, i.e. a hypothetical/alternative scenario showing the effects if the money spent on the underwrites was instead directed as additional expenditure by the Cook Islands Government on social/other services. This effect is also measured through the *Cook Islands Economy Model*.
4. The **wider effects** in regard to the nature and operation of the Cook Islands economy, and its linkages with other economies.

Our findings are presented in the following sections

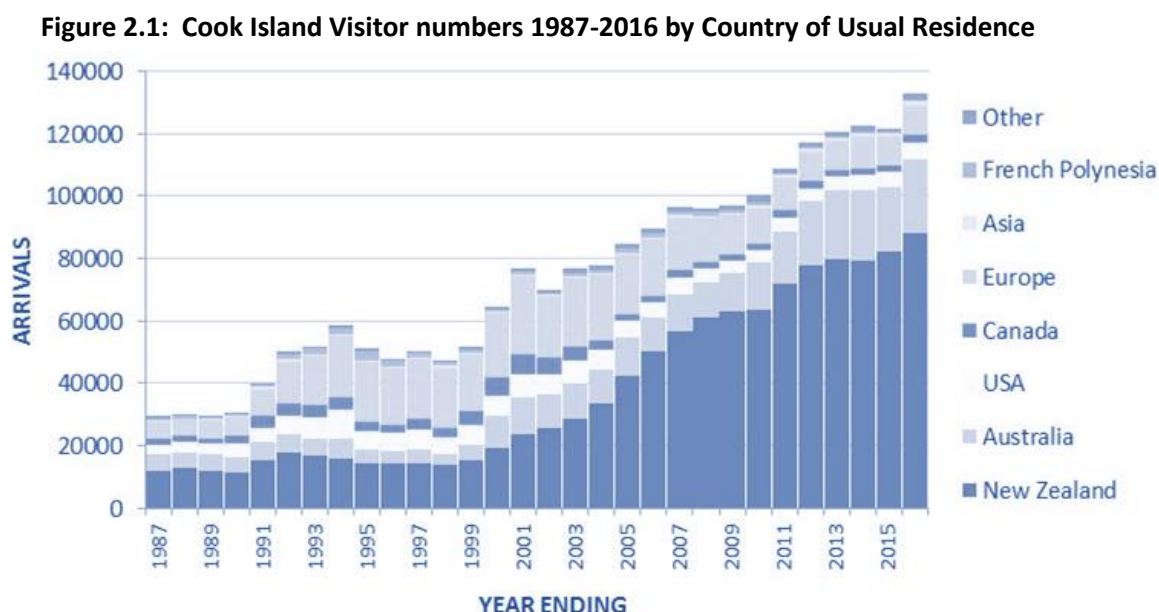
## 2 Economic Effects of the Underwrite

The core purpose of underwriting the two services is to maintain direct air links with key markets, notably Australia, North America and Europe. Direct links are intended to maintain the opportunity for visitors from those markets to travel to the Cook Islands, and to generate visitor expenditure in the Cook Islands economy. As well as the direct visitor and expenditure outcomes, there are strategic aims, particularly to maintain a direct presence in those core markets to support marketing and promotional effort by CITC and others, and to sustain a broader mix in the nation’s tourism product. This includes higher end facilities which appeal especially to northern hemisphere tourists.

The economic effects are considered primarily, but not wholly, in terms of the effects on tourism, measured according to the numbers of additional visitors to the Cook Islands because of the underwritten services. This is assessed in terms of the gross contribution to GDP, and the net contribution once the consequent effects – that is, less government expenditure than would otherwise be the case, because of the cost of the underwrites – are also taken into account.

### 2.1 Tourism Sector

To set the tourism context, we examined arrival trends and passenger arrival and departure data for the period 2010 to 2016 (YE June<sup>5</sup>). Figure 2.1 shows the main trends.



The arrivals numbers show considerable growth in visitor numbers since the year 2000, when total arrivals exceeded 60,000 for the first time. Migration Statistics indicate there will be 132,900 visitors in 2016<sup>6</sup>, with annual growth averaging 4.6 per cent per annum over the 2000-2016 period, or some 8,310 additional visitors each year.

<sup>5</sup> Note that the analysis of passenger numbers below is based on arrivals and departures for the 2014 and 2015 calendar years. However, to be consistent with the Financial and Contract review, the analysis of future economic effects is based on June years, rather than calendar years.

<sup>6</sup> Estimated for May and June 2016 according to the trend across July 2015-April 2016

However, there has been a substantial structural shift in visitor arrivals (see Figure 2.1), with a substantial increase in numbers from New Zealand (+9.9 per cent per annum) and Australia (+5.3 per cent per annum), but significant decreases in visitors from North America (-2.8 per cent per annum) and Europe (-4.6 per cent per annum). Although there has been some recovery in the North American market since 2010 (+3.6 per cent per annum), and a slowdown in the decline of European visitors (now -2.3 per cent per annum), the visitor industry as at 2016 is heavily dependent on the New Zealand market (66% of arrivals) and Australian market (18%). This dependence has nearly doubled since 2000, predominantly because of growth in the New Zealand (30% of arrivals in 2000), while the North American and European markets have declined in absolute terms and in market share.

This high dependence on the New Zealand market, and the steady decline in European and Canadian visitor numbers, are important considerations in regard to the underwritten flights, particularly given their focus on the North American and European markets, as well as Australia.

### 2.1.1 Net Additional Effects

The analysis covers the **net additional effects** of the underwritten services. A core assumption is that if there were no underwrites, then neither service would continue. However, that does not mean that all of the visitors who travel on the services would no longer travel to the Cook Islands if those services ceased to operate, as some would be able to travel there using other air services.

This potential is different for the two services. The LAX service (flights NZ19 from Los Angeles to Rarotonga, and NZ18 from Rarotonga to Los Angeles) is the only direct service to the USA, and it is not straightforward to reach Rarotonga from Los Angeles through other routes such as via New Zealand or Australia or Tahiti. Many leisure travellers favour direct routes, for reasons of time, cost and convenience, and resist travelling the same airspace twice (such as LAX-AKL-RAR-AKL-LAX) and having to connect through airports. Moreover, a substantial proportion of those travelling from Los Angeles to Rarotonga then travel on to New Zealand or Australia. Since the Cook Islands is not their sole destination, then it is probable that in the absence of a direct service those travellers would still make the trip to New Zealand or Australia, but because of the long back-haul to Rarotonga would be unlikely to still visit the Cook Islands as part of that trip.

For these reasons, we consider that 80-85% of the visitor numbers would be lost if the service was discontinued<sup>7</sup>.

However, the SYD service is one of a number of options for Australian visitors. In the 2014-2015 study period, this service handled some 42% of all Australian visitors, and 28% of all Australian visitors flew direct SYD-RAR-SYD. This shows it is the most important service for Australian visitors, although it served smaller shares of the American (4%), European (7%) and Asian (9%) markets. Australians account for 72% of those using the service, ahead of European visitors (11%) and New Zealand visitors (10%).

The number of Australian visitors to the Cook Islands has shown some increase since the service was introduced in 2011, with growth in Australian arrivals at 5.6% pa, up from the 3.9% recorded over the 2000-2011 period. Total Australian visitor arrivals on the NZ60 service have increased at about the same rate (5.1%).

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<sup>7</sup> A slightly greater share than assumed in the Covec study (2013) which allowed for 80% of passenger numbers to be lost.

For these reasons, we consider that 20-25% of the visitor numbers which currently use the service would be lost if the service was discontinued<sup>8</sup>.

## 2.2 Arrivals and Departures (2010-2015)

To understand the significance of the underwritten flights within the total tourism mix, we have examined CIG's datasets on passenger arrivals and departures. The arrivals dataset contains considerable detail on passenger arrivals by country of residence, age, sex, arrival status (visitor, Cook Island resident, temporary resident, for work purposes, diplomat, and other), together with date of arrival, flight number or name of vessel, for 764,038 arriving passengers over the period from 1 January, 2010 until December 31, 2015. The departures dataset for the same period contains detail on some 746,300 departing visitors, by country of residence, departure date, and flight number or name of vessel. Detail was also provided, on a strictly confidential basis, of visitor passport numbers to enable direct matching of date and flight number of arrival, with date and flight number of departure.

The analysis has focussed on arrivals with the status 'visitor' as the best indicator of genuine tourists, and to differentiate from those including Cook Island residents with New Zealand passports, who arrived either to visit friends and relatives (VFR travellers) or those from the Cook Islands who were visiting home. In the 2014-2015 period, total arrivals numbered 268,153 persons, of whom 247,633 (or 92.3%) were visitors. This 'visitor' total concords closely with the Migration Statistics which show 246,590 for the 2014 and 2015 years.

Appendix 2 shows the detail on all arrivals during the 2010-2015 period, disaggregated by country or region of residence, and arrival status. The appendix also shows how the underwritten services provide air transport services to visitors, by country of origin residence and arrival status.

Using the information in the Appendix, it is possible to estimate the share of total visitor spending attributed to the underwritten services.

### **LAX-Service: Facilitated Spending**

In total, the visitors who utilise the LAX service account for just over 102,000 visitor days in the Cook Islands, or 9.9% of the annual total. Visitor days have been calculated according to the arrival and departure dates of each visitor. The average of 8.3 days per person corresponds closely with the results of the Cook Islands Survey for 2015<sup>9</sup>. Visitor expenditure has been calculated using the results of the Cook Islands Visitor Survey<sup>10</sup>, which shows the mean daily spend within the Cook Islands by country/region of residence, and also provides an estimate of NZ\$97 per person per day for pre-paid<sup>11</sup> goods and services which is estimated to flow through the Cook Islands.

In total, the visitors who utilise the service spent some \$22.5m annually over the 2014-2015 period (Table 2.1). This represented some 10.3% of total visitor expenditure. The share of spending is slightly higher than the share of visitor days because the mix of visitors using the service had a slightly higher daily spend than visitors in total.

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<sup>8</sup> Very similar to the estimate in the Covec study, which allowed for 23% of passenger numbers to be lost.

