

IMPROVING CONNECTIVITY BETWEEN COASTAL ECONOMICS AND CAPITAL CITIES

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Tourism industry plays a significant role in NSW economy, directly contributing \$17.3 billion to NSW Gross State Product (GSP) in 2016-17. Adding the indirect impacts of this sector, the total contribution of tourism to the NSW GSP will increase to \$34.2 billion in the same year. The globally known attractions such as the Opera House, Bondi Beach and the Harbour Bridge make Sydney the most visited tourist destination in the State, especially for international tourists. The Illawarra region is also a nationally and internationally recognised tourist destination due to its proximity to Sydney, its unique natural resources such as the Illawarra Escarpment and beautiful beaches, and its well-developed tourism infrastructure. The opening of a second airport in Western Sydney will impact on the Illawarra economy including its tourism demand. However, the transport infrastructure between the Illawarra and Western Sydney is currently very limited and without any improvements, the Illawarra may not be able leverage the benefits of the new airport. This paper investigates the effects of improving the transport connectivity between Western Sydney and the Illawarra on the Illawarra region. We will also consider the required actions to increase its positive impact, particularly on tourism sector.

Introduction

The Illawarra region is geographically defined as the narrow strip of land between the Illawarra escarpment and the Pacific Ocean bordering the southern edge of Sydney in the north and extending to north of the Shoalhaven or South Coast region. The region comprises the three local government areas (LGAs) of Wollongong, Shellharbour and Kiama. The resident population of the Illawarra is 410,130 which represents 5.2% of the NSW population and 1.7% of the Australia's population (Remplan Economy Profile, 2017). Nonetheless, the Illawarra remains the third most densely populated region in NSW after Sydney and Newcastle and is effectively a part of the Greater Sydney conurbation (which includes the Greater Sydney, Newcastle and Wollongong).

In 2017, Illawarra's Gross Regional Product (GRP) was \$22.324 billion, which represents about 4% of the NSW economy and 1.3% of the Australian economy. It's estimated that 143,610 people work in the Illawarra which is 4.3% of people working in NSW and 1.3% of Australia's total employment (Remplan Economy Profile, 2017).

The regional Illawarra economy has been traditionally based on coal mining, steelmaking, as well as exporting coal from Port Kembla. In more recent years, the Illawarra economy has benefitted significantly from substantial regional public investment in local health and education infrastructure, supporting tens of thousands of jobs in the region. For instance, the three largest industries by employment in the Illawarra are Health Care and Social Assistance (with 24,046 numbers of jobs), Retail

Trade (16,623), and Education and Training (15,694) which together support 40% of jobs in the region (Remplan Economy Profile, 2017).

Tourism is also an important industry that directly contributes over \$50 billion annually to Australia's Gross Domestic Product (GDP). In 2015-16, the tourism industry accounted for 3.2% of Australia's GDP and, including flow-on tourism-related service industries, tourism's direct and indirect share of the national economy amounted to 6.4% of GDP (Tourism Research Australia, 2017b).

In 2015-16, the tourism industry in NSW contributed \$43 billion to Illawarra's gross revenue. In addition, 9,479 people work in the region's tourism industry such as in retail, accommodation, cafes and restaurants, and cultural and recreational services. This figure represents 7% of the regions total employment, and 4.7% of tourism employment of NSW and 1.4% of that of Australia.

Table 1 summarised Illawarra economic and demographic profile.

Port Kembla is the second largest port in NSW and provides the Illawarra with a gateway to national and international markets. Port Kembla is the most significant bulk goods port in southern NSW. It accommodates NSW's largest grain handling facility and is the second largest coal export port in NSW.

Port Kembla has also welcomed several mega cruise ships since 2016. Having the required infrastructure and being close to Sydney, Port Kembla is considered as an alternative cruise ship terminal as Sydney Harbour reaches its capacity.

Table 1: Illawarra Profile, 2017

	Illawarra	Share of NSW	Share of Australia
Population	410,130	5.2%	1.7%
GRP (\$b)	22.324	3.9%	1.3%
Employment	143,610	4.3%	1.3%
Tourism Output (\$m)	42,983.550	3.8%	1.2%
Tourism Employment	9,479	4.7%	1.4%

Source: Remplan Economy Profile (2017).

Tourism Demand

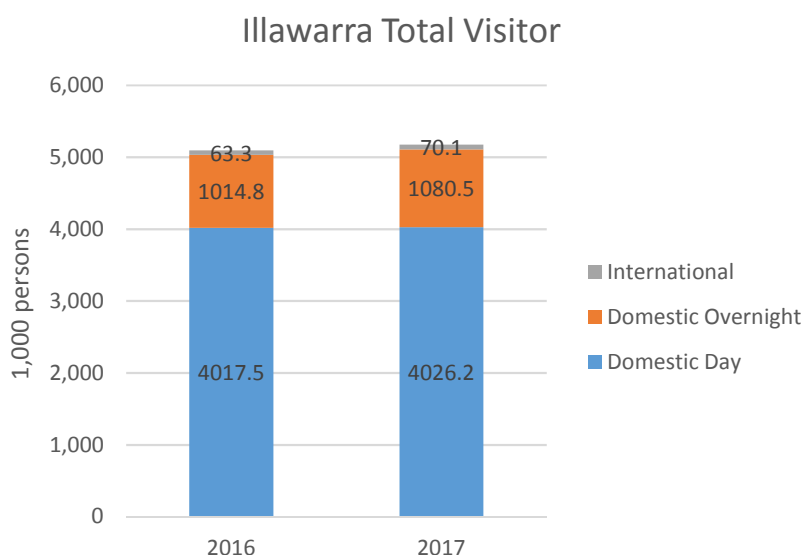
The Illawarra has well-developed tourism infrastructure and is proximate to Sydney, Australia's main international gateway for tourists. The distance between Wollongong's CBD and Sydney's airport terminals is 80km, or between 80 and 100 minutes by car, and about 120 minutes by train. Sydney's domestic and international airports operate

