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JOBS FOR THE WEST

Employment Proposals for Western Sydney

A RESEARCH REPORT FOR
JOBS FOR WESTERN SYDNEY WORKING GROUP

The *Jobs for Western Sydney Working Group* is a community-based group developing a jobs strategy to meet the employment needs of Western Sydney. The Working Group is not aligned to any political or commercial interests. The employment background of the members is broad-based, spanning local government and state government, the trade union movement, universities, schools, business and the community. The expertise of the Working Group includes economics, engineering, education, sociology and planning.

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Preface

The Key Findings chapter condenses the key points from this report into two pages. The Executive Summary chapter expands upon these points, briefly summarising the contents of each chapter. Readers of the main report may choose to skip these two short chapters to avoid repetition.

These first two chapters have been released together as a summary document and further copies are available at the web address shown on the opposite page. The web address for the main report is also shown there.

Note that blue text in the report indicates a link, and clicking on the words takes you to that link.

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Key Findings

The history of Western Sydney shows that residential housing has always expanded much faster than jobs, transport and social infrastructure. Today this pattern continues, with environmental degradation added to the mix.

The most disturbing labour market outcomes are:

- a 'belt' of disadvantage runs from Blacktown through to Campbelltown, with local government areas like Fairfield and Cumberland enduring unemployment rates of 10%.
- in Blacktown, nearly 1,600 teenagers are neither studying nor employed and nearly 9,500 young adults in outer Western Sydney are neither studying nor employed.
- Western Sydney lost 15,000 manufacturing jobs between 2006 and 2016 and large numbers of job losses occurred on the railways.
- important areas of jobs growth have by-passed Western Sydney. Of the 60,000 new jobs in professional, scientific and technical services which were created in Sydney between 2006 and 2016, less than 10,000 went into Western Sydney.
- when it comes to commuting, Western Sydney suffers from hub-and-spoke development, with all major public transport routes converging on Central Sydney. Some 9,000 workers in Penrith, and 11,000 in Campbelltown, make the daily journey into the city along these spokes.

The proposal for a Western Sydney Airport (WSA), to be located at Badgery's Creek and to operate 24 hours a day, has been promoted as a partial solution to the problem of jobs. This report examines the employment outcomes which the proponents of the airport claim will result. It finds:

- contrary to the claims of a 'jobs bonanza', only 120 construction jobs, and 800 airport jobs, would be targeted to Western Sydney workers in the first stages of the project.
- the overall jobs claims—such as 8,700 aviation jobs by 2031—are vastly exaggerated. Comparable airports, such as Adelaide, support only 1,600 aviation jobs.
- proposals for an adjacent business park, and also for an aerotropolis, appear unrealistic. Close examination of these

proposals, and a real world comparison with a number of other business parks in Sydney, shows that the job estimates are inflated.

This report examines a range of other employment options for Western Sydney, centred around building a high-speed rail (HSR) system between Sydney and Melbourne (and later extended to Brisbane). These options form an integrated set of proposals which aim to:

- revitalise manufacturing in Western Sydney, and thus create a large number of skilled and unskilled jobs;
- rebuild the TAFE system in Western Sydney, providing a steady flow of high-quality skilled tradespersons for the HSR project, as well as for other industries in the region;
- build innovative waste recycling plants;
- initiate programs of environmental repair across Western Sydney;
- promote greater community-based banking in Western Sydney.

As well as HSR, this report proposes orbital rail for Sydney. It outlines the concept of an 'employment arc' whereby efficient local rail networks based on concentric routes—rather than the traditional hub-and-spoke pattern—would foster employment growth in a more decentralised fashion.

The HSR proposal promises enormous environmental and technological benefits for Australia. In addition, a HSR corridor from Sydney to Melbourne would foster regional development along the route. From a planning perspective, increased regional prosperity is a better outcome than more crowded cities.

When it comes to comparing high-speed rail with a second airport for Sydney, it is clear that the two are incompatible. Continued expansion of domestic air travel between Sydney and Melbourne would make any future HSR system unviable. By contrast, HSR is compatible with a single airport, that is, Kingsford Smith Airport. Indeed, HSR between Sydney and Melbourne could divert domestic air passengers on that route from air travel to rail travel. As a result, airline capacity at Sydney's Kingsford Smith Airport would be freed up, thereby allowing for the expansion of international flights. The proposed freight role for Western Sydney Airport would also be rendered unnecessary by connecting Sydney with an inland international freight airport using HSR. In essence, high-speed rail would make the need for a second Sydney airport at Badgerys' Creek redundant.

Executive Summary

A history of failure

Western Sydney has a long history of neglect: since the 1960s residential housing has always expanded much faster than jobs, transport and social infrastructure. Today this pattern continues, with environmental degradation added to the mix. Plans to massively expand residential settlement in Western Sydney are accompanied by plans for an airport which will operate 24 hours a day, without a curfew. High levels of noise and air pollution, and increased traffic congestion, await the residents of Western Sydney. They are told they must accept this if they want more jobs in their region: a classic case of 'job blackmail'.

This report shows that this treatment of Western Sydney is nothing new, and repeats the patterns of the past. Western Sydney has become a vast dormitory suburb for central and north Sydney, with long hours of commuting inflicted on its residents. The green spaces, which were once a feature of the West, are increasingly disappearing, replaced by vast acreages of densely-settled housing estates. Current proposals would see 500,000 new residents being settled in the West by 2041.

The employment needs of Western Sydney

The core problem which Western Sydney faces is a lack of jobs to meet the needs of a constantly increasing population. This directly feeds into problems of unemployment, underemployment and long hours of commuting. This report argues that regional job strategies require a mix of job types: from lower skilled through to higher skilled. The former are important as a way of offering work to those currently unemployed; the latter can reduce the commuting burden for those residents who currently travel long distances to jobs in central or northern Sydney.

Census data show that a 'belt' of disadvantage runs from Blacktown through to Campbelltown, with local government areas like Fairfield and Cumberland enduring unemployment rates of 10% (at a time when North Sydney had an unemployment rate of 3.7%). As well as unemployment, Western Sydney grapples with the problem of NEETs: young people 'neither in employment, nor education or training'. In Blacktown, nearly 1,600 teenagers are neither studying nor employed. When it comes to young adults (20 to 24 years old) nearly 9,500 of

those who live in outer Western Sydney are neither studying nor employed. What this means is that large numbers of young people in Western Sydney are in a 'labour market limbo': a social and economic disaster in the making.

When it comes to commuting, Western Sydney suffers from the history of its hub-and-spoke development, whereby all major public transport routes converge on Central Sydney. Some 9,000 workers in Penrith, and 11,000 in Campbelltown, make the daily journey into the city along these spokes.

Not only does Western Sydney need more jobs located in the West, but a large-scale orbital rail system is needed to enable residents to access jobs in other areas of the West without clogging arterial roads. Such a system would also foster job creation along an 'employment arc' stretching from Liverpool-Campbelltown to Richmond-Windsor. Such an arc—with economic zones located at key 'nodes'—could help revitalise manufacturing, and other blue-collar industries in Western Sydney, thereby providing a larger range of lower-skilled jobs for residents.

Many of the new jobs in the West could come from relocating public sector administrative jobs. At present, nearly 14,000 State government administrative jobs are found in Sydney LGA. Parramatta, with about 5,500 government jobs comes a long way behind. The outlying LGAs in Western Sydney—such as Penrith and Blacktown—have less than 1000 government jobs, while those in the outer parts of South West Sydney—such as Campbelltown—have less than 500 government jobs.

Other types of jobs needed in Western Sydney include those in specialist occupations, such as ITC professions and higher-level clerical jobs. Such jobs are common in banking, finance and corporate management. Workers in these fields invariably travel long distances to work since most of the professional and higher-level clerical jobs located in Western Sydney are predominantly found in health and education.

The last decade in Western Sydney has seen a number of disturbing labour market outcomes. The West lost 15,000 manufacturing jobs between 2006 and 2016 and large numbers of job losses occurred on the railways, as State governments cut back dramatically on staffing numbers. At the same time, important areas of jobs growth by-passed Western Sydney. Of the 60,000 new jobs in professional, scientific and technical services which were created in Sydney between 2006 and 2016, less than 10,000 went into Western Sydney. Ultimately, the economy of Western Sydney is severely unbalanced: it fails to provide a diverse range of jobs which are needed for the region to prosper.

Is Western Sydney Airport the answer?

This report looks closely at the proposal for Western Sydney Airport (WSA) and the associated aerotropolis to see if it will provide the numbers and the diversity of jobs required in Western Sydney.

The proponents of WSA usually emphasise the 'total jobs' which WSA will create. These figures are in the order of about 11,000 for construction, nearly 28,000 for airport operations in 2031, and nearly 48,000 for airport operations in 2041. These are the headline job numbers which are designed to grab attention. They are, however, quite misleading when it comes to assessing the real employment effects of WSA.

Contrary to the claims of a 'jobs bonanza', only 120 construction jobs, and 800 airport jobs, would be targeted to Western Sydney workers in the first stages of the project. Chapter 3, below, explores this issue in great detail.

The overall jobs claims—such as 8,700 aviation jobs by 2031—are vastly exaggerated. Comparable airports, such as Adelaide, support only 1,600 aviation jobs. Proposals for an adjacent business park also appear unrealistic, with the airport's proponents suggesting that another 4,000 jobs will arise from economic activities around the airport. A real-world comparison with a number of other business parks in Sydney also shows that these numbers are massively inflated.