<sup>9</sup> Cook Islands Visitor Survey Results April-June 2015, p11.

<sup>10</sup> Cook Islands Visitor Survey Results April-June 2015, p11-12.

<sup>11</sup> Such as tour packages and activities.

**Table 2.1: Expenditure in Cook Islands (NZ18 and NZ19 services during 2014 and 2015; \$'000)**

Services Used	NZ	Australia	USA	CANADA	Total Americas	UK	Germany	Total Europe	Total Asia	TOTAL
Inbound NZ19 and outbound NZ18	\$ 80	\$ 50	\$ 5,400	\$ 2,420	\$ 7,860	\$ 460	\$ 490	\$ 2,260	\$ 40	\$ 10,350
Inbound NZ19 and outbound NZ19	\$ 110	\$ 40	\$ 90	\$ 140	\$ 230	\$ 160	\$ 80	\$ 360	\$ -	\$ 750
Inbound NZ19, outbound Other	\$ 640	\$ 140	\$ 850	\$ 670	\$ 1,530	\$ 810	\$ 720	\$ 2,570	\$ 10	\$ 4,910
Inbound NZ18 and outbound NZ18	\$ 50	\$ 10	\$ 110	\$ 90	\$ 210	\$ 210	\$ 130	\$ 600	\$ -	\$ 860
Outbound NZ18, inbound Other	\$ 210	\$ 60	\$ 960	\$ 660	\$ 1,620	\$ 1,140	\$ 1,050	\$ 3,680	\$ 10	\$ 5,590
<b>Total LAX Service</b>	<b>\$ 1,090</b>	<b>\$ 300</b>	<b>\$ 7,410</b>	<b>\$ 3,980</b>	<b>\$ 11,450</b>	<b>\$ 2,780</b>	<b>\$ 2,470</b>	<b>\$ 9,470</b>	<b>\$ 60</b>	<b>\$ 22,460</b>
Other Services	\$ 131,980	\$ 33,820	\$ 2,040	\$ 970	\$ 3,570	\$ 8,790	\$ 3,700	\$ 20,870	\$ 2,330	\$ 194,990
<b>TOTAL</b>	<b>\$ 133,080</b>	<b>\$ 34,120</b>	<b>\$ 9,450</b>	<b>\$ 4,950</b>	<b>\$ 15,030</b>	<b>\$ 11,570</b>	<b>\$ 6,170</b>	<b>\$ 30,330</b>	<b>\$ 2,400</b>	<b>\$ 217,450</b>
Inbound NZ19 and outbound NZ18	0.1%	0.1%	57%	49%	52%	4%	8%	7%	2%	5%
Inbound NZ19 and outbound NZ19	0.1%	0.1%	1%	3%	2%	1%	1%	1%	0%	0%
Inbound NZ19, outbound Other	0.5%	0.4%	9%	14%	10%	7%	12%	8%	0%	2%
Inbound NZ18 and outbound NZ18	0.0%	0.0%	1%	2%	1%	2%	2%	2%	0%	0%
Outbound NZ18, inbound Other	0.2%	0.2%	10%	13%	11%	10%	17%	12%	0%	3%
<b>Total LAX Service</b>	<b>0.8%</b>	<b>0.9%</b>	<b>78%</b>	<b>80%</b>	<b>76%</b>	<b>24%</b>	<b>40%</b>	<b>31%</b>	<b>3%</b>	<b>10%</b>
Other Services	99%	99%	22%	20%	24%	76%	60%	69%	97%	90%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

### SYD-RAR: Facilitated Spending

Over the 2 year period, there were 19,854 passengers using the service, or 9,926 per year with the Australian market capturing 42% of visitors. The service also has some importance for the American market (4%), the European market (7%) and the Asian market (9%). In total, the visitors who utilise the service, account for some 87,000 visitor days in the Cook Islands, or 8.4% of the annual total.

In total, the visitors who utilise the service spent some \$19.1m annually over the 2014-2015 period (Table 2.2). This represented some 8.8% of total visitor expenditure. As with the LAX service, the share of spending is slightly higher than the share of visitor days because the mix of visitors using the service had a slightly higher average daily spend than visitors in total.

**Table 2.2: Expenditure in Cook Islands (NZ60 and NZ61 services during 2014 and 2015; \$'000)**

Services Used	NZ	Australia	USA	CANADA	Total Americas	UK	Germany	Total Europe	Total Asia	TOTAL
Inbound NZ 60 and Outbound NZ61	\$ 1,370	\$ 8,960	\$ 70	\$ 30	\$ 100	\$ 300	\$ 90	\$ 810	\$ 120	\$ 11,440
Inbound NZ60, outbound Other	\$ 660	\$ 2,950	\$ 120	\$ 90	\$ 220	\$ 220	\$ 180	\$ 760	\$ 110	\$ 4,730
Outbound NZ61, inbound Other	\$ 440	\$ 1,770	\$ 70	\$ 80	\$ 160	\$ 120	\$ 180	\$ 560	\$ 30	\$ 2,970
<b>Total SYD Service</b>	<b>\$ 2,470</b>	<b>\$ 13,680</b>	<b>\$ 260</b>	<b>\$ 200</b>	<b>\$ 480</b>	<b>\$ 640</b>	<b>\$ 450</b>	<b>\$ 2,130</b>	<b>\$ 270</b>	<b>\$ 19,140</b>
Other Services	\$ 130,610	\$ 20,440	\$ 9,190	\$ 4,740	\$ 14,540	\$ 10,930	\$ 5,720	\$ 28,200	\$ 2,130	\$ 198,310
<b>TOTAL</b>	<b>\$ 133,080</b>	<b>\$ 34,120</b>	<b>\$ 9,450</b>	<b>\$ 4,950</b>	<b>\$ 15,030</b>	<b>\$ 11,570</b>	<b>\$ 6,170</b>	<b>\$ 30,330</b>	<b>\$ 2,400</b>	<b>\$ 217,450</b>
Inbound NZ 60 and Outbound NZ61	1.0%	26.3%	1%	1%	1%	3%	1%	3%	5%	5%
Inbound NZ60, outbound Other	0.5%	8.6%	1%	2%	1%	2%	3%	3%	5%	2%
Outbound NZ61, inbound Other	0.3%	5.2%	1%	2%	1%	1%	3%	2%	1%	1%
<b>Total SYD Service</b>	<b>1.9%</b>	<b>40.1%</b>	<b>3%</b>	<b>4%</b>	<b>3%</b>	<b>6%</b>	<b>7%</b>	<b>7%</b>	<b>11%</b>	<b>9%</b>
Other Services	98.1%	59.9%	97%	96%	97%	94%	93%	93%	89%	91%
<b>TOTAL</b>	<b>100.0%</b>	<b>100.0%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Visitor spending is a key driver of the economic impacts/effects of the underwrite. The visitor spending brings capital in to the economy and then flows through, affecting all the sectors that support and provide services to visitor services.

## 2.3 Economic Effects of the Underwritten Services

The economic assessment covers the net effects of the additional visitors served by the two underwritten services. The 'net' suggests that any effects that would have taken place irrespective of the underwrites are excluded. For each service, the net additional visitor spending was analysed using the Cook Islands Economy Model, to identify the effects on gross output (GO), GDP or value added, incomes, and employment.

The cost of the underwrite was examined using the same approach, though as a negative impact. It was modelled as a net reduction in government spending, on the basis that if the money was not spent on the underwrite then it would instead be spent by the government as a *pro rata* increase within the local economy. The direct and indirect, and total<sup>12</sup> effects of the additional spending by visitors, and the implied lower spending by government, for the base year (2015) are shown in Table 2.3.

**Table 2.3: Net Economic Impact of Underwritten Services 2014-15**

INDICATOR	LAX-RAR SERVICE			SYD-RAR SERVICE		
	Visitor Spend (\$m)	Government Spend (\$m)	Net Effect (LAX)	Visitor Spend (\$m)	Government Spend (\$m)	Net Effect (SYD)
<b>Visitor Spend (\$m)</b>	\$ 17.7		\$ 17.7	\$ 4.3		\$ 4.3
<b>Government Spend (\$m)</b>		-\$ 6.3	-\$ 6.3		-\$ 4.1	-\$ 4.1
<b>Gross Output Effects (\$m)</b>						
<i>Direct and indirect</i>	\$ 21.8	-\$ 10.1	\$ 11.7	\$ 5.3	-\$ 6.5	-\$ 1.2
<i>Direct, indirect and induced</i>	\$ 38.0	-\$ 21.4	\$ 16.6	\$ 9.3	-\$ 13.8	-\$ 4.5
<b>GDP Effects (\$m)</b>						
<i>Direct and indirect</i>	\$ 14.3	-\$ 4.9	\$ 9.3	\$ 3.5	-\$ 3.2	\$ 0.3
<i>Direct, indirect and induced</i>	\$ 21.4	-\$ 9.9	\$ 11.5	\$ 5.2	-\$ 6.4	-\$ 1.1
<b>Income Effects(\$m)</b>						
<i>Direct and indirect</i>	\$ 8.1	-\$ 3.9	\$ 4.2	\$ 2.0	-\$ 2.5	-\$ 0.5
<i>Direct, indirect and induced</i>	\$ 13.1	-\$ 7.4	\$ 5.7	\$ 3.2	-\$ 4.8	-\$ 1.6
<b>Employment Effects</b>						
<i>Direct and indirect</i>	205	- 169	37	50	- 109	- 59
<i>Direct, indirect and induced</i>	343	- 264	78	84	- 171	- 87

Values in \$2013 terms

The additional spend by visitors who used the LAX-RAR service is estimated at \$17.7m. This generated some \$14.3m of direct and indirect value added effects, and a total GDP effect (direct, indirect and induced) of some \$21.4m.

**The annual cost of the underwrite averaged some \$6.3m in 2014-15. If this money had been spent by the government on activities and services, it would have generated some \$4.9m in direct and indirect value added, and had a total GDP effect of \$9.9m.**

**In net terms, the GDP effect of the LAX underwrite is positive over the 2014-2015 period, in the order of \$11.5m annually. The net additional income effect is estimated at \$5.7m, and the net additional employment is estimated at 78 persons.** Clearly, this service is delivering economic impacts and positive effects.