relatively efficiently although the road and train networks into and out of the airport are becoming ever more congested adversely impacting on the tourism experience. With the proposed second Sydney airport at Badgery's Creek and continued improvements to the road and rail transport networks, it is conceivable that journey times between Sydney and Wollongong can be reduced to around 60 minutes.

The Illawarra Regional Airport (IRA) is a security controlled, licensed airport that is owned and operated by Shellharbour City Council (SCC). The airport is located at the intersection of the F6, Princes Highway and Illawarra Highway at Albion Park Rail, about 90 minutes' drive to Sydney Airport. Recently, the SCC welcomed direct flights to Melbourne and Brisbane thanks to an agreement with regional airline Fly Corporate. The IRA has the potential to be upgraded and expanded over time to accommodate a growing tourism industry and (potentially) alleviate congestion at Sydney Airport.

Well developed tourism infrastructure, in addition to beautiful beaches and the escarpment attracts many domestic and international visitors to the region. Tourism Research Australia reports that 5,176,831 visitors came to the Illawarra in 2017, of which 4,026,187 (or 78%) domestic visitors were day-trippers, 1,080,539 (21%) domestic visitors stayed overnight and 70,106 (1%) were international visitors. Comparing these figures with those of 2016 reveals that the total number of visitors grew by 1.59% from 5,095,593 visitors in 2016 to 5,176,831 in 2017. However, the growth of tourism demand between 2016 and 2017 varies among the types of tourists from 0.22% in domestic day visitors, to 6.48% in domestic overnights and 10.68% in international visitors. Thus, while the number of international visitors is lower than those of domestic visitors, the growth rate in international visitors has been stronger. Figure 1 shows the structure of visitors of the Illawarra in 2016 and 2017.

Figure 1: Illawarra tourism structure in 2016 and 2017

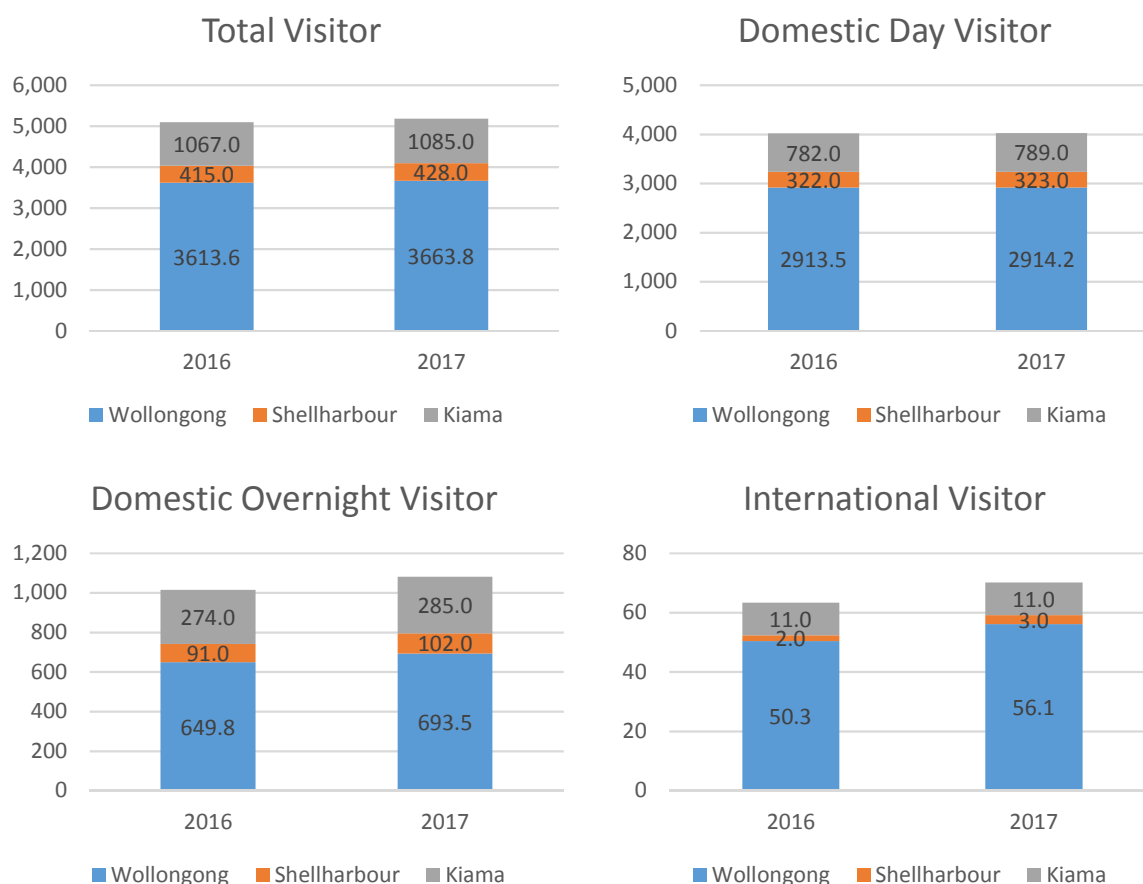


Source: Tourism Research Australia (2017b, 2018b)