As well as the job numbers, the quality of employment also matters. Underemployment—where workers can't get enough hours of work—is growing among Australia's blue-collar workforce. Western Sydney airport is likely to contribute to this problem, as considerable numbers of airport blue-collar jobs increasingly become part-time.

Plans are also underway for an aerotropolis, a mini-city adjacent to the proposed Western Sydney Airport. The planners expect to see economic activities based on engineering, consulting, corporate law, information and communications technology (ICT), international finance and marketing, all relocate to the aerotropolis. They envisage the aerotropolis as an executive hub where board meetings and other high-level decision making can take place. Realistically, chief executives and general managers of corporations in industries such as these are unlikely to relocate to Badgerys Creek, nor travel there for regular meetings. These people currently live in Eastern, Northern and Central Sydney, and the expectation that they will move to South-Western Sydney, or regularly commute there, is far fetched. It is far more likely that corporate Australia will continue to use Kingsford Smith Airport as their centrepiece, and leave WSA as a budget-airline and freight-airline

centre. This suggests that the aerotropolis proposals are not serious policy, but a form of 'window dressing' to bolster support for the airport.

The high-speed rail alternative

In 2010 the Federal Government was committed to high-speed rail but the decision by a later government to develop Badgerys Creek as a second airport for Sydney has undermined any possibility of HSR going ahead. This report argues that high-speed rail between Sydney and Melbourne (and ultimately, to Brisbane) should be an *alternative* to the second airport, *not* a complement to it. Indeed, on commercial grounds alone, the two projects are not compatible. High-speed rail is only economic if domestic airline passengers between Sydney and Melbourne transition to high-speed rail. Building HSR—which would reduce domestic air traffic—would result in the international flight capacity of Kingsford Smith airport increasing, thereby removing the need for a second airport in Sydney to cater for this market. As for the proposal that Western Sydney Airport might provide a 24 hour *freight* airport—this idea is also undercut by high-speed rail. With an inland international freight airport connected to Sydney by HSR, any further need for a second Sydney airport at Badgery's Creek would be made redundant.

As well as its transport advantages, high-speed rail has considerable employment benefits. Compared to the second airport proposal, building a 21st century high-speed system in Australia would provide a large number of high-quality jobs over several decades. The Californian HSR project, currently under construction, is expected to create 200,000 jobs over the lifetime of the project.

The construction of the HSR network can also be implemented as a counter-cyclical measure, thereby alleviating the periodic slumps which afflict the construction industry. This report proposes a strategy that would tie high-speed rail into the revitalisation of manufacturing, and the rebuilding of the TAFE system. Both of these areas have haemorrhaged badly over the last decade and a public commitment to their resuscitation is long overdue.

In conjunction with proper planning, high-speed rail can also be a catalyst for the decentralisation of economic enterprise away from Sydney's CBD. Within Sydney, it can be linked with orbital rail to greatly improve employment mobility for the residents of Western Sydney. Outside of Sydney, HSR can help re-invigorate regional NSW and Victoria.

On environmental grounds the case for high-speed rail (HSR) is overwhelming. HSR can become a major contributor to carbon

emission reductions. This is because emissions per passenger using rail transport are much lower than air transport and because the HSR system has the potential to draw all its electricity from renewable energy sources.

Employment proposals for Western Sydney

The employment strategy outlined here for Western Sydney makes high-speed rail its centrepiece. At the same time, the proposals for jobs in the West are both far-reaching and integrated. This report argues for revitalising manufacturing in Australia by ensuring that there is local fabrication of both the track and the rolling stock (including locomotives). While this may be shared between New South Wales and Victoria, a large component of this work could take place in Western Sydney (as well as Newcastle and Wollongong). Underpinning both the design and construction of a high speed rail system is the necessity for high levels of technical skill. The long overdue rebuilding of the TAFE system is thus an integral part of this strategy. As a positive spin-off, this would also benefit a large range of local employers, employers who are otherwise likely to face skilled-labour shortages in coming years. This report also stresses the need for building orbital rail in Western Sydney to overcome the destructive spoke-and-hub employment patterns which dominate Sydney.

This report emphasises the importance of the 'circular economy', whereby the benefits of economic development need to be retained within the system. This gives priority to local employment needs and local decision-making and control. Prioritising local supply chains—that is, ensuring that purchases go to a wide range of local businesses—should be a crucial part of publicly funded developments, such as orbital and high speed rail. In this way, employment gains are retained in the local area.

Environmental sustainability is integral to the circular economy and this report outlines the prospects for building innovative waste-recycyling plants in Wesern Sydney. This has become an urgent issue now that China is no longer accepting Australia's low-grade waste. Complementing this waste strategy could be a broader program of environmental repair across western Sydney, based on efforts to restore the Nepean / Hawkesbury catchment and protect remnant Cumberland Plain woodlands.

Finance is a core part of economic development. As is well known, the chronic failure to adequately fund small and medium businesses (SMEs) remains a core weakness in Australia's economy. Compared to

countries like Germany, which has a vibrant community banking sector underpinning its dynamic SME manufacturing sector, Australia trails badly. Australia lacks a strong community-based banking sector and SMEs here face a heavily-concentrated commercial banking sector which overwhelmingly funds property inflation, rather than productive investment. By promoting community-based banking, this report argues that SMEs would be better placed to access finance for expansion. At the same time, an expanded banking and finance industry in Western Sydney would bring an increased number of higher-level clerical and professional jobs into the area. These could complement the higher-level technology jobs which would be required for the high-speed rail projects and for the innovative recycling plants.

The report concludes by posing a number of important questions which implementing these proposals would require. This current report is a strategy document, laying the groundwork for working through some of the complexities around implementation.

1 Introduction: jobs for Western Sydney

1.1 History repeats

A brief overview of the history of Western Sydney provides a chronicle of repeated failures, particularly failures by state planning agencies.[1] The problems which surfaced in the 1960s and 1970s as the first large housing estates were built have an eerie familiarity in today's world. Before looking at the issue of jobs for Western Sydney—the focus of the next chapter—one needs to glance back several decades to understand how and why the following dilemmas persist:

- a shortage of local jobs and the need for residents to commute long distances;
- congested transport infrastructure across Western Sydney;
- a declining physical environment in which to raise families;
- a general lack of cultural and social facilities comparable to what residents in the centre of Sydney take for granted.

In the late 1940s, a visionary plan for Sydney's future unfolded. The *County of Cumberland Plan* had the goal of encircling Sydney with a 'green belt', a corridor of native vegetation:

> [The Green Belt will be] a girdle of rural open space encircling the urban districts and penetrating towards the centre between some of the outer districts ... Ensuring for all time, ready access by urban populations to a countryside specially planned and maintained for their benefit.[2]

Decentralising industry, commerce and cultural facilities into the suburbs

The plan also aimed to decentralise industry, commerce and cultural facilities away from the centre and into the suburbs. This was intended to both ease transport congestion and

1. This chapter draws heavily on Chapter 9, Building Communities, from Ian Watson (2015), *A Disappearing World: Studies in Class, Gender and Memory*, Melbourne: Australian Scholarly Publishing. A copy of this chapter is available for download from http://ianwatson.com.au/pubs/watson_building_communities_from_disappearing_world_2015.pdf.
2. Quote from the Cumberland Plan, reproduced in Sue Daniel (2018), *How a post-war population explosion put an end to Sydney's 'visionary' Green Belt plan*, Curious Sydney, Sydney: ABC News, URL: http://www.abc.net.au/news/2018-03-29/curious-sydney-what-happened-to-sydneys-green-belt/9576144.

minimise long travelling times for workers. By the end of the 1950s, however, most of the rail proposals had been withdrawn from the plan, and the green belt itself had been reduced from an original size of 128 square miles to only 44 square miles.

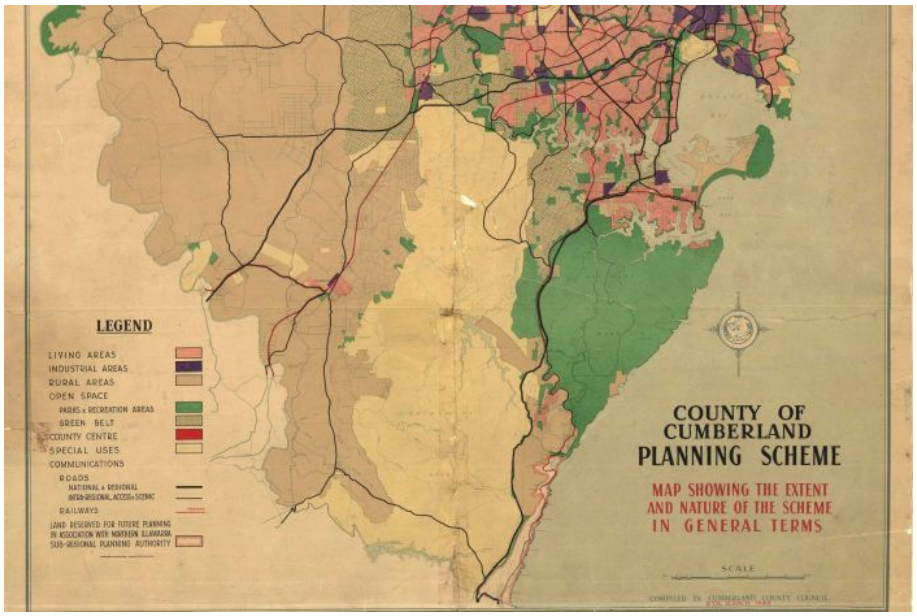

FIGURE 1:
PART OF SYDNEY'S GREEN BELT: THE VISIONARY COUNTY OF CUMERLAND PLAN.
Source: City of Sydney Archives.