The estimated effect of the SYD-RAR service is considerably smaller. While the number of visitors who use the service is similar to the number using the LAX service, there is much greater opportunity to

<sup>12</sup> Direct, indirect and induced effects.

use alternative air services instead, and if the direct Sydney service was discontinued then it is expected that the majority of Australian visitors, in particular, would still visit the Cook Islands, using other services. On this basis, it is estimated that 20% of those who use the SYD-RAR service would not visit the Cook Islands, but 80% would do so. **Accordingly, the net additional visitor spend associated with the service is \$4.3m, and the total GDP effect of this expenditure is estimated at \$5.2m annually.**

The cost of the underwrite for the Sydney service was \$4.1m per year in 2014-15. If that money had been instead spent by the government on services and activities, it would have generated some \$6.4m in GDP, or around \$1.1m more than that arising from visitor spend. **This means that in net terms, the GDP effect of the SYD underwrite is negative, in the order of -\$1.1m. The net income effect is estimated at -\$1.6m, and the net employment effect is -87 persons.**

It is important to note that the underwrites provide an incentive for the airlines to provide the services and disruption the services would have a negative effect on visitor numbers, and consequently the economic impacts.

## 2.4 Spatial Distribution of the Effects

Our modelling did not distinguish between separate islands, and the economic effects are for the Cook Islands (group of islands) as a whole. Due to data limitations it is not possible to develop a model with the necessary spatial definitions to trace the flow of goods and services between the islands (and on the different islands). As an alternative, and to provide a high level indication of the spatial distribution, we looked at the international passengers' travel patterns to get a sense of how the underwritten air services deliver benefits to the outer islands. To do this, we attempted to match the passenger arrival and departure data with information from Air Rarotonga. It was not possible to develop a direct match across all records and the resulting coverage (direct relationship) was around 50 per cent. Reasons for this level of matching include, difference in how names/surnames are spelt, incomplete records and formatting issues, to name some. The inability to get a high level of alignment between the datasets means that this discussion is based on limited information, has a high degree of uncertainty and, as such, should be seen as a high level and preliminary assessment. Further, it relies on information received (verbally) during the site visits. With the above caveats in mind, we use rounded figures in this discussion.

Of the total number of visitors coming to the Cook Islands, only a share of these travel to the other Islands using Air Rarotonga (AR). Of the passengers flying AR, around 20 per cent are islanders moving between islands. This suggests that between 6,500 and 6,600 of the 33,000 passengers are domestic movements. This leaves around 26,500 passengers flying AR and these are assumed to be the international visitors (approximately 80 per cent). This suggests that the share of the international passengers that travel to the other islands is between 10% and 15%. With reference to the underwritten services, the data suggests that around a third (30%-35%) of the passengers on these flights also use AR's services, so it is assumed that these travellers go to the other islands. Therefore, it can be assumed that this portion of the economic effects arise in the other islands, with some linkages back to the main island (Rarotonga) in the form of supply chain effects.

## 2.5 Growth Scenarios

The study is also tasked with examining the likely future impacts and effects on the economy. This is not straightforward, as it needs to take into account both the trends in visitor numbers from each market, and also the effects of the forthcoming change in aircraft on the services, as the existing B767 aircraft will be replaced with B772 aircraft. This change will have both positive and negative economic effects.

On the negative side, the costs of operating the B772 are higher than for the older B767 aircraft, especially fuel costs and ownership costs of a newer aircraft. This means that the cost of the underwrite is almost certain to **increase in the short term**.

However, the B772 aircraft has larger total capacity (312 passengers compared with 230 for the B767), including considerable premium economy class capacity (40 seats) and considerably better quality of business class. The better quality of the aircraft and the cabin service is expected to be attractive to travellers, including those higher income travellers who prefer business class. On this basis, the number of visitors using the service can be expected to increase because of the better aircraft, especially for northern hemisphere visitors (North America and Europe).

However, it is difficult to forecast accurately the likely increase in numbers, particularly the effect of the new aircraft. Accordingly, we have examined the outcomes for a number of scenarios<sup>13</sup>, and estimated the effects on the economy from these. The analyses have been undertaken for each service, with the effects also considered in aggregate, for both underwritten services combined.

Four scenarios for visitor growth have been developed, and expressed in terms of the numbers of visitors using each service. They all provide for future passenger numbers to be influenced by underlying trends, the positive effects of a new aircraft, and for ongoing marketing and promotional activity to support the enhanced services. The growth projections are service-specific, and are based on the weighted average growth according to the mix of visitors currently using each service, rather than the weighted average for visitors in total, so that the specific effects of the change in aircraft can be taken into account. The main features of each scenario are highlighted below and Appendix 3 shows the details:

- **Very low growth:** reflecting slower increases (than in the low growth scenario) from all markets which currently show growth, and no growth (but no further decline) in the Canada and Europe markets.
- **Low growth:** slowing of the current growth rates of visitor arrivals from key markets and some low growth in smaller markets.
- **Medium growth:** a continuation of the trends for the different markets (including some decline in some of the smaller markets).
- **High growth:** a continuation of the growth trends for the key markets plus a return to positive growth in the smaller markets.

These growth scenarios underpin the scenarios used to assess the economic impacts of the underwritten services, for the period 2017 to 2020, for each service. This is done to illustrate the

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<sup>13</sup> Scenarios are most relevant to examine a range of plausible future outcomes when forecasting is technically difficult, as it is in this case because the introduction of the B772 represents a quantum change. Commonly, in examining possible future growth, low, medium and high scenarios are employed to reflect (respectively) conservative, moderate, and optimistic growth outcomes.



potential medium and long term sustainability of the underwrites. The results of the economic impact modelling are presented in the following section.

### 2.5.1 Scenarios Results and Sensitivities

A scenario approach is used for each route to assess each one separately. There is a direct relationship between visitor numbers and load factors on the services, and between load factors and the size of the underwrite needed. Using this relationship, the growth futures have been analysed to identify the implied change in load factors, and therefore the size of the underwrite, for each future year. We note that this is necessarily a close approximation (since not all of the drivers of the underwrite calculation are linear) but it nevertheless provides a sound basis for estimating the size of the underwrite, and the net contribution to GDP from additional visitors at different levels of future growth.

The technical assessment of the underwrite also identified the sensitivities to changes in fuel costs, and the value of the NZ dollar, which are the major variables (together with load factors) likely to affect the underwrite amount. It is also important to consider the sensitivity of the results to key assumptions, especially the degree to which removal of either service might impact on visitor numbers to the Cook Islands.

Because a wide range of combinations is possible, the impacts are presented in detail for each service in the Medium growth (as a base case) future, and in summary for the various configurations around this base case.

#### ***Effects of Los Angeles Service***

Table 2.4 sets out the estimated economic effects, for the 2017 to 2020 period. **The results suggest that in the medium growth future, the net effects on the economy of the Los Angeles service underwrite are positive**, with GDP larger by \$8m to \$19m. This result is consistent with the analysis for 2014 and 2015 (Table 2.3, above). It allows for the B772 to operate on the service for most of the 2017 year.

**Interpreting the table:** The table shows the numbers of visitors to the Cook Islands estimated to use the service, the numbers of those who would be net additional, their expenditure, and the outcomes for GDP in direct and indirect, and total terms. It also shows the cost of the underwrite (at the associated load factors for those visitor numbers<sup>14</sup>) and the effects on GDP if that money is not spent by the government on other services, and funds the underwrite. The final line shows the net contribution on GDP in that year.

**Table 2.4: Economic Effects of the Los Angeles Service Underwrite**

Los Angeles Service	Medium Growth Underwrite Scenario : Base Case							
	2014	2015	2016	2017	2018	2019	2020	2021
Visitors using the Service	11,750	11,930	12,240	12,600	13,700	14,600	15,300	16,000
Net Additional Visitors (80%)	9,400	9,540	9,790	10,100	11,000	11,700	12,200	12,800
Net Additional Visitor Spend (\$m)	\$ 17.7	\$ 18.0	\$ 18.4	\$ 19.0	\$ 20.7	\$ 22.0	\$ 23.0	\$ 24.1
Direct and Indirect Value Added (\$m)	\$ 14.3	\$ 14.5	\$ 14.9	\$ 15.4	\$ 16.7	\$ 17.8	\$ 18.6	\$ 19.5
Total Value Added (GDP) from Service (\$m)	\$ 21.4	\$ 21.7	\$ 22.3	\$ 23.0	\$ 25.0	\$ 26.6	\$ 27.8	\$ 29.1
Cost of Underwrite (\$m)	-\$ 6.4	-\$ 6.4	-\$ 4.4	-\$ 9.2	-\$ 8.2	-\$ 7.3	-\$ 6.7	-\$ 6.2
Direct and Indirect Value Added (\$m)	-\$ 5.0	-\$ 4.9	-\$ 3.4	-\$ 7.1	-\$ 6.4	-\$ 5.7	-\$ 5.2	-\$ 4.8
Total Value Added (GDP) from CIG Spend (\$m)	-\$ 10.1	-\$ 10.0	-\$ 7.0	-\$ 14.4	-\$ 12.9	-\$ 11.5	-\$ 10.6	-\$ 9.7
<b>Net Contribution to GDP (\$m)</b>	<b>\$ 11.3</b>	<b>\$ 11.7</b>	<b>\$ 15.3</b>	<b>\$ 8.6</b>	<b>\$ 12.2</b>	<b>\$ 15.1</b>	<b>\$ 17.2</b>	<b>\$ 19.4</b>

<sup>14</sup> These have been interpolated from the technical analysis

These effects are sensitive to the growth rate in visitor numbers, as well as the outcomes for airline operation. In our analysis, we considered the scenarios and identified the following key points (Appendix 4 shows the detailed results for each scenario):

- The effects of this underwrite are generally positive for the economy. While the higher cost of the B772 would mean the underwrite costs go up considerably from 2017, and the net positive effect is reduced, the net effects are positive in almost all combinations;
- Underlying demand growth in all combinations means that the negative effect reduces/positive effect increases over time;
- The net effect would be small in a low growth future, in which the NZD appreciates to increase the cost of the underwrite, and only 50% of visitors using the services are assumed to be net additional. In that combination of circumstances, the net effect is an overall negative outcome in 2017 and 2018, and thereafter small positive effects;
- The very low growth future, which is assumed to correspond with the low load factors and high fuel costs as market conditions worsen (see Appendix 3) and assumes only 50% of visitors are net additional, would show a substantial net negative impact in 2017, though recovery to a net neutral impact on the economy by 2021;
- The net effects are more substantially positive if market growth is medium or high, and/or the airline costs are favourable in real terms (eg. the NZD depreciates).