Figure 2 presents the tourism types per LGA of the Illawarra in 2016 and 2017. As the figure shows, Wollongong attract the greatest number of visitors (domestic day, domestic overnight and international), following by Kiama and Shellharbour. However, the 2016-2017 growth of tourism demand is not homogenous among the LGAs as follows:

- Domestic day growth: Kiama had the highest growth (0.83%) followed by Shellharbour (0.37%) and Wollongong (0.02%)
- Domestic overnight growth: Shellharbour had the largest growth (12.69%) followed by Wollongong (6.74%) and Kiama (3.98%)
- International: International visitors growth varies significantly from 38.71% in Shellharbour to 11.45% in Wollongong and 0.28% in Kiama

Figure 2: Tourism structure in Wollongong, Kiama, and Shellharbour (1,000 visitors) in 2016 and 2017



Source: Tourism Research Australia (2017b, 2018b)

Additionally, visitors stayed in the Illawarra a total of 4,416 nights, including 1,778 nights spent by international tourists and 2,637 nights spent by domestic visitors. This implies that the average stay per visitor is 4 night including 25 nights per international visitor and 2 nights per domestic visitor.

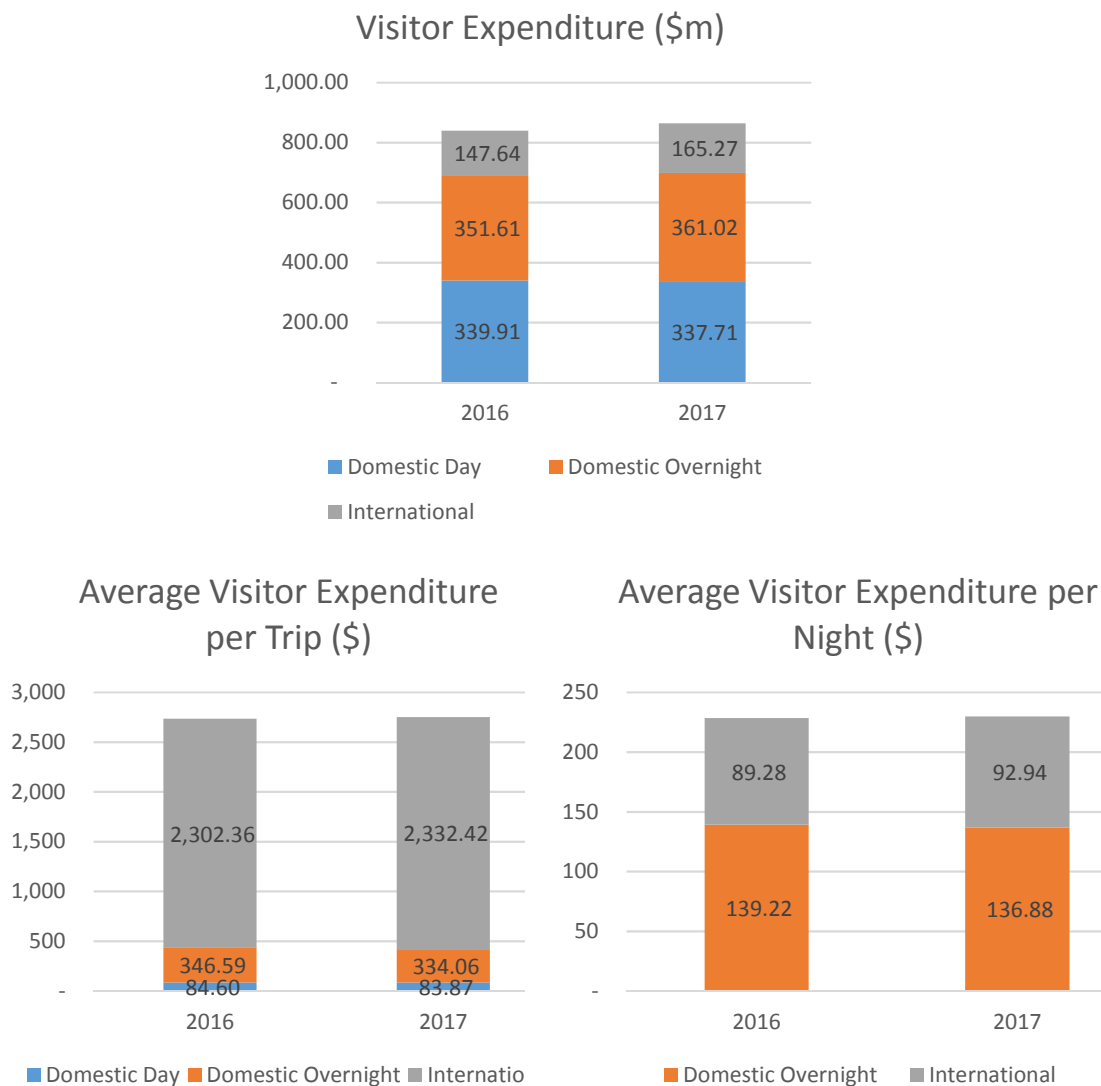
Total visitor expenditure in the Illawarra region in 2017 was \$864 million which was about 2.96% higher than last year. The contribution of international is about 19% (\$165 million), which has increased by about 11.94% compared to the last year. The domestic visitor expenditure, however, increased by only 1.04%.