During the 1950s and 1960s the New South Wales Housing Commission was at the forefront of developing new housing estates in Western Sydney. The impetus for this had come from Sydney's severe housing shortage in the post-war years, as well as a commitment to dismantle the 'working-class slums' of the inner city. However, as historian Diane Powell observed, this desire to increase Sydney's housing stock was in conflict with the Cumberland County Council's 'lofty plans':

> The two government bodies were often at cross-purposes, the one aiming to provide a coordinated and aesthetically pleasing greater urban system with a harmonious balance of nature and culture, the other briefed to provide a huge number of houses as cheaply and quickly as possible within the metropolitan boundaries. One saw the empty spaces as permanent green areas in an urban patchwork, the other in terms of how many building blocks could be etched out of them.[3]

3. Diane Powell (1993), *Out West: Perceptions of Sydney's Western Suburbs*, Sydney: Allen and Unwin, p. 54.

The enduring tension between making Western Sydney more 'liveable' versus filling every space with more housing

This conflict has persisted to the present day, producing an enduring tension between making Western Sydney more 'liveable' versus filling every space with more housing. In the late 1960s Green Valley came to symbolise all that was wrong with the Housing Commission's large estates. While the Commission developed progressive policies for planning *physical* space, such as planting native trees and constructing child-safe pedestrian walkways, its efforts at planning *social* space were disastrous. In the 1940s the Housing Commission had intended to create *communities* rather than simply housing estates, but 'in an economic climate beset by shortages of materials, labour, and finance it was these community facilities which were to bear the brunt of restrictions'.[4] By the 1960s, these shortages had been overcome but the community facilities, invariably the responsibility of other government agencies, lagged badly behind the provision of housing. In Green Valley thousands of people had been settled before any substantial social infrastructure was in place. In 1966, with nearly 5,000 dwellings already completed and no social facilities in place, the Housing Commission tried to justify this neglect as an inevitable 'stage' in any suburban development.

Planners were swayed by the availability of land, rather than employment

Green Valley's dilemma exemplified the basic problem with the Housing Commission's strategy for developing new communities on the outer fringes of Sydney. The Commission planners were swayed by the availability of land, rather than employment, and took little account of how local labour markets functioned. In Green Valley, the new settlers competed in the Liverpool labour market with local workers, as well as other job seekers from the growing areas of Campbelltown and Camden. The result invariably was lower wages or longer hours of commuting. A study of Green Valley carried out in the early 1970s showed that 83 per cent of husbands on the estate spent more than ten hours per day away from home, and nearly a third were away for more than twelve hours.[5]

There had been some industrial development in western Sydney in the 1940s, such as the St Marys' defence industries, and in the post-war years this continued to expand, providing one of the main sources of factory work for women in the new Mt Druitt suburbs. Western Sydney continued to expand steadily from the 1950s through to the 1980s, as industries which had been traditionally based in the inner city or inner

4. Carolyn Allport (1980), 'The unrealised promise: plans for Sydney housing in the forties', in: *Twentieth Century Sydney: Studies in Urban and Social History*, ed. by Jill Roe, Sydney: Hale and Iremonger, p. 57

5. Thomas Brennan (1973), *New Community: Problems and Policies*, Sydney: Angus and Robertson, pp. 6–7.

west moved to the Blacktown area to establish 'greenfield sites'. They seized the opportunity of large vacant sites to consolidate factories and warehouses which had often been spread across many suburbs.

Growth of employment in Blacktown and Mt Druitt fell far behind the massive increase in population

However, despite this pattern of industrial development, the growth of local employment in Blacktown and Mt Druitt fell far behind the massive increase in population in the area. Thousands of workers still commuted by train into the city, and road access to the Housing Commission estate remained a single lane highway until the early 1970s.[6]

New commercial centres in Sydney's west failed to eventuate

In the late 1960s the Sydney Region Outline Plan had called for the development of large new commercial centres in Sydney's west, as a way of broadening the employment opportunities in the new suburban areas, but these had failed to eventuate. In their submission to the government in 1977, the Mt Druitt inter-agency workers declared:

> The Mt Druitt community has been sold short. The early promise of job opportunity, commercial and industrial expansion with 'a balance between resident population and employment so that most people will not have to travel outside the area to work' has not been met.[7]

Public transport remained inadequate for years

Public transport remained inadequate for many years and in some cases, even deteriorated. Despite the steady increase in population in western Sydney, train services to the area were actually reduced during the late 1960s. Other social resources, such as meeting places, recreational and sporting facilities, health and educational amenities, were all deficient for many years. The residents, and especially local politicians, were acutely aware of the Green Valley experience and drew on this comparison to voice their anger. As the local State member explained,

> Population was running way ahead of planning in the area and the mistakes that the State Government had made … at Green Valley were being perpetrated on a even larger scale at Mt Druitt …

6. *Blacktown Advocate*, 29/11/1967, p. 1.
7. 'Balance' quote from the Sydney Region Outline Plan and included in the inter-agency submission. See Sue Richards et al. (1977), *Mt Druitt–Workers? Yes! Jobs? No!*, Submission to Government from Mt Druitt Interagency, State Library of NSW, p. 3.

> … There are thousands of children in the area, no playing fields, no meeting places, nothing for teenagers to do, and inadequate transport facilities to take them anywhere.[8]

As late as 1973, with a population of 70,000, the area still lacked a public hospital. The vast majority of the people settling in the new estates of Western Sydney were young families, and yet specialist medical services, like gynaecologists, obstetricians and paediatricians remained clustered in the Sydney city centre. A *Sydney Morning Herald* feature article in 1973 summed up the dilemma bluntly: 'Out west—wasteland, wantland' and 'New town, blue town'. At the end of the 1970s, a *Herald* editorial characterised the plight of Western Sydney as a 'dumping ground' for Sydney's expanding population, and its writer condemned past governments for the neglect which had 'left communities to fend for themselves without adequate amenities, industry or services'.[9]

1.2 The situation today

Before looking at the situation in Western Sydney today, it is worth briefly defining the region and showing its recent population growth. Table 1 shows the 13 Local Government Areas (LGAs) which make up the region, and their populations in 2006 and 2016. Over 1.1 million people live in the region, an increase of nearly 200,000 residents in a ten year period. This overall 20% increase in population has been outpaced by two LGAs where increases have reached over 50% (Camden and Parramatta).

TABLE 1: POPULATION BY LOCAL GOVERNMENT AREA, WESTERN SYDNEY, 2006 AND 2016

LGA	*2006*	*2016*	*Change*	*% change*
Blacktown	136,837	169,393	32,556	23.8
Blue Mountains	38,137	39,779	1,642	4.3
Camden	25,312	39,880	14,568	57.6
Campbelltown	72,742	79,999	7,257	10.0
Canterbury-Bankstown	151,795	173,975	22,180	14.6
Cumberland	76,486	104,998	28,512	37.3
Fairfield	90,934	100,854	9,920	10.9
Hawkesbury	30,419	32,638	2,219	7.3
Liverpool	82,728	102,976	20,248	24.5
Parramatta	74,045	112,996	38,951	52.6
Penrith	86,874	99,245	12,371	14.2
The Hills Shire	80,613	79,795	-818	-1.0
Wollondilly	20,036	24,316	4,280	21.4
Total	966,958	1,160,844	193,886	20.1

Source: Census 2006 and 2016, Place of residence

8. *Blacktown Advocate*, 27/8/1969, p. 1.
9. *Sydney Morning Herald*, 8/2/1973, various pages. 'Dumping ground' quote from *Sydney Morning Herald*, 5/1/1979, p. 6.

Today's planners foresee 500,000 new residents being settled by 2041

The current dilemmas for Western Sydney outlined earlier–around jobs, transport, social facilities and environment–make its history more pertinent than ever. As Figure 2 shows, today's planners foresee 500,000 new residents being settled by 2041 in just two areas: in the South West Growth Centre (between Badgerys Creek and Liverpool) and on a floodplain in the North West Growth Centre (northwest of Parklea). Such developments would be the final nail in the coffin of Sydney's Green Belt, eliminating most of Western Sydney's open space, native woodland and market gardening.