### Sydney Service

Table 2.5 sets out the estimated net economic effects associated with the Sydney service, for the 2017 to 2020 period (The table has the same structure as Table 2.4 and is interpreted in the same way).

**Table 2.5: Economic Effects of the Sydney Service Underwrite**

Sydney Service	Underwrite Scenario : Base Case							
	2014	2015	2016	2017	2018	2019	2020	2021
Visitors using the Service	9,781	9,930	10,642	11,350	12,530	13,610	14,530	15,520
Net Additional Visitors (20%)	1,960	1,990	2,130	2,270	2,510	2,720	2,910	3,100
Net Additional Visitor Spend (\$m)	\$ 3.8	\$ 3.8	\$ 4.1	\$ 4.4	\$ 4.8	\$ 5.2	\$ 5.6	\$ 6.0
Direct and Indirect Value Added (\$m)	\$ 3.1	\$ 3.1	\$ 3.3	\$ 3.6	\$ 3.9	\$ 4.3	\$ 4.6	\$ 4.9
Total Value Added (GDP) from Service (\$m)	\$ 4.6	\$ 4.6	\$ 5.0	\$ 5.3	\$ 5.9	\$ 6.3	\$ 6.8	\$ 7.2
Cost of Underwrite (\$m)	-\$ 4.9	-\$ 3.4	-\$ 2.1	-\$ 2.1	-\$ 4.3	-\$ 3.5	-\$ 3.0	-\$ 2.3
Direct and Indirect Value Added (\$m)	-\$ 3.8	-\$ 2.7	-\$ 1.7	-\$ 1.6	-\$ 3.3	-\$ 2.7	-\$ 2.3	-\$ 1.8
Total Value Added (GDP) from CIG Spend \$m	-\$ 7.6	-\$ 5.3	-\$ 3.3	-\$ 3.2	-\$ 6.7	-\$ 5.4	-\$ 4.7	-\$ 3.6
<b>Net Contribution to GDP (\$m)</b>	<b>-\$ 3.0</b>	<b>-\$ 0.7</b>	<b>\$ 1.6</b>	<b>\$ 2.1</b>	<b>-\$ 0.8</b>	<b>\$ 0.9</b>	<b>\$ 2.1</b>	<b>\$ 3.6</b>

The results suggest that in the medium growth future, the net effects on the economy of the Sydney service underwrite are initially negative or neutral, and becoming slowly positive as market growth occurs. This is again consistent with the analysis of the Sydney service for 2014 and 2015 (Table 2.3, above). The analysis assumes that a B772 is introduced in the 2018 FY. **The net effects of the Sydney underwrite are substantially smaller than those of the Los Angeles service**, primarily because a much smaller share (20%) of visitors using the service can be considered as net additional.

These effects are again sensitive to the growth rate in visitor numbers, as well as the outcomes for airline operation (Appendix 4 shows the detailed results for each scenario) with the main observations being:

- a. The effects of this underwrite are initially (once the B772 enters service) negative for the economy with all scenarios, except the high growth scenario, showing a net negative effect (-\$0.6m to -\$3.6m) in the first year of the new aircraft, and the very low growth scenario at -\$5.3m;
- b. The net effects generally improve over time, consistent with growth in the key markets;
- c. Under medium or high growth scenario, or if airline cost conditions are favourable, the negative effect changes to a net neutral or slightly net positive outcome by 2019.
- d. Under the pessimistic future combination – low growth, unfavourable airline costs because the NZD has appreciated, and only 15% of visitors using the service are net additional – the contribution to GDP is net negative through to 2021;
- e. The very low growth future, which is assumed to correspond with the low load factors and high fuel costs as market conditions worsen and assumes that only 15% of passengers are net additional<sup>15</sup>, would show a substantial net negative impact in 2018. Thereafter, there would be some recovery but still a net negative impact on the economy by 2021;
- f. Under all other combinations of outcomes, the underwrite would deliver a neutral or small net contribution to the Cook Islands economy from 2019 or 2020 onwards. This the case for all the combinations except the ‘very low growth’ scenario.

## 2.6 Conclusion & other considerations

The analysis shows that the **strategy of underwriting the two air services is generally sound for an economic perspective, because continuation of the services has a more positive outcome for the economy than if they were discontinued.** This is demonstrable in terms of the direct and flow-on effects through the economy, undertaken as a technical analysis.

Importantly, this conclusion stands from an analytical perspective. In any assessment of this type, it is important to also take into account broader matters, especially the strategic importance of the air links which the underwrites seek to maintain. The Cook Islands economy is very heavily dependent on tourism. Annual income for the tourism sector – accommodation, hospitality, transport, activities and related services – is over ten times larger than the value of fish exports (the next largest export), and much of the employment on Rarotonga and the outer islands is directly or indirectly dependent on overseas visitors. This serves to highlight the importance of strategic considerations, for both the tourism sector, and the wider economy and community.

Key strategic values of the Los Angeles and Sydney air services are:

- a. **Direct Links.** It is increasingly important to have direct links with key markets, especially the Los Angeles route which is the only air link to the United States, and through that to the markets of Europe.
- b. **Market security.** The currently high dependence on the New Zealand and Australia visitor markets is a risk for the Cook Islands economy, especially given the nature of the New Zealand

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<sup>15</sup> This assumption has a strong effect on the results. If 20% of passengers are attributed to the service, the net negative effect in the very low growth future is close to neutral by 2021, rather than -\$2.3m.

market which is short-medium haul, predominantly middle-market, family and couple units, who are price sensitive. A substantial downturn in New Zealand visitor numbers would have significant negative effects for the economy.

- c. **Broadening the Visitor and Product Base.** The dominance of New Zealand visitors, with their middle market orientation and limited propensity to utilise the higher end of the Cook Island tourist product (especially accommodation) increases the risks to the Cook Islands tourism base. Access to the USA and Europe markets is especially important for the higher end facilities, on Rarotonga and especially Aitutaki. A broader visitor base is also very important for the Cook Islands to attract a broader (tourist sector) **investor base**.
- d. **Higher quality aircraft.** Although the introduction of the B772 will increase the costs of the underwrites, the availability of genuine business class and premium economy capacity will enhance the attractiveness of the Cook Islands as a destination for higher end travellers. This suggests that while the new aircraft will take some time to become established products on the Cook Islands links, the switch to B772 is likely to act positively to broaden the visitor base, and consequently help maintain a broader tourism product base.
- e. **Expanding the Sydney market.** Urban Sydney has a population greater than New Zealand in total, yet the number of Australian visitors – let alone Sydney residents – remains relatively low. The Sydney service is a direct link to the largest single market within 8,000 km, and is 600km closer than Melbourne, with a much larger population than Brisbane (though Brisbane is 200km closer). Sydney therefore offers the greatest potential to develop a market at the quicker end of long haul (6-7 hours) – especially given the relatively high penetration already of the New Zealand market.

If the underwrites showed a negative GDP outcome, then decisions around them would require weighing up of the strategic and other values of maintaining the services, against the negative economic outcomes. However, this analysis suggests that is not the case, as the underwrites show a generally positive outcome.

### **Social Implications**

The main focus of the study is on the economic implications of the two services. It is also important to consider briefly the wider benefits of the services to the Cook Islands community. The Cook Island economy is dominated by tourism activities and related businesses. These activities employ people paying salaries and wages (income). The main positive effects of the services stem directly from the additional tourism revenues which they bring to the Cook Islands, and especially from the employment which the tourism sector sustains. The long term financial sustainability of the services will flow through and have an effect on local jobs and household incomes. This is an important observation because the flow on effects to the local community are important and, as our analysis has shown, the services are delivering positive effects (inflow of foreign capital, generating employment and income).

This flows through directly in terms of incomes, to wage and salary earners, and to business operators. The analysis identified a net positive outcome for income of \$5.7m from the LAX service, and -\$1.6m from the Sydney service. In combination, the two services (as at 2014 and 2015) generated a net additional \$4.1m in income. The scenarios suggest that the future effects of the Los Angeles service will also have a net positive effect on incomes, associated with the generally positive effects on GDP. The situation is marginal for the Sydney service, given that its overall effect on GDP is expected to be negative initially following the introduction of the B772 service.

However, the effects on employment are not as positive as those on income. The analysis of the 2014-15 period showed a net positive outcome for the Los Angeles service (employment of +78 persons) but a negative net outcome for the Sydney service (employment effect of -87 persons when compared with expenditure by the government on other goods and services). In net terms, across both services, the effect in 2014-2015 is estimated to have been a small negative.

The higher net cost of the underwrite in the initial years indicates that the opportunity cost in employment terms will increase. This does not indicate that people will lose jobs, since the underwrites have been in place for some years, and the analysis shows the opportunity cost for employment, rather than the impact of reducing government spending. Nevertheless, this opportunity cost is expected to increase as the underwrite costs increase in the short term as the B772 is introduced.

From the wider perspective, however, there are also direct benefits for employment and workforce skills from maintaining a broader tourism base and tourism product base. This is important given the dominant role of tourism in the economy. This is consistent with other strategic initiatives to extend skills among the tourism sector workforce as part of the national development strategy<sup>16</sup> specifically 'Priority Area 1: Economic Development'. This area's goal and key objectives are supported by the underwrite services. In turn this aligns with some of the other areas of the plan, including social development (that states that the '*people... can enjoy opportunities to fulfil their potential, prosper and participate...*'). The underwrite services support this area.