In 2017, the domestic average spent per trip in the Illawarra was \$418 per trip while the international visitors spent \$2,332 per trip. Compared to 2016, the international average spent per trip increased by 1.31% while that of domestic decreased by 3.07%.

The average spent per night by international tourists was \$93 in 2017, which was 4.09% higher than in 2016 and by domestic visitors was \$137, which was 1.68% lower than that of 2016.

Figure 3 shows the Illawarra expenditure in 2016 and 2017.

Figure 3: Illawarra Visitor Expenditure in 2016 and 2017



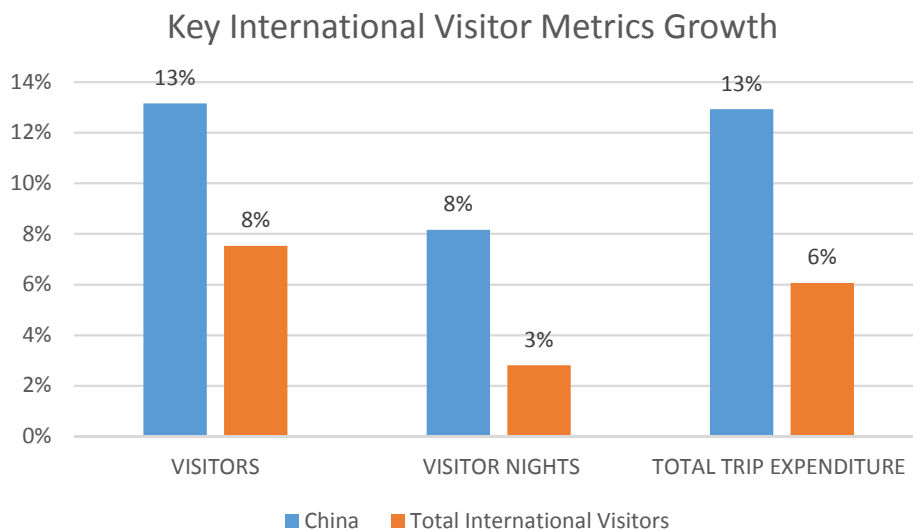
Source: Tourism Research Australia (2017b, 2018b)

Figures 1 to 3 implies that although the number of international visitors is lower than domestic visitors, their contribution to the economy in terms of visitor expenditure is higher. Among all international tourists, Chinese inbound tourism to Australia has been growing strongly in recent years. In 2017, almost 1.2 million Chinese visitors visited Australia and spent \$9.8 billion; both metrics were 10% higher than the previous year.

The NSW Government has set a target to double overnight visitor expenditure by 2020. It's predicted that China will be NSW's largest international market in terms of visitor arrivals, visitor nights and expenditure and contributes more than \$2.1 billion annually to the NSW Visitor Economy (Destination NSW, 2012). Currently (i.e. year ended 2018), China is the largest Australia's international market as Chinese tourists contribute to 16% of number of visitors, 20% of visitor nights and 26% of total trip expenditure (Tourism Research Australia, 2018a). Additionally, as Figure 4 shows, the growth of all these figures over the last year were most significant than those of all international visitors.

Similarly, China is dominated in Wollongong international tourism market by contributing to 16% of visitor arrival and 30% visitor night in 2017. These metrics increased by 25% and 7%, respectively, over the last year (Tourism Research Australia, 2018b).

Figure 4: Key International Visitor Metrics growth between March 2017 and March 2018, China vs Overall



Source: Tourism Research Australia (2018a)

To sum up, tourism in the Illawarra has been growing in 2016 and 2017. The growth of international tourism is more significant and the opening of the second airport in Western Sydney can make it even stronger. The next section describes the existing transport networks between the Illawarra and Sydney Airport and the proposed Western Sydney airport.

Transport Networks

The Illawarra region is connected to Sydney, and its international and domestic airports, via the South Coast Line train network (SCO), the Princes Highway, and other local motorways and roads. There is serious congestion on the road network at peak times

(6am – 10am and 3pm – 7pm), particularly on the Princes Highway from the Sutherland Shire into Sydney's CBD. The passenger train service is slow by international standards, with the route winding up and down the Illawarra escarpment at under 60 km/h.