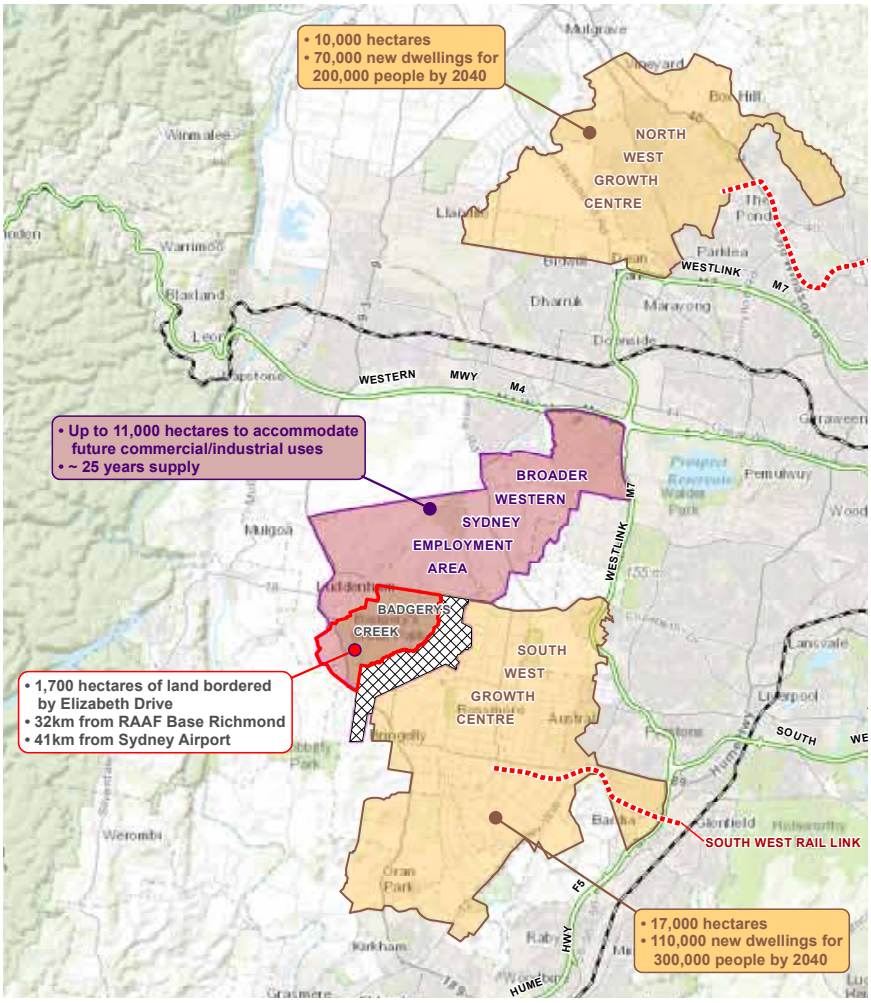

FIGURE 2:
LAND USE PROPOSALS FOR WESTERN SYDNEY
Source: Department of Infrastructure and Regional Development, Exhibit 5 WSA Area Development Zones and Major Transport Connections Eastward, reproduced in John D. Kasarda (2015), *A Western Sydney Aerotropolis: Maximising the benefits of Badgerys Creek*, Sydney: NSW Business Chamber, p. 16

Problems of transport and jobs in Western Sydney are almost insurmountable

Even without such massive development, the problems of transport and jobs are currently almost insurmountable. It is clear to anyone who studies the data closely that increasing population in this way will compound these problems many times over. The proponents of these schemes–Federal and State politicians and bureaucrats, property developers and Chambers of

Commerce—repeatedly dangle the lure of jobs in front of the residents of Western Sydney. They hope to entice them to accept not only this massive expansion in housing, but also a major airport development at Badgerys Creek, an airport intended to operate 24 hours a day without any curfew. This strategy is a well known one in the history of environmental campaigns and goes by the name of 'job blackmail'. Its mantra is: "If you want jobs, you must accept [fill in the blanks] environmental destruction."[10]

It is instructive to recall that the Cumberland Plan was largely based on the Greater London Plan of 1944, which had both a Green Belt and satellite towns around it.[11] What worked in London did not work in Sydney—for a range of reasons—and instead Sydney lost most of its Green Belt, replaced by a vast suburban sprawl. Part of London's success was due to its fast train network and the connections between satellite towns which this fostered. To this day Sydney has been cursed by a spoke-and-hub transport system, where 'all roads lead to Rome'. This reports looks at how solving part of this transport mess—through enhanced orbital rail and intercity high-speed rail—might also undo some of the damage which the spoke-and-hub system has imposed on Western Sydney.

A response to the job blackmail raised by Western Sydney Airport

This report is a response to the threat of job blackmail raised by the proposed airport at Badgerys Creek and by the massive over-development proposed for South West and North West Sydney. This report argues for a large number of new jobs in Western Sydney, but they need to be jobs which cater to a broad mix of occupations and skills, and jobs which enhance the quality of life in Western Sydney and improve its environment. While the Green Belt may have been largely lost, this is no reason to sacrifice what remains, nor to destroy the liveability of Western Sydney.[12] Indeed, with more local jobs, improved public transport infrastructure, a major expansion in social and cultural facilities, and genuine efforts towards environmental repair, the liveability of Western Sydney could be immensely improved.

10. Richard Kazis and Richard L. Grossman (1982), *Fear at work: job blackmail, labor, and the environment*, New York: Pilgrim Press.

11. Daniel 2018.

12. As town planner Ian Sinclair observed, pockets of the original Green Belt still exist: 'The area that has been kept of the original Green Belt is around the M4 and Prospect Reservoir. What's interesting though is that the plan that came after it was the 'Sydney Region Outline Plan' and it outlined an area slightly to the west which basically has become the Western Sydney Parklands, so the Green Belt as an area of government-owned land exists today.' Quoted in ibid.

2 The employment needs of Western Sydney

2.1 Regional job strategies

There are several key principles behind regional job strategies. These are necessary in order to ensure that residents in those regions benefit from any job creation programs or any regional industry plans. First, it is important to provide *a mix of job types*, ranging from lower skilled to more highly skilled occupations. The thinking behind this is:

It is important to provide a mix of job types, ranging from lower skilled to more highly skilled occupations

- the less skilled jobs can be taken by those currently unemployed, who are often workers with limited formal education;
- the more highly skilled jobs can be taken by those currently *under-employed*, who are often workers with reasonably good levels of formal education;
- the more highly skilled jobs can also be taken by those who commute long distances, and who often have specialised skills for which there are few jobs in their local area.

Secondly, for each of these groups of workers access to training and education can be crucial. This is because the new jobs often require a different mix of skills to those held by both the employed and unemployed workers. Even the lower skilled jobs may require exposure to new technology, as digital innovations become more common. Lower skilled jobs may also require good levels of literacy or numeracy. In both these situations, unemployed workers may need assistance in 'upskilling'. It is for reasons like these that this report strongly promotes the idea of rebuilding the TAFE (technical and further technical education) system (as outlined in Chapter 5 below).

Thirdly, it's important to realise that jobs must *precede* training courses. One of the great failures of labour market programs in Australia over the last 25 years has been the practice of forcing the unemployed to complete a maze of 'training courses', often of a very superficial nature, with no guaranteed job at the end. Progressive thinking in this area requires that an unemployed person be placed in a job first, and then training should be tailored to the

Placing unemployed people in jobs first …and then tailoring the training to the job and the person

requirements of both the job and the person.[1] The ideal here is based on the traditional apprenticeship model: that is, an unemployed worker learns on the job, but also learns off-site in a training institution for a certain period of the week.

A different situation applies to workers with higher levels of skill. At present, one of the growth areas in education has been post-graduate degrees and diplomas. Part of this reflects an unfortunate trend towards increased 'credentialism', whereby workers need more qualifications just to access, or hold down, an existing job which may not actually require those qualifications. This is part of the scandal of over-qualified workers in Australia.[2]

Finally, an essential part of the story concerns workers who need to upgrade their skills because of the changing nature of their jobs. This is sometimes referred to as 'lifelong learning': the need to keep abreast of new technology as the world of work is constantly transformed. Sometimes these transformations reflect not new technology, but new business practices—such as outsourcing or just-in-time methods. But when such changes do indeed reflect a genuine need for new skills, or the updating of existing skills, then it is clearly worthwhile for the community to invest in educational resources to facilitate this.

It is worthwhile for the community to invest in educational resources for workers to gain new skills

From these ideas emerge the following sequence: first, the creation of new jobs that meet the needs of the existing residents; secondly, the provision of the educational and training infrastructure which supports those jobs; and thirdly, adequate financing to ensure those jobs become long-term. The report addresses this issue of finance in Chapter 5, where I outline plans to expand community-based banking in Western Sydney. The report also makes long-term Federal Government funding the centre-piece of the proposal for high-speed rail.

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1. See, for example, Beth Cook et al. (2008), *Creating effective local labour markets: a new framework for regional employment policy*, University of Newcastle, Australia: Centre of Full Employmentloyment and Equity.

2. Research from the early 2000s showed 'close to 30 per cent of workers are overeducated and are underutilising their skills'. About 21 per cent of workers with a degree were working in jobs which did not require that level of education, while about 46 per cent of workers with a vocational qualification were in jobs not requiring that level of skill. Ingrid Linsley (2005), 'Causes of Overeducation in the Australian Labour Market', in: *Australian Journal of Labour Economics* Vol. 8. No. 2, pp. 121–143, p. 121. See also Kostas G. Mavromaras et al. (2007), *The Problem of Overskilling in Australia and Britain*, Discussion Paper No. 3136, IZA.

With these principles in mind, this report now looks at the extent of the employment problem in Western Sydney: both those workers currently unemployed and those who commute long distances to work. An understanding of the situation of these groups is a crucial part of developing a jobs strategy for the region. The other half of the strategy involves outlining worthwhile industry proposals that will improve the region, as well as the wider community. As I suggest later, these revolve around stable construction jobs in orbital rail and high-speed rail, rebuilding the TAFE system, revitalising manufacturing, building innovative recycling plants and expanding community-based banking.