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<sup>16</sup> The Cook Islands Te Kaveinga Nui. National Sustainable Development Plan 2011-2015.

### 3 Conclusions

The analysis shows that underwriting the two services has a net positive effect for the Cook Islands economy, which arises from the net additional spending by overseas visitors. These effects mean the economy is larger (GDP is greater) with the services in place, after allowing for the negative effects of the costs of the underwrites. The effects of the underwrite for the Los Angeles route, are clearly positive. However, the effects of the Sydney underwrite by itself, are more marginal.

In addition, there are strategic values from maintaining the direct services from Los Angeles and Sydney, relating to the importance of having direct links with key markets, of seeking to extend the breadth of the market base at a time when one single market (New Zealand) accounts for a very large share of visitor numbers, of maintaining and extending a broad product base, and of maintaining a direct link to facilitate growth from the very large Sydney population base. There is also value in maintaining links whose quality and attractiveness to travellers will improve with the introduction of the B772 aircraft.

There are both significant challenges and opportunity in the short and medium term. The B772 aircraft will be more expensive to operate, and the costs of the underwrites will increase, probably substantially, in the short term (2017 and 2018).

The underwrite costs are directly related to load factors which drive aircraft revenue, and filling more seats, especially in the premium economy and business class sections, is very important. On the positive side, tourism numbers are expected to grow steadily, with the main markets of New Zealand, Australia and the USA, as well as Asia, having shown solid growth over the 2010-2016 period. The introduction of the B772 service is expected to have positive effects on visitor numbers from these markets, and especially also on the Europe market which has shown slow decline over the 2010-2016 period (following a more substantial decline during 2000-2010). This means that while the net costs of the underwrite will increase in the short term, there is considerable upside potential, stemming from the underlying market growth and the improved service quality of the B772.

However, these trends are not guarantees that the long term outlook will remain favourable and there are risks. The costs of the underwrites are substantial, and require a significant proportion of government revenue. It is important to recognise that, **even though the net effects on the economy are largely positive, the underwrite on this service still represents a very large direct cost to community, and any initiative which can reduce the cost – particularly through marketing and product strategies to generate additional revenue for the air services – will have direct positive effects for the economy and community.** The fact that the net outcome for the economy is positive does not mean that the underwrite pays for itself.

The anticipated greater cost of the underwrite does mean more potential for economic impacts to turn net negative. This means it will be very important to actively 'work the underwrite', because there are no silver bullets which will reduce the net costs in one hit. Rather, given the nature of tourism which is the aggregate outcome of many decisions by individuals and groups to travel, improvements will arise from the combined effects of many small gains – both in limiting the costs of the underwrite, and increasing the numbers of visitors and their fare revenue. Such effort is required both directly through the CIG and AirNZ relationship, and also through the related marketing effort, including by Air NZ and CITC.

In our view, it is important to take a medium-long term perspective when evaluating the underwrites. The next two years are a period in which there will be a quantum change from the introduction of the B772, with a consequent negative shift in economic effects likely in the short-medium term. This is because the underwrite costs will rise as a step change, whereas any increase in passenger numbers will take some time to build up.

However, while that shift will increase the costs, it will not alter the underlying fundamentals and strategic reasons for maintaining the links. That, together with the clear potential for upside, emphasises the need to take a medium-long term perspective in any decisions about the underwrites.

# 4 Appendices



## Appendix 1: Interviewees

- Ministry of Finance and Economic Management
  - John Webb
- Cook Islands Trading Corporation
  - Halatoa Fua
- Air NZ employees
  - Peter Walsh
  - Hamish Curson
  - Andrew Skilling
  - Jonathon Dale, and
  - Kenny Mar
- Air Rarotonga
  - Ewan Smith
- Cook Islands Chamber of Commerce members
- Pacific Resort Hotel Group
  - Greg Stanaway
  - Marcus Niszow
- Edgewater Resort
  - Bob Taylor
- National Environment Service
  - Joseph Brider

## Appendix 2: Arrivals and Departure Information

The table below shows the detail on all arrivals during the 2010-2015 period, disaggregated by country or region of residence, and arrival status. The table shows the same breakdown for the 2015 calendar year. Arriving and departing persons were matched (using passport numbers), to identify the arrival and departure dates and flight numbers. This process achieved a high level of matching, in excess of 91 per cent overall. There are several reasons why 100% matching was not possible, particularly because the analysis covered the period 1 January 2014 until 31 December 2015. This meant that those arriving prior to 1 January 2014 would not have a direct match, nor would those who arrived before 31 December 2015 but had not departed by the end of that year. There were also a number of visitors who arrived and departed two or more times, which meant that direct matching on an individual trip basis was difficult and risked overstating their length of stay.

The dominance of New Zealand and Australian visitors is clearly apparent.

### Total Arrivals by Country/Region of Residence and Arrival Status 2010-2015.

ORIGIN	Visitor	Work	Diplomat	Total Visitors & Work	Cook Islander	Resident	Temp Resident	Total Cook Island & Residents	TOTAL	N.A.	GRAND TOTAL
New Zealand	388,222	1,009	74	389,305	79,500	3,533	2,288	85,321	474,626	35,464	510,090
Australia	82,964	181	31	83,176	3,120	452	492	4,064	87,240	7,901	95,141
South Pacific	3,706	372	22	4,100	89	149	607	845	4,945	411	5,356
<b>Total NZ-Pacific</b>	<b>474,892</b>	<b>1,562</b>	<b>127</b>	<b>476,581</b>	<b>82,709</b>	<b>4,134</b>	<b>3,387</b>	<b>90,230</b>	<b>566,811</b>	<b>43,776</b>	<b>610,587</b>
USA	26,537	59	41	26,637	225	151	114	490	27,127	2,297	29,424
Canada	11,643	21	1	11,665	92	37	44	173	11,838	1,303	13,141
South America	1,195	5	-	1,200	-	1	4	5	1,205	75	1,280
Other America	15	-	-	15	-	-	-	-	15	-	15
<b>Total Americas</b>	<b>39,390</b>	<b>85</b>	<b>42</b>	<b>39,517</b>	<b>317</b>	<b>189</b>	<b>162</b>	<b>668</b>	<b>40,185</b>	<b>3,675</b>	<b>43,860</b>
Great Britain	35,980	72	4	36,056	78	136	130	344	36,400	3,104	39,504
Germany	15,119	15	-	15,134	36	74	48	158	15,292	1,322	16,614
Other Europe	20,571	37	17	20,625	557	177	129	863	21,488	1,425	22,913
<b>Total Europe</b>	<b>71,670</b>	<b>124</b>	<b>21</b>	<b>71,815</b>	<b>671</b>	<b>387</b>	<b>307</b>	<b>1,365</b>	<b>73,180</b>	<b>5,851</b>	<b>79,031</b>
China	3,397	6	2	3,405	10	22	5	37	3,442	368	3,810
Other Asia	4,995	144	36	5,175	17	42	201	260	5,435	513	5,948
Middle East	26	-	-	26	-	-	-	-	26	-	26
Africa	2,019	6	-	2,025	2	6	17	25	2,050	217	2,267
Other	16,474	152	110	16,736	94	74	229	397	17,133	1,376	18,509
Total Asia & Other	26,911	308	148	27,367	123	144	452	719	28,086	2,474	30,560
<b>TOTAL</b>	<b>612,863</b>	<b>2,079</b>	<b>338</b>	<b>615,280</b>	<b>83,820</b>	<b>4,854</b>	<b>4,308</b>	<b>92,982</b>	<b>708,262</b>	<b>55,776</b>	<b>764,038</b>

### Total Arrivals by Country/Region of Residence and Arrival Status 2015.

ORIGIN	Visitor	Work	Diplomat	Total Visitors & Work	Cook Islander	Resident	Temp Resident	Total Cook Island & Residents	TOTAL	N.A.	GRAND TOTAL
New Zealand	75,979	139	4	76,122	15,856	772	540	17,168	93,290	-	93,290
Australia	15,760	33	-	15,793	563	95	124	782	16,575	-	16,575
South Pacific	709	65	1	775	22	30	147	199	974	-	974
<b>Total NZ-Pacific</b>	<b>92,448</b>	<b>237</b>	<b>5</b>	<b>92,690</b>	<b>16,441</b>	<b>897</b>	<b>811</b>	<b>18,149</b>	<b>110,839</b>	<b>-</b>	<b>110,839</b>
USA	5,525	16	-	5,541	41	30	40	111	5,652	-	5,652
Canada	2,033	-	-	2,033	18	3	8	29	2,062	-	2,062
South America	251	-	-	251	-	-	1	1	252	-	252
Other America	-	-	-	-	-	-	-	-	-	-	-
<b>Total Americas</b>	<b>7,809</b>	<b>16</b>	<b>-</b>	<b>7,825</b>	<b>59</b>	<b>33</b>	<b>49</b>	<b>141</b>	<b>7,966</b>	<b>-</b>	<b>7,966</b>
Great Britain	6,005	18	-	6,023	10	31	48	89	6,112	-	6,112
Germany	2,748	-	-	2,748	6	14	11	31	2,779	-	2,779
Other Europe	3,515	8	1	3,524	98	42	31	171	3,695	-	3,695
<b>Total Europe</b>	<b>12,268</b>	<b>26</b>	<b>1</b>	<b>12,295</b>	<b>114</b>	<b>87</b>	<b>90</b>	<b>291</b>	<b>12,586</b>	<b>-</b>	<b>12,586</b>
China	649	5	2	656	4	4	2	10	666	-	666
Other Asia	948	40	6	994	3	1	54	58	1,052	-	1,052
Middle East	-	-	-	-	-	-	-	-	-	-	-
Africa	310	2	-	312	1	-	5	6	318	-	318
Other	3,664	28	6	3,698	7	16	54	77	3,775	-	3,775
Total Asia & Other	5,571	75	14	5,660	15	21	115	151	5,811	-	5,811
<b>TOTAL</b>	<b>118,096</b>	<b>354</b>	<b>20</b>	<b>118,470</b>	<b>16,629</b>	<b>1,038</b>	<b>1,065</b>	<b>18,732</b>	<b>137,202</b>	<b>-</b>	<b>137,202</b>

Nevertheless, taking account of the very high rate of successful matching of arrival and departure, the totals were factored up to concord with total arrival numbers by each country or region of origin for the 2014-2015 period, on the basis that the 91% which did match would be representative of all arrivals in that period.