Travelling by car, it generally takes between 1 hour 15 minutes and 2 hours to commute between Sydney Airport and Wollongong's CBD, and 15-30 minutes longer from Sydney's CBD. The main roads between Sydney and the Illawarra are the Princes Highway and Princes Motorway. Travelling by train, based on the current Sydney train timetable, it takes about 1 hour and 20 minutes to commute between Sydney Airport and Wollongong, and approximately 1 hour and 30 minutes to commute between Sydney Central station and Wollongong station. During weekdays, there are 28 passenger services travelling from the Illawarra to Sydney (with 27 services from Sydney to the Illawarra).

A second Sydney domestic and international airport terminal at Badgery's Creek in Western Sydney has been approved and is scheduled to be completed by 2026. Currently, the quickest travel between Wollongong and Badgery's Creek is by car and via Picton Road and Hume Motorway, which takes about 70 minutes. Using the SCO and Sydney Train network makes the journey longer to about 130 minutes to travel between Wollongong and Leppington which is currently the nearest train station to Badgery's Creek. These long trips highlight the importance of improving transport network between Western Sydney and the Illawarra. Such an improvement will facilitate the movement of tourism and labour force between the Illawarra and Western Sydney and will bring economic benefits to both regions.

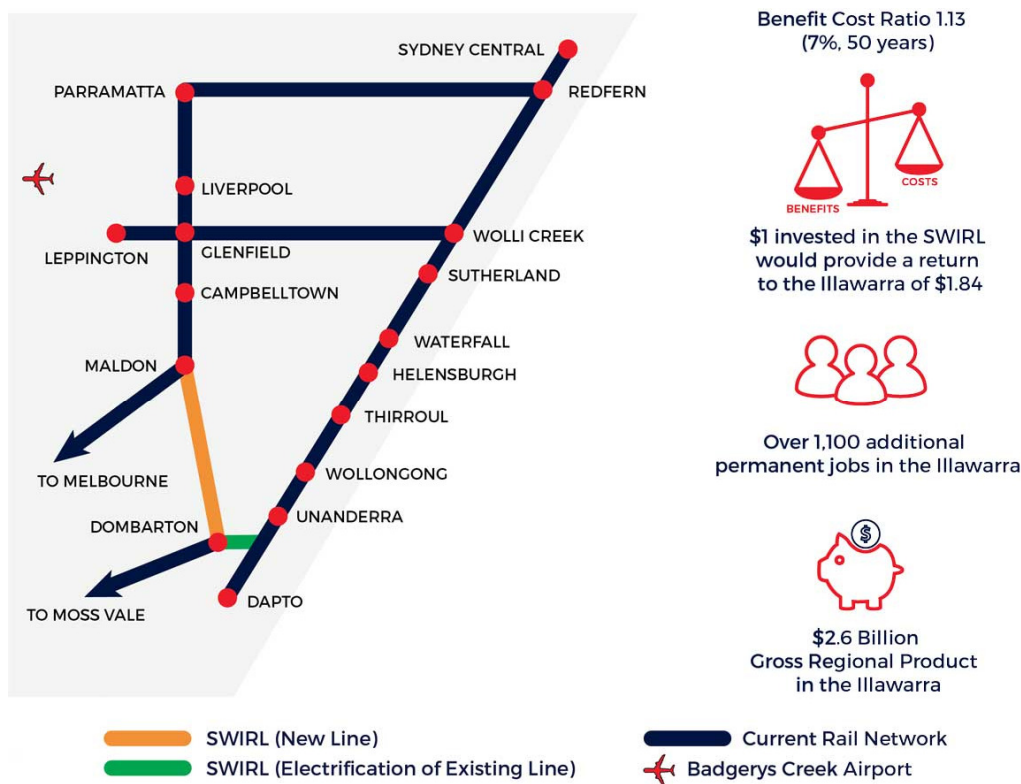
Currently, because of its proximity to Sydney, which is Australia's largest and deepest labour market (with over 2.6 million jobs), 22,102 people commute daily between the Illawarra and Sydney to work. More than 77% of these commuters travel by car (17,053), 13% by rail (2,897) and about 6% travel by train and car (1,294). The majority of commuters (84%) travel from the Illawarra to the Greater Sydney (18,574) while 3,528 people travel from Greater Sydney to the Illawarra. Having a closer look at the data reveals that 24% of the Illawarra commuters travel to Western Sydney (4,396) while 39% of commuters from the Greater Sydney to the Illawarra are from Western Sydney (1,360). Due to poor public transport between the Illawarra and Western Sydney, 97% of those commuters travel by car (Australian Bureau of Statistics, 2017). Therefore, the improvement in Western Sydney and the Illawarra will benefit not only the Illawarra residents, but also the considerable number of people who must travel from Western Sydney to the Illawarra for work

Sydney-Wollongong has been identified as one of those key strategic passenger rail corridors by Australian Government (Australian Government, 2017), however very limited additional service capacity can be provided to passengers or freight based on existing transport network, especially the rail network. SMART has found that reducing passenger commute times on the South Coast Line is severely constrained by the geological conditions of the Illawarra escarpment and the consequent engineering challenges, and would require a significant public investment in the order of \$2 billion. An alternative rail option, the South West Illawarra Rail Link (SWIRL) can be considered.