2.2 Unemployment in western sydney

A 'belt' of disadvantage runs from Blacktown through to Campbelltown

When it comes to unemployment, the most severe lack of jobs lies in a belt of Local Government Areas (LGAs) running from Blacktown through Cumberland, Fairfield, Canterbury-Bankstown, Liverpool and Campbelltown. Fairfield and Cumberland are the worst affected: in 2016 the former had an unemployment rate of 10.5% and the latter had a rate of 9.5%. By contrast, North Sydney had an unemployment rate of just 3.7%. Figure 3 shows the unemployment rate as quintiles (five equal groups) for the LGAs which make up Sydney and its immediate surrounds. (Those LGAs which make up western and south western Sydney are labelled).

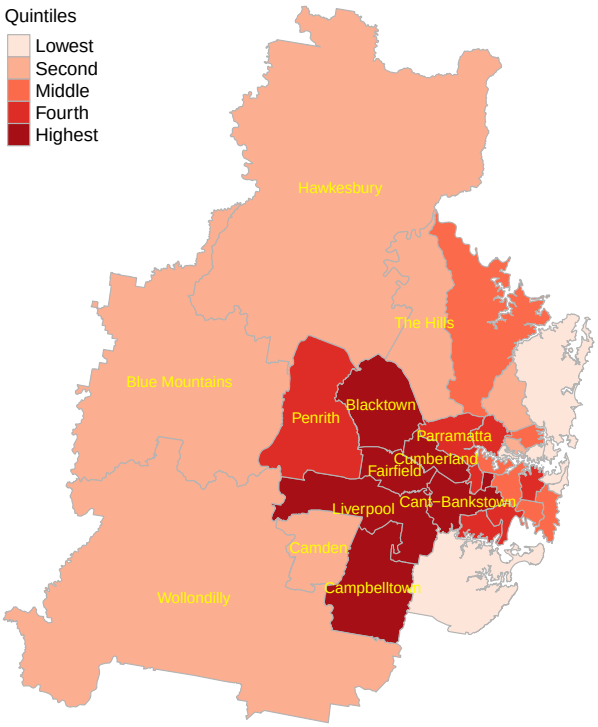

FIGURE 3:
WHERE UNEMPLOYED WORKERS LIVE.
Source: 2016 Census data.

Unemployment rates are only part of the story

The unemployment rate is only part of the story. For a variety of reasons, considerable numbers of people without jobs 'drop out' of the unemployment statistics. Some leave the labour market and become part of the 'hidden unemployed'. In the case of young people this is a serious problem and a category called NEET has been created to measure this. This stands for *neither in employment, nor education or training*. In other words, these are young people, some of whom are in the labour market, but unemployed, and others who are not in the labour market at all. Of course, people who have retired, or who are studying or raising young children, may be outside the labour market also. But young people in the NEET category don't fit into these groups, as they are no longer at school nor studying at university or TAFE. A certain proportion may be raising children, but the vast majority are simply 'off the radar'.

The NEET category is particularly helpful for looking at the prospects for teenagers and young adults. One would hope that people at this age are preparing for a productive working future; but if they are neither studying nor working, then that future is highly uncertain.

In Blacktown nearly 1,600 teenagers are neither studying nor employed

In the case of teenagers, areas outside the unemployment belt are also notable. For example, Penrith and Hawkesbury are also in the highest quintile for NEET (see Figure 4). Blacktown and Campbelltown, also in this quintile, have the highest proportions of NEET (at over 7%). By contrast, most of the LGAs in Eastern and Northern Sydney have less than 3% of their teenagers in this category. If these percentages seem small, the numbers themselves are cause for concern. In Blacktown, for example, nearly 1,600 teenagers are in this NEET category, while across Sydney as a whole, the numbers total nearly 12,000.

Across outer Western Sydney nearly 9,500 young adults are neither studying nor employed

When it comes to young adults, those aged 20 to 24 years, the percentages are much higher. LGAs like Campbelltown and Cumberland have nearly 18% of their young adults in the NEET category, while Fairfield and Liverpool are not far behind. In terms of numbers, there are nearly 9,500 young adults in these four LGAs who are neither employed nor in education or training. Figure 5 summarises these data and again highlights the strong East / West divide in the labour market fortunes of young people.

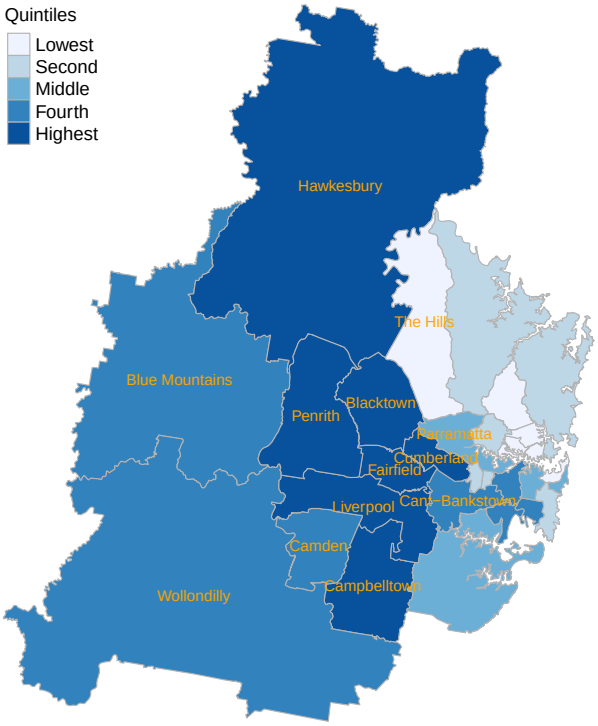

FIGURE 4:
WHERE NEET TEENAGERS LIVE.
Source: 2016 Census data.

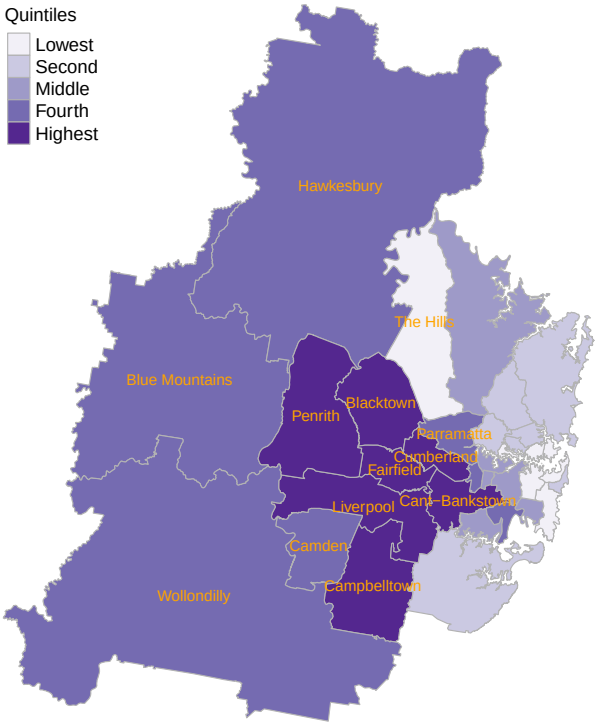

FIGURE 5:
WHERE NEET YOUNG ADULTS LIVE.
Source: 2016 Census data.

Large numbers of young people are in a 'labour market limbo': a social and economic disaster in the making

This heavy concentration of young people in Western Sydney who are neither in employment, nor education or training is a disturbing sign for the future. These young people are crucial for building a future workforce in this country, and the fact that such large numbers are found in this labour market limbo is both a social and economic disaster. Not only are young people in this situation in danger of poverty and homelessness, but society looses the potentially valuable contribution which they have to offer.

Jobs are not located in the West in the numbers needed

The labour market bias against young people in Western Sydney is one of the most serious problems that the region faces and it partly arises because jobs are not located in the West in the numbers needed to address this problem.

``It is a full-time job trying to find a job"

Jenny has found herself unemployed after working in marketing for more than 12 years. During that time, she commuted to North Sydney by train, leaving home at 6.15am and returning home at night, usually between 7.15pm and 8.30am.

While the journey to work was comfortable, coming home was a different matter: ``the return trip trains are packed to the hilt and usually involved having to stand at least to Parramatta if not the whole way, because they just did not have enough carriages on the train".

It was the impact on her home life of these long hours which most affected Jenny: ``There was no social life during the week ... when I got home I was exhausted" and ``I never got to see [my children] in the morning ... I generally got to see them at dinner and put them to bed---that was my time with them"

Once she became unemployed, Jenny found that distance remained a problem: the type of skilled work which she sought was only available in central or north Sydney, though prospects for work in Parramatta were increasing. Where once she turned to local recruiters for jobs, she found that `networking' was now the basis for getting into most jobs in her field: ``companies don't want to have to pay recruiters".

Jenny has been warned to expect to stay unemployed for upto 12 months if she wants a job at the same level she had before. And job searching itself has been arduous: ``It is a full time job trying to find a job".

2.3 The issue of commuting

Jobs could be relocated to Western Sydney and the of commuting eased

A major problem with Western Sydney's history of spoke-and-hub employment patterns is the burden of commuting which it imposes on residents. The toll on finances, health, home life and general well-being from many hours of sitting in traffic or on trains and buses can be considerable. In many cases, the kinds of specialised jobs which workers seek are only to be found in central or northern Sydney. In other cases, however, many of these jobs could be relocated to western Sydney and the burden of commuting eased.

``It's just something you have to do - as you have no choice!"

Michael, a Penrith resident who works in the Sydney CBD, spends nearly 12 hours a day away from home. Leaving at 6.30am and returning at 6.15pm, his day involves about 3 hours of commuting, using both his car and the train.