The matching process provided information on date and flight of arrival, date and flight of departure, calculated length of stay in days, as well as nationality of visitor (country or region of residence), and age and sex data. Visitors from New Zealand, Australia, USA, Canada, United Kingdom, Germany and China were categorised by country of residence. Other visitors were grouped to region of residence as South Pacific, Other Europe, South America, Other America, Other Asia, Middle East, Africa and Other (including those whose country was not defined).

This matching was a critical part of the analysis, to show the numbers of visitors who have used the underwritten services to arrive or depart, or both, during the study period. The analysis has focused on each service individually, although there are some visitors who made use of both underwritten services for their visit.

### The LAX-RAR service (NZ18 and NZ19)

For the LAX service, flight NZ18 RAR to LAX and flight NZ19 LAX to RAR, visitors were categorised according to whether they:

- Used the service both ways, arriving on NZ19 from LAX and subsequently departing on NZ18 to LAX;
- Used the service NZ19 from LAX and subsequently departed on flight NZ19 to Auckland;
- Used the service NZ19 from LAX but departed on another flight (to New Zealand or Australia);
- Arrived on flight NZ18 from New Zealand, and subsequently departed also on NZ18 to LAX;
- Arrived on another flight from New Zealand, Australia or Papeete, and then departed on NZ18 to LAX.

These categories capture all of the passengers who utilise the LAX-RAR leg of the service. It excludes those who use the NZ18 service from Auckland but do not then on-fly to Los Angeles (that is, who use the service primarily to get to the Cook Islands from New Zealand).

The numbers of passengers in these categories, by country/region of residence, is shown in the table.

### Visitors using NZ18 and NZ19 services during 2014 and 2015

Services Used	NZ	Australia	USA	CANADA	Total Americas	UK	Germany	Total Europe	Total Asia	TOTAL
Inbound NZ19 and outbound NZ18	30	20	2,740	710	3,470	170	140	860	30	4,440
Inbound NZ19 and outbound NZ19	90	30	60	70	130	90	40	180	-	430
Inbound NZ19, outbound Other	520	100	630	390	1,030	490	350	1,330	10	3,010
Inbound NZ18 and outbound NZ18	40	-	70	60	130	110	70	310	-	480
Outbound NZ18, inbound Other	150	60	760	400	1,170	780	560	2,170	10	3,570
<b>Total LAX Service</b>	<b>830</b>	<b>210</b>	<b>4,260</b>	<b>1,630</b>	<b>5,930</b>	<b>1,640</b>	<b>1,160</b>	<b>4,850</b>	<b>50</b>	<b>11,930</b>
Other Services	78,450	16,990	1,190	490	2,040	4,970	1,810	11,120	1,860	111,890
<b>TOTAL</b>	<b>79,270</b>	<b>17,210</b>	<b>5,460</b>	<b>2,110</b>	<b>7,970</b>	<b>6,610</b>	<b>2,960</b>	<b>15,980</b>	<b>1,910</b>	<b>123,820</b>
Inbound NZ19 and outbound NZ18	0%	0%	50%	34%	44%	3%	5%	5%	2%	4%
Inbound NZ19 and outbound NZ19	0%	0%	1%	3%	2%	1%	1%	1%	0%	0%
Inbound NZ19, outbound Other	1%	1%	12%	18%	13%	7%	12%	8%	1%	2%
Inbound NZ18 and outbound NZ18	0%	0%	1%	3%	2%	2%	2%	2%	0%	0%
Outbound NZ18, inbound Other	0%	0%	14%	19%	15%	12%	19%	14%	1%	3%
<b>Total LAX Service</b>	<b>1%</b>	<b>1%</b>	<b>78%</b>	<b>77%</b>	<b>74%</b>	<b>25%</b>	<b>39%</b>	<b>30%</b>	<b>3%</b>	<b>10%</b>
Other Services	99%	99%	22%	23%	26%	75%	61%	70%	97%	90%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Averaged over the 2 year period, there were some 11,930 passengers who used the service each year. Key aspects are:

- a. The service is very important for the North American market. Some 78% of all visitors from the USA used the service either both ways (50%), *en route* to another destination after the Cook Islands (13%) or when homeward bound (15%);
- b. It is similarly important for the smaller Canadian market, carrying nearly 77% of all Canadian visitors to the Cook Islands, and for the total American market which includes South America;

The service is also very important for the European market. Some 30% of all visitors from Europe used the service, including the 21% of all European visitors who used the northbound leg from Rarotonga to Los Angeles.

The following table shows the importance of each market to the LAX-RAR service.

**Importance of each market to NZ18 and NZ19 services during 2014 and 2015**

Services Used	NZ	Australia	USA	CANADA	Total Americas	UK	Germany	Total Europe	Total Asia	TOTAL
Inbound NZ19 and outbound NZ18	1%	0%	62%	16%	78%	4%	3%	19%	1%	100%
Inbound NZ19 and outbound NZ19	21%	7%	13%	16%	30%	21%	10%	43%	0%	100%
Inbound NZ19, outbound Other	17%	3%	21%	13%	34%	16%	11%	44%	0%	100%
Inbound NZ18 and outbound NZ18	7%	1%	15%	12%	26%	24%	14%	65%	0%	100%
Outbound NZ18, inbound Other	4%	2%	21%	11%	33%	22%	16%	61%	0%	100%
<b>Total LAX Service</b>	<b>7%</b>	<b>2%</b>	<b>36%</b>	<b>14%</b>	<b>50%</b>	<b>14%</b>	<b>10%</b>	<b>41%</b>	<b>0%</b>	<b>100%</b>
Other Services	70%	15%	1%	0%	2%	4%	2%	10%	2%	100%
<b>TOTAL</b>	<b>64%</b>	<b>14%</b>	<b>4%</b>	<b>2%</b>	<b>6%</b>	<b>5%</b>	<b>2%</b>	<b>13%</b>	<b>2%</b>	<b>100%</b>

The table shows:

- a. Half of the demand for the service is from the American market, and most of this is from the USA market (36%);
- b. Visitors from Europe accounted for 41% of the total use made of the service. Together, the American and Europe markets accounted for over 90% of the use made of the service.

In total, the visitors who utilise the service account for just over 102,000 visitor days in the Cook Islands, or 9.9% of the annual total. Visitor days have been calculated according to the arrival and departure dates of each visitor. The average of 8.3 days per person corresponds closely with the results of the Cook Islands Survey for 2015<sup>17</sup>.

<sup>17</sup> Cook Islands Visitor Survey Results April-June 2015, p11.

## Visitor days by those using NZ18 and NZ19 services during 2014 and 2015

Services Used	NZ	Australia	USA	CANADA	Total Americas	UK	Germany	Total Europe	Total Asia	TOTAL
Inbound NZ19 and outbound NZ18	400	200	24,600	11,000	35,900	2,100	2,200	10,100	200	47,100
Inbound NZ19 and outbound NZ19	600	200	400	600	1,100	700	400	1,600	-	3,400
Inbound NZ19, outbound Other	3,100	600	3,900	3,100	7,000	3,600	3,200	11,500	100	22,400
Inbound NZ18 and outbound NZ18	300	-	500	400	900	900	600	2,700	-	3,900
Outbound NZ18, inbound Other	1,000	300	4,400	3,000	7,400	5,100	4,700	16,500	100	25,300
<b>Total LAX Service</b>	<b>5,400</b>	<b>1,300</b>	<b>33,800</b>	<b>18,100</b>	<b>52,300</b>	<b>12,400</b>	<b>11,100</b>	<b>42,400</b>	<b>400</b>	<b>102,100</b>
Other Services	647,000	151,700	9,300	4,400	16,400	39,400	16,600	93,600	11,100	931,800
<b>TOTAL</b>	<b>652,300</b>	<b>153,000</b>	<b>43,100</b>	<b>22,600</b>	<b>68,800</b>	<b>51,900</b>	<b>27,700</b>	<b>136,000</b>	<b>11,500</b>	<b>1,034,000</b>
Inbound NZ19 and outbound NZ18	0%	0%	57%	49%	52%	4%	8%	7%	2%	5%
Inbound NZ19 and outbound NZ19	0%	0%	1%	3%	2%	1%	1%	1%	0%	0%
Inbound NZ19, outbound Other	0%	0%	9%	14%	10%	7%	12%	8%	1%	2%
Inbound NZ18 and outbound NZ18	0%	0%	1%	2%	1%	2%	2%	2%	0%	0%
Outbound NZ18, inbound Other	0%	0%	10%	13%	11%	10%	17%	12%	1%	2%
<b>Total LAX Service</b>	<b>1%</b>	<b>1%</b>	<b>78%</b>	<b>80%</b>	<b>76%</b>	<b>24%</b>	<b>40%</b>	<b>31%</b>	<b>3%</b>	<b>10%</b>
Other Services	99%	99%	22%	19%	24%	76%	60%	69%	97%	90%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Visitor expenditure has been calculated using the results of the Cook Islands Visitor Survey<sup>18</sup>, which shows the mean daily spend within the Cook Islands by country/region of residence, and also provides an estimate of NZ\$97 per person per day for pre-paid<sup>19</sup> goods and services which is estimated to flow through the Cook Islands.

In total, the visitors who utilise the service spent some \$22.5m annually over the 2014-2015 period (see the table above). This represented some 10.3% of total visitor expenditure. The share of spending is slightly higher than the share of visitor days because the mix of visitors using the service had a slightly higher daily spend than visitors in total.