South West Illawarra Rail Link

Illawarra First and the SMART infrastructure Facility University of Wollongong, released a detailed report examining the cost and benefit of a new rail line, referred to as the SWIRL, along with upgrade to the existing SCO. The SWIRL would complete and electrify the Maldon-Dombarton Line¹ (35kms), together with electrification of a small segment of the Unanderra-Moss Vale Line (7kms). An overview of the SWIRL is illustrated in Figure 5 (SMART Infrastructure Facility, 2017).

Figure 5: Overview of the SWIRL



Source: Upgrading rail connectivity between Illawarra and Sydney – SMART Infrastructure Facility (2017)

This link will shorten the distance and give the port direct access to South West Sydney. Without curfews, the link is able to operate at its maximal service capacity for export freight (principally coal and grain) from Western NSW to the port, which in turn will significantly release the pressure on the SOC. In general, the SWIRL will accommodate both freight and passengers, providing a direct and efficient rail link to the fastest growing economy in Australia, Western Sydney. For passenger services, it will significantly reduce the travel times between Wollongong and main stations in Western Sydney, from

¹ Originally, this rail line was considered during the construction of the Port Kembla coal loader in 1979. In October 1982, the project received concept approval from the NSW Government and construction was commenced during the mid-1980s. The project was cancelled in 1988.

more than 2 hours to around 1.5 hours, even less. For example, the travel time between Wollongong and Campbelltown will be reduced from 131 minutes (without SWIRL) to 60 minutes (with SWIRL), from 130 minutes to 91 minutes between Wollongong and Leppington, and from 125 minutes to 91 minutes between Wollongong and Liverpool. The comparison is illustrated as in Figure 6 (SMART Infrastructure Facility, 2017).

Figure 6: Comparison of travel times between Wollongong and main stations in Western Sydney



Source: Upgrading rail connectivity between Illawarra and Sydney – SMART Infrastructure Facility (2017)

In SMART’s view, SWIRL could meet the transport connectivity objectives set by Transport for NSW at a lower cost and provide many economic and social benefits for residents in the Illawarra and Western Sydney. Potential benefits deriving from the completion of the SWIRL include:

- economic benefits,
- job opportunities,
- potential increase in freight between Port Kembla and Sydney,
- and other indirect benefits such as reducing noise and pollution in urban areas, reduced congestion on the SCO by providing an alternative entry point into the Sydney Trains Network, and reduced heavy truck congestion on Mt Ousley and other roads near Port Kembla.

We have conducted a detailed cost benefit analysis and economic impact analysis to estimate the effects of SWIRL on the region. We estimated that the total cost of constructing the SWIRL is about \$1.7 million in 2016-17 dollars. We also estimate a benefit-cost ratio (BCR) for a passenger-freight SWIRL to be 1.13 at the standard 7% discount rate over 50 years, and 1.56 at a 4% discount rate over 50 years, which is the standard lower-bound estimate but in our view a more appropriate measure in the post-GFC world.

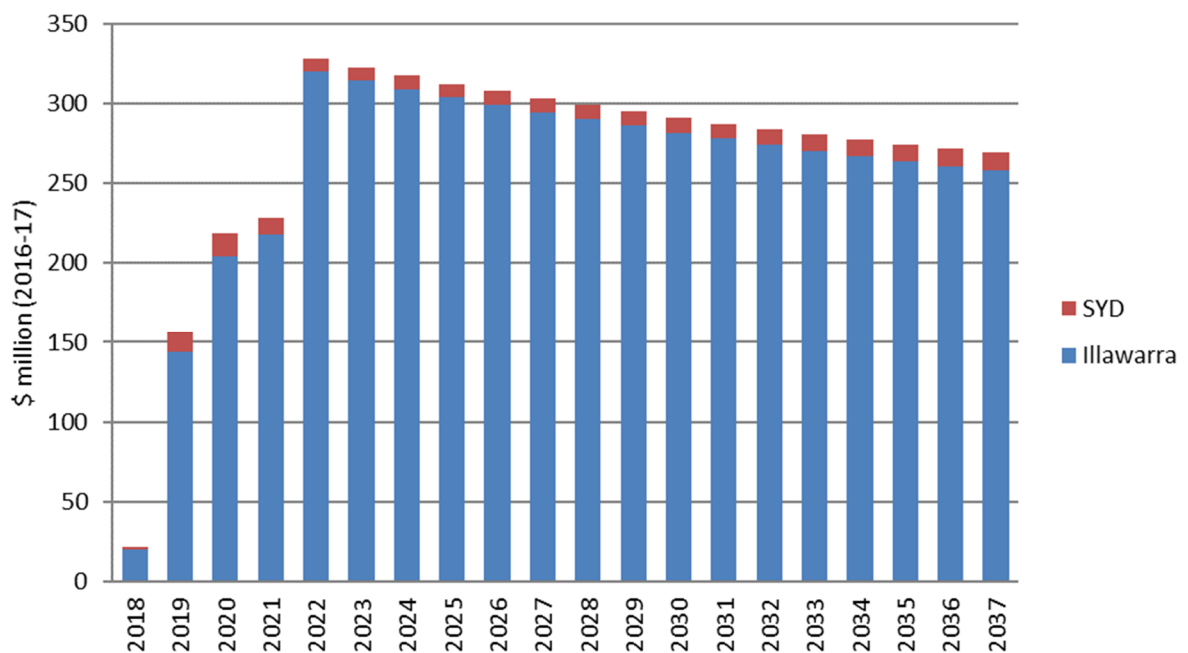
We also conducted a detailed economic impact analysis and found that the benefit to the Illawarra region would be \$2.6 billion (in NPV terms at the standard 7%) and over 1,100

permanent additional jobs (in FTE terms). This indicates the return to the Illawarra would be \$1.84 for each \$1 invested in the SWIRL.