Michael does not catch the train from his nearest station. He travels to a station further West to ensure he gets a seat on the train.

Working closer to home would be ideal, but the more specialised work which Michael undertakes means employment closer to Penrith is unlikely to eventuate, nor to pay as much.

The picture of commuting which emerges from the Census is a mixed one. On the one hand, large numbers of workers travel to the CBD or Eastern or Northern Sydney, and these workers face the longest commutes. Nearly 9,000 workers in Penrith are in this situation, while over 11,000 in Campbelltown make these kinds of journeys. On the other hand, considerable numbers of workers in these outlying areas also work in other LGAs, some of which are not part of the spoke-hub corridor. Often, their travel to work would benefit from better orbital transport options. For example, the majority of workers in Blacktown–well over 72,000–travel into other LGAs; in Campbelltown the numbers top 30,000 and in Penrith they exceed 40,000. Figure 6 shows these patterns and demonstrates the diversity of commuting routes for Western Sydney workers.

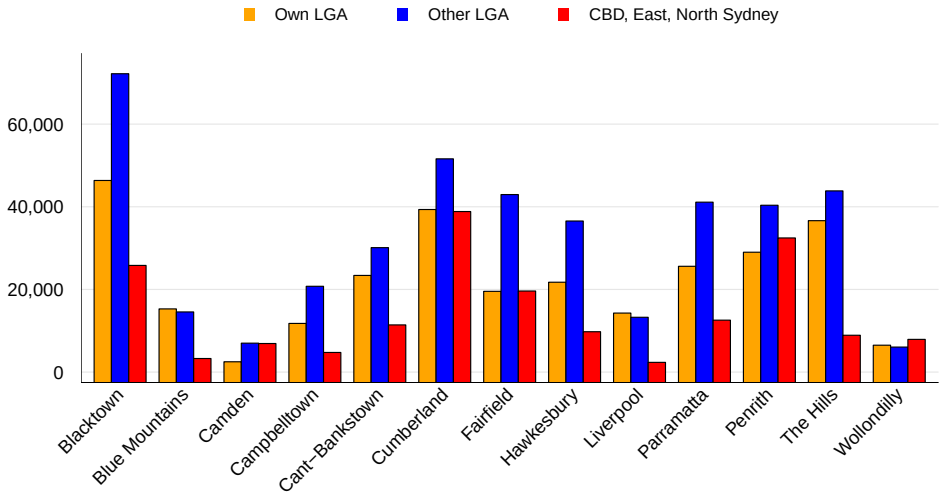

FIGURE 6: WHERE WESTERN SYDNEY WORKERS COMMUTE TO
Numbers of workers travelling to three main destinations. Workers living in a number of Western Sydney LGAs. *Source*: 2016 Census: usual residence and place of work data.

2.4 The employment profile of Western Sydney

Local jobs for the unemployed, and for those commuting long hours into the city, are both needed

The shortage of jobs in Western Sydney has two important aspects. As outlined earlier, there is the issue of providing jobs for those who are unemployed or underemployed, and there is the issue of providing jobs for those who currently commute long hours into the central parts of Sydney. One way of measuring the extent of the problem of commuting is to look at the occupational profile of those who reside in the LGAs in Western Sydney, and compare that with the occupational profile of the jobs to be found in those LGAs. Occupational profiles tell us about the types of workers for whom jobs must be found. After looking at occupation, I turn to industry, and use the same approach of looking at the industry profile of Western Sydney LGAs and the industry profile for those jobs in the central parts of Sydney. As one would expect, the industry story generally matches the occupational story.

Occupations held by Western Sydney residents

I begin by looking at jobs at the broadest occupational level (called *major group*). This provides an overview of the occupational profile of each LGA and is a useful way to compare the people who *live* in that LGA with the people who *work* in that LGA. This comparison is shown graphically in Figure 7, where the blue dots show the occupation of people working in that LGA, and the orange dots show the occupation of people living in that LGA.

For example, in the Blue Mountains the highest proportion of people in both these categories are professionals, but more professionals live in the Blue Mountains than work there. This pattern is also evident in

Blacktown, Parramatta and The Hills. On the other hand, in LGAs like Cambpelltown, Fairfield, Liverpool and Penrith, more professionals are found working there than residing there. In one sense, the first set of LGAs 'exports' some of their professional workers outside the LGA, whereas the latter set of LGAs needs to 'import' some of their professionals.

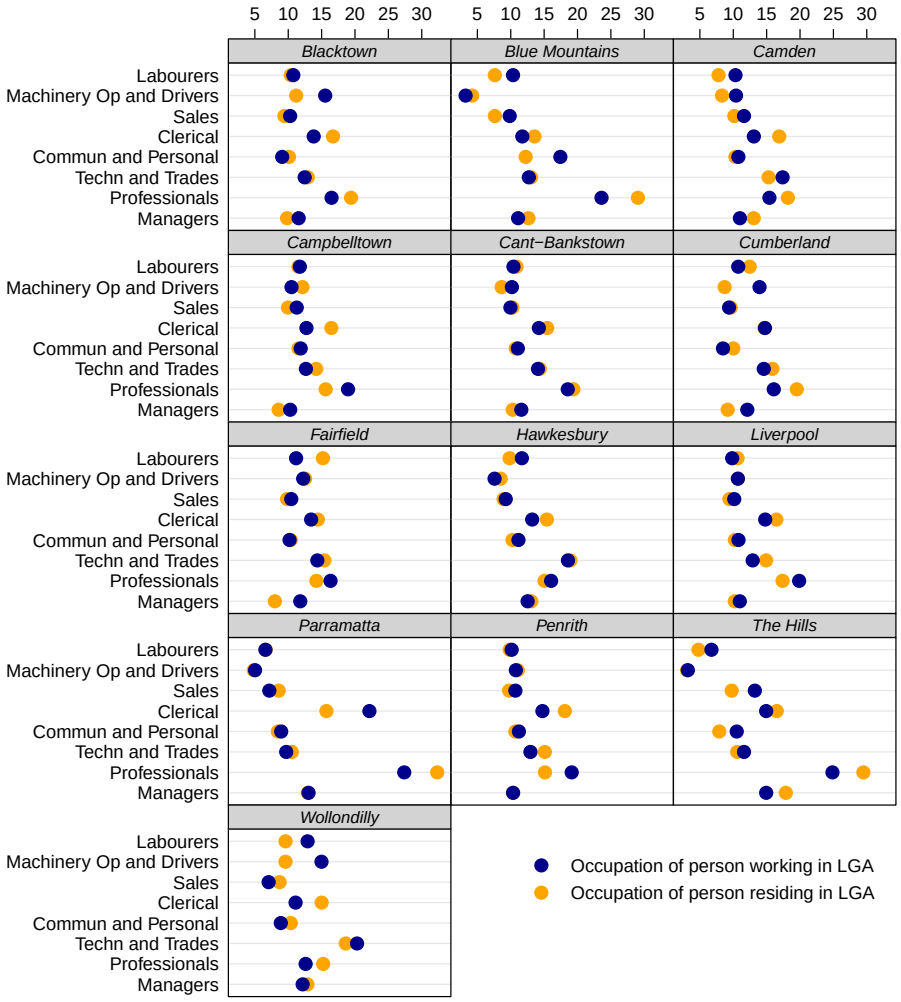

FIGURE 7: OCCUPATIONS IN LGAs IN WESTERN SYDNEY
Percentages of each occupational group for usual residence and place of work data.
Source: 2016 Census data.

Clerical occupations are one important area where residents need to commute for work. In nearly all LGAs (with the exception of the Blue Mountains, Cumberland and Parramatta) one finds more clerical workers residing there than are working there.[3]

Many clerical jobs currently require residents to commute

3. It needs to keep in mind that there will always be commuting between areas, because job specialisation is such that no LGA will ever provide a complete set of job possibilities for all residents.

The distinctive character of each LGA is also notable. Professionals are the largest occupational group in many LGAs—as they are in the labour market more generally—representing nearly 30% of residents in LGAs like the Blue Mountains and The Hills. On the other hand, in LGAs like Penrith, Cambelltown, Fairfield and Hawkesbury the proportion is about half of this and blue collar occupations are much more common. Overall, Figure 7 shows that LGAs like Cumberland, Liverpool and Penrith have more diversity in their occupational profiles than LGAs like Parramatta, Blue Mountains and The Hills.

How many residents work locally, and how many need to commute?

Jobs measured in this broad occupational way (major group level) are useful for understanding the skills of the workforce. Looking at professionals, for example, this category includes highly specialised jobs in ICT (information and communication technology) as well as jobs like teachers and nurses. Because these differences are important, it is worth burrowing down and looking at a more detailed description of occupations: the *unit* level. In the example below I take four LGAs—where workers commute long distances—and compare them by the top 15 occupations. I do this in two ways: I look at the occupations where local residents work in their own LGA; and I also look at the occupations where local residents need to commute to either the CBD or north Sydney (which I refer to as 'inner Sydney').