### The SYD-RAR service (NZ60 and NZ61)

For the Sydney service, flight NZ60 SYD to RAR and flight NZ61 RAR to SYD, visitors were categorised according to whether they:

- Used the service both ways, arriving on NZ60 from SYD and subsequently departing on NZ61 to SYD;
- Used the service NZ60 from SYD and subsequently departed on another flight to New Zealand, Australia or the USA;
- Arrived on another flight from New Zealand, Australia or Papeete, and then departed on NZ61 to SYD.

<sup>18</sup> Cook Islands Visitor Survey Results April-June 2015, p11-12.

<sup>19</sup> Such as tour packages and activities.

## Expenditure in Cook Islands (NZ18 and NZ19 services during 2014 and 2015)

Services Used	NZ	Australia	USA	CANADA	Total Americas	UK	Germany	Total Europe	Total Asia	TOTAL
Inbound NZ19 and outbound NZ18	\$ 80	\$ 50	\$ 5,400	\$ 2,420	\$ 7,860	\$ 460	\$ 490	\$ 2,260	\$ 40	\$ 10,350
Inbound NZ19 and outbound NZ19	\$ 110	\$ 40	\$ 90	\$ 140	\$ 230	\$ 160	\$ 80	\$ 360	\$ -	\$ 750
Inbound NZ19, outbound Other	\$ 640	\$ 140	\$ 850	\$ 670	\$ 1,530	\$ 810	\$ 720	\$ 2,570	\$ 10	\$ 4,910
Inbound NZ18 and outbound NZ18	\$ 50	\$ 10	\$ 110	\$ 90	\$ 210	\$ 210	\$ 130	\$ 600	\$ -	\$ 860
Outbound NZ18, inbound Other	\$ 210	\$ 60	\$ 960	\$ 660	\$ 1,620	\$ 1,140	\$ 1,050	\$ 3,680	\$ 10	\$ 5,590
<b>Total LAX Service</b>	<b>\$ 1,090</b>	<b>\$ 300</b>	<b>\$ 7,410</b>	<b>\$ 3,980</b>	<b>\$ 11,450</b>	<b>\$ 2,780</b>	<b>\$ 2,470</b>	<b>\$ 9,470</b>	<b>\$ 60</b>	<b>\$ 22,460</b>
Other Services	\$ 131,980	\$ 33,820	\$ 2,040	\$ 970	\$ 3,570	\$ 8,790	\$ 3,700	\$ 20,870	\$ 2,330	\$ 194,990
<b>TOTAL</b>	<b>\$ 133,080</b>	<b>\$ 34,120</b>	<b>\$ 9,450</b>	<b>\$ 4,950</b>	<b>\$ 15,030</b>	<b>\$ 11,570</b>	<b>\$ 6,170</b>	<b>\$ 30,330</b>	<b>\$ 2,400</b>	<b>\$ 217,450</b>
Inbound NZ19 and outbound NZ18	0.1%	0.1%	57%	49%	52%	4%	8%	7%	2%	5%
Inbound NZ19 and outbound NZ19	0.1%	0.1%	1%	3%	2%	1%	1%	1%	0%	0%
Inbound NZ19, outbound Other	0.5%	0.4%	9%	14%	10%	7%	12%	8%	0%	2%
Inbound NZ18 and outbound NZ18	0.0%	0.0%	1%	2%	1%	2%	2%	2%	0%	0%
Outbound NZ18, inbound Other	0.2%	0.2%	10%	13%	11%	10%	17%	12%	0%	3%
<b>Total LAX Service</b>	<b>0.8%</b>	<b>0.9%</b>	<b>78%</b>	<b>80%</b>	<b>76%</b>	<b>24%</b>	<b>40%</b>	<b>31%</b>	<b>3%</b>	<b>10%</b>
Other Services	99%	99%	22%	20%	24%	76%	60%	69%	97%	90%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

These categories capture all of the passengers who utilise the SYD-RAR leg of the service. It excludes those who use the NZ61 service from Auckland to Rarotonga but do not then on-fly to Sydney, and also excludes those who fly from Rarotonga to Auckland on NZ60 (that is, those who use the service primarily to get to the Cook Islands from New Zealand). The numbers of passengers in these categories, by country/region of residence, is shown in table.

## Use of the NZ60 and NZ61 Service during 2014 and 2015

Services Used	NZ	Australia	USA	CANADA	Total Americas	UK	Germany	Total Europe	Total Asia	TOTAL
Inbound NZ 60 and Outbound NZ61	590	4,810	40	20	70	150	40	460	80	6,050
Inbound NZ60, outbound Other	280	1,470	100	40	150	110	80	390	80	2,360
Outbound NZ61, inbound Other	160	920	50	50	120	70	80	280	30	1,510
<b>Total SYD Service</b>	<b>1,030</b>	<b>7,200</b>	<b>190</b>	<b>110</b>	<b>330</b>	<b>330</b>	<b>200</b>	<b>1,130</b>	<b>180</b>	<b>9,930</b>
Other Services	78,240	10,020	5,270	1,990	7,640	6,280	2,760	14,850	1,730	113,890
<b>TOTAL</b>	<b>79,270</b>	<b>17,210</b>	<b>5,460</b>	<b>2,110</b>	<b>7,970</b>	<b>6,610</b>	<b>2,960</b>	<b>15,980</b>	<b>1,910</b>	<b>123,820</b>
Inbound NZ 60 and Outbound NZ61	1%	28%	1%	1%	1%	2%	1%	3%	4%	5%
Inbound NZ60, outbound Other	0%	9%	2%	2%	2%	2%	3%	2%	4%	2%
Outbound NZ61, inbound Other	0%	5%	1%	2%	2%	1%	3%	2%	2%	1%
<b>Total SYD Service</b>	<b>1%</b>	<b>42%</b>	<b>3%</b>	<b>5%</b>	<b>4%</b>	<b>5%</b>	<b>7%</b>	<b>7%</b>	<b>9%</b>	<b>8%</b>
Other Services	99%	58%	97%	94%	96%	95%	93%	93%	91%	92%
<b>TOTAL</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

Over the 2 year period, there were 19,854 passengers using the service, or 9,926 per year. Key aspects are:

- The service is important for the Australian market. Some 42% of all visitors from Australia used the service either both ways (28%), or to arrive (9%) or depart from the Cook Islands (5%);
- The service also has some importance for the American market (4%), the European market (7%) and the Asian market (9%).
- Not surprisingly, there is overlap with the Los Angeles service for the American and European markets in particular. The numbers are small, although for the majority of both Americans and Europeans who utilise the SYD service in conjunction with other inbound or outbound services, the Los Angeles service is the most important of the other services used.

- d. Australian visitors account for nearly three-quarters (72.4%) of the total use of the service, with the European market accounting for the next largest share (11.4%).

The following table shows the importance of each market to the SYD-RAR service. Australian visitors account for nearly three-quarters (72%) of the total use of the service, with the European market accounting for the next largest share (11%).

**Importance of each market to NZ60 and NZ61 services during 2014 and 2015**

Services Used	NZ	Australia	USA	CANADA	Total Americas	UK	Germany	Total Europe	Total Asia	TOTAL
Inbound NZ 60 and Outbound NZ61	10%	79%	1%	0%	1%	2%	1%	8%	1%	100%
Inbound NZ60, outbound Other	12%	62%	4%	2%	6%	5%	3%	16%	3%	100%
Outbound NZ61, inbound Other	11%	61%	4%	4%	8%	5%	5%	19%	2%	100%
<b>Total SYD Service</b>	<b>10%</b>	<b>72%</b>	<b>2%</b>	<b>1%</b>	<b>3%</b>	<b>3%</b>	<b>2%</b>	<b>11%</b>	<b>2%</b>	<b>100%</b>
Other Services	69%	9%	5%	2%	7%	6%	2%	13%	2%	100%
<b>TOTAL</b>	<b>64%</b>	<b>14%</b>	<b>4%</b>	<b>2%</b>	<b>6%</b>	<b>5%</b>	<b>2%</b>	<b>13%</b>	<b>2%</b>	<b>100%</b>

### Appendix 3: Growth Scenarios

The **Low growth scenario** allows for a slowing<sup>20</sup> of the current (2010-2016) growth rates for the New Zealand, Australia, USA and Asia markets. However, it also allows for the medium term decline seen in the Canada and Europe markets to cease after 2016 – in response to the improved aircraft – and return instead to positive growth. Based on the projected growth rate for USA arrivals (+4.8 per cent per annum), this allows for positive growth from Canada (+2.4 per cent per annum) and Europe (+1.2 per cent per annum).

This scenario would see annual growth of +3.1 per cent per annum for the LAX-RAR service out to 2021. The historic rate for users of the LAX-RAR service is +1.6 per cent per annum, which is a mix of positive growth in most markets, but decline in the Canada and Europe markets. The projected growth is higher for the SYD-RAR service at +5.3 per cent per annum, because growth is driven mostly by the Australian market, which grew at an average annual rate of 7.5% over the 2010-2016 period. The weighted average actual growth rate across the markets which use the SYD-RAR service is +6.1% (2010-2016), which suggests the Low scenario of +5.3 per cent is conservative.

The **Medium growth scenario** allows for continuation of the historical growth for the New Zealand, Australia, USA and Asia markets, and reversal of the decline for Canada and Europe from 2017. It also allows for short term impetus from the introduction of the new aircraft.

For the LAX-RAR service, allowance is made for two “once-off” uplifts for the USA market (+5% in 2017 and +3.5 per cent in 2018), and lesser uplifts for the Canada and Europe markets (3% in 2017 and 1.5% in 2018). From 2017, the Canada market would achieve two-thirds the growth rate of the USA market (+4.0 per cent per annum), while the Europe market would grow at +3.0%. There would also be small uplifts for the Australia and New Zealand markets (2% in 2017 and 1% in 2018). The growth rate for the service over the 2016-2020 period in this scenario is 6.1 per cent per annum.