Under the central case scenario (at the standard 7% discount rate), we estimate the NPV of the total economic impact of SWIRL to be \$2,579 million in the Illawarra region. The total economic impact for Greater Sydney is \$97 million. The reason most of the impact occurs in the Illawarra is because most of the capital investment and the assumed stream of net benefits occurs in the Illawarra. Conceptually, the economic impact for NSW is the sum of the impacts for the Illawarra, Greater Sydney and the rest of NSW. The total economic impact for NSW is \$2,635 million in NPV terms.

Figure 7 illustrates the economic impacts in annual terms. As the figure shows, the economic benefit is at a peak during the construction stage.

Figure 7: Central Case Scenario – annual economic impact, by calendar year (\$m real, undiscounted)

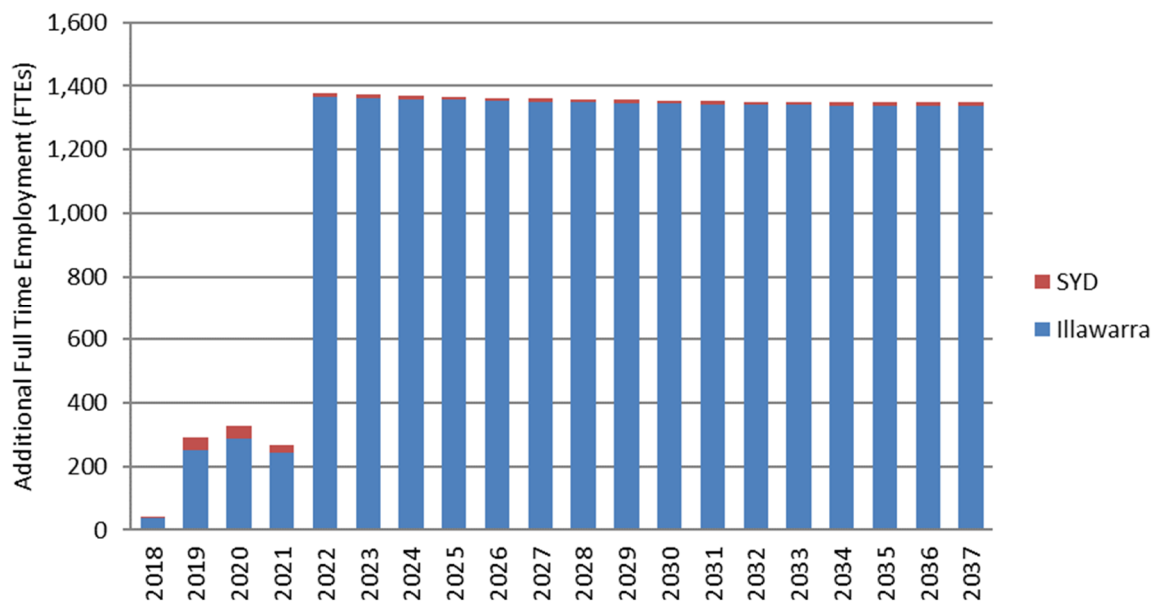


Source: Upgrading rail connectivity between Illawarra and Sydney – SMART Infrastructure Facility (2017)

In terms of employment impacts, we estimated that the average annual additional employment over the construction and operating period (2018-2037) is 1,119 FTEs in the Illawarra, 14 FTEs in Sydney (Figure 8) and 1,135 in NSW.

Peak employment occurs in 2022, at 1,367 FTEs in the Illawarra and at 1,387 in NSW, and 41 FTEs in Sydney in 2019.

Figure 8: Central Case Scenario – annual employment impact, by calendar year (FTEs)



Source: Upgrading rail connectivity between Illawarra and Sydney – SMART Infrastructure Facility (2017)

The overall results of the Central Case scenario for Option 4 are summarised in Table 2 below.

Table 2: Central Case Scenario – summary of economic impacts by region

ECONOMIC IMPACT ON... OVER THE PERIOD 2018 TO 2037	\$ MILLIONS, REAL GRP 2016-17 DOLLARS (NPV, 7%)	EMPLOYMENT	
		(ANNUAL AVERAGE 2037)	EMPLOYMENT (AT 2018- PEAK)
Illawarra Region	2,579	1,119	1,367
Sydney Region	97	14	41
NSW	2,635	1,135	1,387

Source: Upgrading rail connectivity between Illawarra and Sydney – SMART Infrastructure Facility (2017)

As explained in Introduction section, the tourism sector supports 7% of total employment in the Illawarra region and in NSW. This implies that SWIRL can create 78 new jobs in tourism in the Illawarra.