Why do this? It is one of the best ways of outlining which kinds of specialised occupations don't offer local jobs for residents in Western Sydney. In this way, it highlights the shortcomings of Sydney's labour market in so far as it obliges Western Sydney residents to commute long distances.[4]

Residents working in retail, in blue-collar jobs and in professional health and education jobs tend to work locally

Looking first at Blacktown, Table 2 shows us the top 15 occupations where residents work in their own LGA (first two columns). Sales assistants make up the largest number of occupations for Blacktown residents who work in Blacktown. The 3,447 people in this category make up 47% of all Blacktown residents who work as sales assistants. Only 421 Blacktown residents working in this occupation travel to inner Sydney, which is just 6% of the total (shown in the last two columns). Clearly, a number of residents of Blacktown who work as sales assistants work in nearby LGAs (such as Parramatta) so this local employment pattern is not the complete story.

4. This is the reason for making the destinations central or northern Sydney. Choosing other destinations might mean that some workers only travel to a nearby LGA and this would not count as a 'long commute'.

TABLE 2: MAIN OCCUPATIONS IN WHICH **BLACKTOWN** RESIDENTS WORK IN THEIR LOCAL LGA

	Work in own LGA		*Commute to inner Sydney*	
Occupation	*No.*	*%*	*No.*	*%*
Sales Assistants (General)	3,447	47	421	6
Storepersons	2,160	45	72	1
Child Carers	1,484	54	95	3
Truck Drivers	1,190	41	28	1
General Clerks	1,008	31	446	14
Forklift Drivers	982	43	17	1
Primary School Teachers	903	54	9	1
Registered Nurses	881	25	110	3
Checkout Operators and Office Cashiers	867	60	62	4
Retail Managers	841	38	95	4
Receptionists	690	35	171	9
Secondary School Teachers	661	39	16	1
Commercial Cleaners	658	38	126	7
Automobile Drivers	645	51	78	6
Kitchenhands	634	45	100	7

Source: 2016 Census data

HOW TO READ THESE TABLES (AND THOSE IN THE APPENDIX)

The first table (Table 2) in each set shows the top 15 occupations in which residents work locally, and the percentage in the third column shows what proportion of all residents who work in that occupation (in general) are working locally. The fifth column is there for comparison, showing what proportion of all residents in that occupation are commuting to inner Sydney (defined as the CBD and north Sydney). The remaining residents in that occupation (not shown here) are those who work in another LGA, but not in inner Sydney. The second table in each set (Table 3) shows the top 15 occupations in which residents commute to inner Sydney, with the same comparison possible between columns 3 and 5 (though the order is reversed because the focus is on the commuting). The same occupations may occur in both tables where large numbers of residents in that occupation are both working locally and commuting.

Looking down the table there is a pattern whereby some local residents are able to work locally. These span a range of lower skilled occupations (sales assistants and checkout operators), as well as more skilled occupations (child carers). There are blue-collar occupations (storepersons, truck drivers and forklift drivers), and there are also professional occupations (teachers and nurses).

By way of contrast, Table 3 shows us the occupations held by Blacktown residents who need to commute to inner Sydney. At the top of the list are computer programmers: nearly 1,000 Blacktown residents in this occupation commute to the city, and this is more than half (53%) of all

computer programmers who are living in Blacktown. By way of contrast, only 7% of residents in this occupation are able to work in their local LGA.

TABLE 3: MAIN OCCUPATIONS IN WHICH **BLACKTOWN** RESIDENTS COMMUTE TO CENTRAL SYDNEY OR NORTH SYDNEY

	Commute to inner Sydney		*Work in own LGA*	
Occupation	*No.*	*%*	*No.*	*%*
Software and Applications Programmers	924	53	125	7
Accountants	837	33	392	15
General Clerks	446	14	1,008	31
ICT Managers	445	41	100	9
Accounting Clerks	430	18	540	22
Sales Assistants (General)	421	6	3,447	47
ICT Support Technicians	348	31	145	13
Contract, Program and Project Administrators	345	25	183	13
Management and Organisation Analysts	326	37	83	9
Insurance, Money Market and Statistical Clerks	313	41	34	4
Bank Workers	253	21	153	13
ICT Business and Systems Analysts	240	44	47	9
Advertising and Marketing Professionals	235	30	148	19
Information Officers	233	17	278	20
Security Officers and Guards	211	20	189	18

Source: 2016 Census data

``We have no time together … the kids miss out on playgroup and stuff"

Wendy, who lives at Werrington, near Penrith, commutes to Randwick 5 days a week, including weekends. While she works a nominal 8 hour shift, she is away from home for 12½ hours a day. In other words, she spends 4½ hours each day commuting, using a combination of bus, train and bus. Hers is a single-car household, and her husband needs their car to get to Richmond where he works.

The long hours have had a severe impact on family life: at the end of each day ``I would not feel like doing anything and would struggle to keep my eyes open". She has little opportunity to spend time with her husband or children: ``we have no time together. People say you just have to make time for husband and family but there is no time in which to make time".

The prospect of working locally appeals to Wendy: ``a job closer to home is my main goal, that's why I'm studying to be a teacher." Her current occupation is too specialised to provide many options in Western Sydney. Apart from the shortage of jobs, transport is also an issue. The absence of orbital rail rules out public transport access to areas north or south of Penrith.

The pattern for Blacktown repeats in Penrith, Campbelltown and Liverpool, with small variations in the percentages, but an overall consistency in the story they tell. The details are shown in Appendix 1 and are not discussed in any detail here.

The residents who need to commute have specialised skills

Again looking down the list, the most striking feature of these data on residents who commute to inner Sydney is that the occupations overwhelmingly involve quite specialised skills: many involve ICT occupations, or are specialised professional / clerical jobs related to areas like accounting or insurance.

From these patterns several conclusions are evident for these four LGAs:

- there are a mix of occupations–based on skill–already held by residents who work locally;
- however, the more highly skilled occupations are biased towards human services, that is, occupations which tend be decentralised to begin with: such as health and education services;
- these human services jobs are largely publicly funded, and their numbers expand to meet the needs of a growing residential population;
- by way of contrast, smaller numbers of local residents with lower skills are found commuting to inner Sydney;
- instead, the residents who do commute tend to have specialised occupational skills, commonly found in larger organisations such as government departments or corporations.

Is it possible to put numbers on these kinds of jobs? This is difficult when looking at occupations at the *unit level* because there are 474 of these and only the top 15 have been examined in this way. Consequently, for the next stage of the analysis I move to a higher level of aggregation in occupations–the *sub-major group* level–where there are only 51 categories,[5] and I combine the four LGAs discussed above and also include the Blue Mountains and Hawkesbury, the other two LGAs where residents who commute to central Sydney must travel long distances. The results of this analysis are shown in Tables 4 and 5.

The health of the local retail sector is fundamental for employment

Looking first at those residents who are working in their local LGA, the presence of sales assistants is overwhelming: nearly 15,000 people. Half of all residents who are working in this occupation are working in their own LGA. This reinforces the view put forward by local businesses that the health of the local retail sector is fundamental to the employment outcomes in an LGA.

5. In outlining these results, only the top 20 are discussed. If all categories were examined, the absolute numbers would be even greater. Consequently, the magnitudes in the following discussion are intentionally under-estimated, making the conclusions quite conservative.

Jobs in education and health rely on adequate government funding

The health, social assistance and education sectors are major employers in local LGAs. While some specific health and educational occupations do number less than the sales assistant jobs, these occupations in the aggregate are considerable. Nearly 25,000 residents work in these occupations and the proportions who work locally range from 45% (carers and aides) through to 38% (health professionals). The viability of this area of employment relies crucially on the commitment of governments to provide adequate public funding for the health and education sectors.

TABLE 4: MAIN OCCUPATIONAL SUB-MAJOR GROUPS IN WHICH RESIDENTS WORK IN THEIR LOCAL LGA

	Work in own LGA		*Commute to inner Sydney*	
Occupation	*No.*	*%*	*No.*	*%*
Sales Assistants and Salespersons	14,499	50	1,363	5
Carers and Aides	9,966	45	614	3
Education Professionals	8,229	41	788	4
Road and Rail Drivers	7,134	37	573	3
Specialist Managers	6,316	25	3,922	15
Health Professionals	6,288	38	510	3
Hospitality, Retail and Service Managers	6,003	37	1,465	9
General Clerical Workers	4,875	34	1,732	12
Automotive and Engineering Trades Workers	4,810	34	292	2
Numerical Clerks	4,435	26	3,303	19
Hospitality Workers	4,341	52	811	10
Business, Human Resource and Marketing Professionals	4,187	21	5,659	28
Inquiry Clerks and Receptionists	4,126	33	1,420	11
Construction Trades Workers	4,105	29	701	5
Cleaners and Laundry Workers	4,087	41	786	8
Storepersons	3,977	33	210	2
Food Preparation Assistants	3,801	61	246	4
Factory Process Workers	3,794	36	153	1
Other Labourers	3,763	43	447	5
Sales Support Workers	3,235	49	584	9

Source: 2016 Census data

TABLE 5: MAIN OCCUPATIONAL SUB-MAJOR GROUPS IN WHICH RESIDENTS COMMUTE TO CENTRAL SYDNEY OR NORTH SYDNEY

	Commute to inner Sydney		*Work in own LGA*	
Occupation	*No.*	*%*	*No.*	*%*
Business, Human Resource and Marketing Professionals	5,659	28	4,187	21
Specialist Managers	3,922	15	6,316	25
ICT Professionals	3,879	43	1,025	11
Numerical Clerks	3,303	19	4,435	26
Other Clerical and Administrative Workers	1,779	14	2,996	23
General Clerical Workers	1,732	12	4,875	34
Engineering, ICT and Science Technicians	1,590	16	2,034	21
Hospitality, Retail and Service Managers	1,465	9	6,003	37
Design, Engineering, Science and Transport Professionals	1,439	17	2,062	24
Inquiry Clerks and Receptionists	1,420	11	4,126	33
Sales Assistants and Salespersons	1,363	5	14,499	50
Office Managers and Program Administrators	1,356	14	3,232	33
Personal Assistants and Secretaries	1,082	24	1,685	37
Sales Representatives and Agents	934	12	2,242	30
Protective Service Workers	860	11	1,909	25
Hospitality Workers	811	10	4,341	52
Education Professionals	788	4	8,229	41
Cleaners and Laundry Workers	786	8	4,087	41
Construction Trades Workers	701	5	4,105	29
Electrotechnology and Telecommunications Trades Workers	696	7	2,558	26

Source: 2016 Census data

Blue-collar occupations are a major presence in Western Sydney

Blue-collar occupations are of a similar magnitude, with nearly 25,000 residents working in either trade jobs or labouring jobs. While this sector is under-pinned by construction, it is important to keep this in perspective. Some of these jobs depend on household consumption—such as automotive maintenance and repairs—or reflect those areas of manufacturing which still survive in outer western Sydney.