For the SYD-RAR service, allowance is made for two “once-off” uplifts of 4% then 2% for the Australia market (4% in 2017 and 2% in 2018), and lesser uplifts for all other markets (2% in 2017 and 1% in 2018). Those uplifts aside, the medium scenario assumes that historic growth rates continue for Australia, New Zealand, USA, and Asia markets. Although the Canada and Europe markets are assumed to return to positive growth, these account for just 5% of the total growth. The growth rate for the service over the 2016-2020 period in this scenario is 8.1 per cent per annum.

The **High growth scenario** again allows for continuation of the historical growth for the New Zealand, Australia, USA and Asia markets, and the reversal of the decline for Canada and Europe from 2017. It allows for growth from the Canada market to match the USA growth, while growth from Europe markets would be two-thirds that of the USA.

For the LAX-RAR service, this scenario allows for larger “once-off” uplifts for the USA market (+7.5% in 2017 and +5% in 2018), together with 5% then 3% for the Canada and Europe markets, with smaller uplifts (2.5%) for the Australia, New Zealand and Asia markets. The growth rate for the service over the 2016-2020 period in this scenario is 7.9 per cent per annum.

For the SYD-RAR service, this scenario allows for a larger uplift for the Australia market (7.5% in 2017 and 3.7% in 2018) and uplifts of 2.5% then 1.2% for all other markets. The growth rate for the service over the 2016-2020 period in this scenario is 9.3 per cent per annum.

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<sup>20</sup> In each market, the future rate of growth (% per year) is assumed to be 80% of the historical rate. For example, the growth from the USA which has averaged 6.0% pa is assumed to slow to 4.8 per cent per annum (6.0% x 0.8).



Allowance is also made for a **Very low growth** scenario. This allows for slower increases (than in the low growth scenario) from all markets which currently show growth, and no growth (but no further decline) in the Canada and Europe markets. This would see growth averaging 1.7 per cent for the LAX service, and 3.9 per cent for the SYD service.

## Appendix 4: Scenario Results

### Economic Effects of the Los Angeles Service Underwrite – Sensitivity Assessment

Tourism Growth Scenario	Underwrite Scenario	Net Additional Visitors (%)	2017	2018	2019	2020	2021
Very Low	Conditions Worsen	50%	-\$ 4.0	-\$ 3.1	-\$ 2.2	-\$ 1.1	-\$ 0.1
Low	NZD Appreciates	50%	-\$ 1.8	-\$ 0.5	\$ 0.7	\$ 1.5	\$ 2.7
Low	NZD Appreciates	80%	\$ 6.7	\$ 8.2	\$ 9.6	\$ 10.9	\$ 12.2
Low	Base Case	80%	\$ 7.9	\$ 9.4	\$ 10.9	\$ 12.2	\$ 13.5
Low	NZD Depreciates	80%	\$ 9.5	\$ 11.0	\$ 12.5	\$ 13.8	\$ 15.2
<b>Medium</b>	<b>Base Case</b>	<b>80%</b>	<b>\$ 8.6</b>	<b>\$ 12.2</b>	<b>\$ 15.1</b>	<b>\$ 17.2</b>	<b>\$ 19.4</b>
Medium	NZD Depreciates	80%	\$ 10.2	\$ 13.8	\$ 16.7	\$ 18.8	\$ 21.0
High	Base Case	80%	\$ 9.4	\$ 14.3	\$ 18.7	\$ 21.5	\$ 24.4

### Economic Effects of the Sydney Service Underwrite – Sensitivity Assessment

Tourism Growth Scenario	Underwrite Scenario	Net Additional Visitors (%)	2017	2018	2019	2020	2021
Very Low	Conditions Worsen	15%	-\$ 0.5	-\$ 5.3	-\$ 4.3	-\$ 3.4	-\$ 2.3
Low	NZD Appreciates	15%	-\$ 0.3	-\$ 3.6	-\$ 2.7	-\$ 1.8	-\$ 0.8
Low	NZD Appreciates	20%	\$ 1.0	-\$ 2.3	-\$ 1.3	-\$ 0.3	\$ 0.8
Low	Base Case	20%	\$ 1.8	-\$ 1.4	-\$ 0.4	\$ 0.5	\$ 1.6
Low	NZD Depreciates	20%	\$ 2.6	-\$ 0.6	\$ 0.4	\$ 1.3	\$ 2.4
<b>Medium</b>	<b>Base Case</b>	<b>20%</b>	<b>\$ 2.1</b>	<b>-\$ 0.8</b>	<b>\$ 0.9</b>	<b>\$ 2.1</b>	<b>\$ 3.6</b>
Medium	NZD Depreciates	20%	\$ 2.9	-\$ 0.0	\$ 1.7	\$ 2.9	\$ 4.4
High	Base Case	20%	\$ 5.3	\$ 0.2	\$ 2.1	\$ 3.7	\$ 7.6

## Appendix 5: Input Output Model

This assessment relied on a bespoke IO table that was developed specifically for this project. The Cook Island Government does not publish Supply and Use Tables (SUT) or Input-Output (IO) Tables as these tables are often very expensive to prepare and maintain. This means that the IO tables we derived for this study are not official explanations of the Cook Islands' inter-industry relationships.

We used studies undertaken by the University of Sydney<sup>21</sup> on the structure and function of countries' economies as base information. This enabled M.E to develop a set of IO tables that match the sectoral definitions used by CIG. As mentioned earlier, the IO tables are unofficial and have not been 'approved' or 'adopted' by any of Cook Islands' government departments or ministries.

At the core of any Input-Output (IO) model is a set of data that measures, for a given year, the flows of money or goods among various sectors or industrial groups within an economy. These flows are recorded in a matrix format ('IO table') by arrays that summarise the purchases made by each industry (its inputs) and the sales of each industry (its outputs) from and to all other industries. By using the information contained within such a matrix, we are able to calculate mathematical relationships for the economy. These relationships describe the interactions between industries, specifically, the way in which each industry's production requirements depend on the supply of goods and services from other industries. With this information it is then possible to calculate, given a proposed alteration to a selected industry, all of the necessary changes in production that are likely to occur throughout supporting industries within the wider economy.

Estimating the economic impacts of the underwrite was done by using the Cook Islands Economic Model (underpinned by the IO tables). The model reflects the economic structure and transactions in the Cook Islands economy. There are different types of economic models that could be used to assess the economic effects of different interventions or policies. The models vary in terms of complexity and usability. Econometric models fall at the more basic end of the spectrum, and Computable General Equilibrium and Systems Dynamic models fall at the 'complex' end of the spectrum. For this assessment we used an Input-Output (IO) model which is in the middle of the spectrum.

With reference to IO modelling in general, a key assumption is that input structures of industries are fixed (essentially meaning that industries' input structures are fixed and do not change as total production increases) and that growth in one sector would be able to take place without the economy encountering capacity constraints. In the real world, however, technical relationships could and do over the medium to long term, due to things such as input substitution and technology, change. These changes are driven by technological advances, relative price shifts, product substitutions and the emergence of new industries. For this reason IO analysis is generally regarded as suitable for short-run analysis, where economic systems are unlikely to change greatly from the initial snapshot. In addition to the 'fixed structure' assumption, other important assumptions (and limitations) of IO models are:

- **Constant return to scale:** This means that the same quantity of inputs is needed per unit of output, regardless of the level of production. In other words, if output increases by 10 per cent, input requirements will also increase by 10 per cent.

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21 Lenzen M, Kanemoto K; Moran D, and Geschke A (2012) Mapping the structure of the world economy, *Environmental Science & Technology* 46(15) pp 8374-8381. DOI: [10.1021/es300171x](https://doi.org/10.1021/es300171x); and Lenzen, M., Moran, D., Kanemoto, K., Geschke, A. (2013) Building Eora: A Global Multi-regional Input-Output Database at High Country and Sector Resolution, *Economic Systems Research*, 25:1, 20-49, DOI:[10.1080/09535314.2013.769938](https://doi.org/10.1080/09535314.2013.769938)

- **No supply constraints:** IO assumes there are no inputs restrictions and assumes there is enough capacity in the economy to produce the goods needed to satisfy the economic shock.
- **The model is static:** The model does not reflect price changes and does not have any dynamic feedbacks between price and quantity (e.g. substitution between labour and capital or between inputs). If these changes are included then the model would be (conceptually) similar to the Computable General Equilibrium (CGE) model.

In this assessment, we use the IO model in a ‘comparative static’ manner. That is, comparing two states relative to each other; i.e. the net change of the shock and how this results in a shift relative to the baseline. The following indicators are used to measure economic impact:

- **Gross Domestic Product (GDP) and Value added (VA):** Value Added measures all payments to factors of production (land, labour and capital), and excludes all purchases of intermediate inputs. It broadly equates with gross domestic product (**GDP**) as a measure of economic activity on the national level, and gross regional product on the regional level<sup>22</sup>. Components of value added include compensation of employees (salary and wages), operating surplus (company profits), consumption of fixed capital (depreciation), and subsidies. GDP also includes tax on production.
- **Employment** figures are also included in the assessment and these figures show the level of employment (employees) that would be needed to deliver the work in a given year.

While the economic analysis is primarily quantitative, the assessment also takes into account the nature and operation of the Cook Islands economy (including its spatial structure) and the community. In this regard, the context is especially important – the Cook Islands is an island nation, with long travel distances to other economies, and a small land mass and population base. This means that air and sea links are extremely important for the economy, especially because the economy is small, and there are limited opportunities for many types of economic activity to establish and survive there. The direct linkages with other economies depend especially on air services, such that the geographic spread and diversity of those linkages is an important consideration. These matters are directly relevant to the underwrite assessment, which means that the evaluation extends more widely than the direct effects for the tourism sector – even though that is the primary focus of the research.

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<sup>22</sup> In this assessment, we developed a Cook Islands model. It was not possible to include any ‘regional’ elements. In the Cook Islands context, a regional model would need to reflect the outer islands as separate economies. Given the small size of these ‘economies’, as well as the lack of data, it is not practical to develop a multi-regional model for the Cook Islands.

## Appendix 6: List of References

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