The second airport has a significant economic impact on the Western Sydney economy, particularly on aviation and tourism industries. The Deloitte Access Economy estimated the economic impacts of the Western Sydney Airport and found that it will increase the tourism expenditure of Greater Sydney by about \$13,338 million by 2050 (Deloitte, 2014). Considering the current tourism expenditure of Greater Sydney which is \$19,056

(Destination NSW, 2018), the economic impacts of the Western Sydney Airport on Sydney is very significant. It also implies that the construction and operation of SWIRL can expand such economic benefits to the Illawarra region by facilitating the travel between Western Sydney and the Illawarra for visitors and attracting more tourists to the Illawarra region.

Conclusion

Since the second world war until very recently, the Illawarra economy was traditionally based on the coal mining and steel making industries. However, in recent years the Illawarra economy has shifted towards service industries, including health and education and steel making and related manufacturing industries have declined in relative significance. The Tourism sector, also, has become a more significant industry in the region due to the Illawarra's natural attractions and its proximity to Australia's gateway city and most popular tourist destination of Australia, Sydney.

The contribution of international tourism in terms of visitor expenditure and its growth over the last year are relatively higher than those of domestic visitors. Among all international visitors, China represents an enormous market opportunity for the Illawarra and Australia more generally.

An improvement in the transport networks linking Sydney and the Illawarra would benefit both regions and would likely increase tourism demand in the Illawarra. Currently, passengers travelling by rail between the Illawarra and Sydney using the existing South Coast Line face a lengthy commute of, at best, 87 minutes each way. This long journey places a significant burden on rail commuters, and appears to force commuters into their cars, which in turn places a greater burden on the Illawarra-Sydney road network. The fact that passenger trains receive priority on the South Coast Line also places limitations on volumes of freight that can be transferred by rail into and out of Port Kembla.

Completing the SWIRL could provide many economic and social benefits and is worth serious consideration. For instance, the SWIRL and the South Coast Line operating together would increase total passenger and freight rail network capacity and open up jobs, export/import, education, leisure and housing opportunities for both regions. Additionally, SWIRL could provide a connection between the Illawarra and the proposed Western Sydney Domestic and International Airport, which is planned to be completed by 2026. The existing connection is very poor and without any further improvement, the Illawarra region loses a timely opportunity to connect to the Sydney conurbation and its economic and social opportunities.

We estimated the economic impact on the Illawarra region of a suite of infrastructure measures (centred on the construction of the SWIRL) aimed at significantly improving rail transport connectivity between the Illawarra and Sydney to be \$2.6 billion (in NPV terms) and over 1,100 permanent additional jobs (in FTE terms) including 78 jobs in tourism.

References

Australian Bureau of Statistics (2017). "2016 Census - Employment, Income and Education", Accessed 13/10/2018
<<http://www.abs.gov.au/websitedbs/D3310114.nsf/Home/2016%20TableBuilder>>

Australian Government (2017), "The National Rail Program: Investing in Rail Networks for Our Cities and Regions", Australian Government National Rail Program, ISBN: 978-1-925531-50-3.

Deloitte Access Economics (2014), "Economic Impact of a Western Sydney Airport", Research undertaken for NSW Business Chamber, ISBN 978-0-9923041-1-9.

Destination NSW (2012), "China Tourism Strategy 2012–20", NSW Government, Accessed 08/11/2018 <<https://www.destinationnsw.com.au/about-us/strategies-and-plans/china-tourism-strategy>>

Destination NSW (2018), "Travel to Sydney Tourism Region - Preliminary Year ended June 2018", Accessed 02/11/2018 <<https://www.destinationnsw.com.au/wp-content/uploads/2018/11/travel-to-sydney-timeseries-ye-jun-2018.pdf?x15361>>

Remplan Economy Profile (2017), "Wollongong City Council Online Economic Profile Report", Accessed 12/10/2018
<<https://www.economyprofile.com.au/wollongong/trends/gross-regional-product>>.

SMART Infrastructure Facility (2017), "Upgrading Rail Connectivity between Illawarra and Sydney", Research undertaken for the Illawarra Business Chamber, ISBN: 978-1-74128-268-9.

Tourism Research Australia (2017a), "Local Government Area Profile". Accessed 15/08/2017 <<https://www.tra.gov.au/Regional/local-government-area-profiles>>.

Tourism Research Australia (2017b), "State Tourism Satellite Accounts 2015-16", TRA Australian Trade and Investment Commission (Austrade), Canberra.

Tourism Research Australia (2018b), "International Visitors Survey", Accessed 16/09/2018
<<https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=2ahUKEwixYacls7eAhVFXCsKHRjaC-wQFjAAegQICBAC&url=https%3A%2F%2Fwww.tra.gov.au%2FArticleDocuments%2F185%2FIVS%2520Web%2520Publication%2520>>

%2520YE%2520Mar%25202018.xlsx.aspx&usg=AOvVaw0Q9H9hFmiev6GaZmBqb3b
l>

Tourism Research Australia (2018b), "Local Governmnet Area Profile", Accessed
21/08/2018 <https://www.tra.gov.au/Regional/local-government-area-profiles>>.