As well as sales workers, hospitality occupations are also an important source of employment in Western Sydney, particularly in cafes and restaurants. The numbers here are considerable (over 15,000) and in some LGAs—such as the Blue Mountains—this sector is supplemented by tourism, boosting employment even more.

As the occupation becomes more specialised, so does the need to commute increase

Despite the need for many residents in clerical occupations to commute to inner Sydney, considerable numbers are able to work in their local LGA, but these proportions depend on how specialised the clerical work is. Among general clerical workers, for example, some 34% of residents are working locally and only 12% are commuting to inner Sydney. Similarly, for inquiry clerks and receptionists, some 33% work locally and only 11% commute. But for numerical clerks only 26% work locally, while 19% commute to inner Sydney. As with management

and other administrative jobs, as the occupation becomes more specialised, so does the need to commute increase.

4,000 residents in outer Western Sydney commute to inner Sydney to work as professionals in ICT

Turning now to those residents who commute to inner Sydney, the patterns shown in these two tables confirm the earlier story, particularly for professionals who work in ICT. Nearly 4,000 of these workers commute to inner Sydney, and they make up 43% of all ICT professionals living in these LGAs.[6] Among another group of ICT workers—those working as technicians—some 1,600 also commute to inner Sydney.

10,000 residents in outer Western Sydney work in clerical occupations in inner Sydney

When it comes to the other professional and clerical occupations, the proportion of commuters in these occupations may be lower, but the numbers are considerable: over 10,000 residents who work in clerical and office administrative jobs commute to inner Sydney.

The employment needs of Western Sydney comprise a mixture of jobs, with both generalised and specialised skills

By way of summary, the story is essentially the same whether one looks at occupations in broad terms or in a more detailed fashion. Both tell a story that is well known to any resident of Western Sydney who has spent any time scouring jobs ads. The chances of working locally and avoiding long commuting hinges on either:

- working as a professional in health, education or another part of the 'human services' sector; or
- working in a less specialised management, clerical or administrative occupation; or
- working in a higher-skilled blue-collar occupation based on manufacturing, construction or the automotive trades;
- working in a lower-skilled occupation, whether blue-collar or pink-collar.

In short, the jobs which are missing in Western Sydney are those which could be held by highly skilled professionals—particularly in business and ICT—as well as the more specialised clerical and management occupations which are to be found in large organisations, both private and public sector.

6. It is important to keep in mind that these numbers are an under-estimate, as many would also commute to areas like Parramatta and Ryde.

Of course, this does not mean that more blue-collar occupations are not needed in Western Sydney: indeed the severe shortages of jobs requiring these kinds of skills is one of the reasons why the unemployment picture for Western Sydney—outlined earlier—is such a bleak one. Consequently, in the same way that Western Sydney presents a very mixed picture when it comes to the occupational profile of its residents, so too do the employment needs of Western Sydney require a mixture of jobs, based on both generalised and specialised skills. Maintaining outdated stereotypes of Western Sydney is not helpful when it comes to designing a jobs strategy for the region. The key to successful adaptation in regional labour markets is to achieve a more balanced development across this mix of occupations.

Industries where Western Sydney residents work

I now take a look at the industry story: this echoes the occupational story but it is different in an important way. Occupations are the career paths workers take, and are about the skills they carry into the workplace. Industries are the jobs which employers create, and provide a setting for where workers may exercise those skills. One can think of the intersection between an occupation and an industry as a 'job': such as a clerk in the finance industry, or a labourer in construction. Clerks can also work in government administration; labourers can also work in manufacturing or in warehousing. So the job in which a person works is this intersection between what they have to offer—their occupational skills and their background—and the industry where an employer is found.

Workers with specialist skills face fewer options ... workers with generalist skills face stiffer competition

Occupations based on generalised skills provide jobs with more industry mobility for workers than occupations with specialised skills. The latter find themselves 'locked' into a smaller range of industries, such as architects working in town planning. Often, these workers don't have many other options. This is one reason why opening up more jobs for specialised occupations in Western Sydney involves ensuring that the right mix of industries are located in the West.

In theory, workers in occupations with generalised skills have more choices to move between industries. In practice, this also means those workers face stiffer competition for jobs because there are a lot more other workers like themselves. And many of those more general jobs are becoming scarcer, particularly blue-collar jobs in industries such as manufacturing, wholesale trade and utilities. This decline may reflect increased automation, but it may also reflect cost-cutting (through privatisation, for example) or the overall de-industrialisation of the economy.

Before looking at which industries are growing, and which are declining, I take a brief look at the industries which provide local jobs, and those which require commuting. I follow the same method I used before when looking at occupations, so the discussion of the following tables is brief. As with the occupational tables, only the industry pattern for Blacktown is examined here and the data for Penrith, Campbelltown and Liverpool can be found in Appendix 1.

Those residents who works as salesworkers in Blacktown are mainly found in takeaway stores and supermarkets, while teachers are spread across primary and secondary schools, and nurses are to be found in hospitals (Table 6). What is notable about these industries is that the percentages of residents who work in their own LGA are consistently high, whereas the percentages of these industries where Blacktown residents commute to inner Sydney are remarkably low.

When it comes to commuting, Blacktown residents are mainly working in finance, banking and insurance, and in specialised parts of the ICT industry (Table 7). In most cases, nearly half of all residents who work in these industries are commuting to inner Sydney, while the prospects of working locally are very small: most figures are less than 15%. Again, as was the case with occupation, the industry pattern for Blacktown repeats in Penrith, Campbelltown and Liverpool and the details are shown in Appendix 1.

TABLE 6: MAIN INDUSTRIES IN WHICH **BLACKTOWN** RESIDENTS WORK IN THEIR LOCAL LGA

	Work in own LGA		*Commute to inner Sydney*	
Industry	*No.*	*%*	*No.*	*%*
Takeaway Food Services	2,162	65	73	2
Supermarket and Grocery Stores	2,085	46	122	3
Primary Education	1,340	58	10	0
Child Care Services	1,278	53	81	3
Hospitals (except Psychiatric Hospitals)	1,201	21	294	5
Road Freight Transport	1,172	43	17	1
Other Warehousing and Storage Services	1,068	48	23	1
Aged Care Residential Services	950	27	89	3
Secondary Education	823	41	34	2
Department Stores	767	52	109	7
Local Government Administration	725	46	75	5
Cafes and Restaurants	712	34	204	10
Other Social Assistance Services	674	26	104	4
Building and Other Industrial Cleaning Services	655	37	127	7
Combined Primary and Secondary Education	610	43	64	5

Source: 2016 Census data

TABLE 7: MAIN INDUSTRIES IN WHICH **BLACKTOWN** RESIDENTS COMMUTE TO CENTRAL SYDNEY OR NORTH SYDNEY

	Commute to inner Sydney		*Work in own LGA*	
Industry	*No.*	*%*	*No.*	*%*
Banking	1,469	39	230	6
Computer System Design and Related Services	1,208	40	442	14
General Insurance	697	54	43	3
Other Auxiliary Finance and Investment Services	627	53	115	10
State Government Administration	490	21	346	14
Legal Services	463	51	121	13
Accounting Services	456	32	302	21
Accommodation	429	48	117	13
Wired Telecommunications Network Operation	358	52	86	12
Higher Education	336	33	82	8
Hospitals (except Psychiatric Hospitals)	294	5	1,201	21
Central Government Administration	270	19	155	11
Finance, nfd	228	36	92	15
Cafes and Restaurants	204	10	712	34
Rail Passenger Transport	201	42	62	13

Source: 2016 Census data

Employment in hospitals, and in retail, play major roles in generating local jobs

In summary, the story is straightforward. Employment in hospitals plays a major role in providing employment to local residents, while at the same time the retail sector—particularly groceries and take-away food—dominates the lower-skilled jobs in those LGAs. Some LGAs have specialised industries—such as defence in Liverpool—but mostly it is health and education which provide the staple industries for the more highly skilled workers in these LGAs.

Finance and banking industry jobs require commuting, as do the legal and ICT industries

On the other hand, it is in finance and banking, as well as legal services and various specialised ICT industries, where Western Sydney residents find themselves obliged to commute to inner Sydney. Government administration is also part of this picture, at both State and Federal levels. This issue of State government administration is worth a closer look.

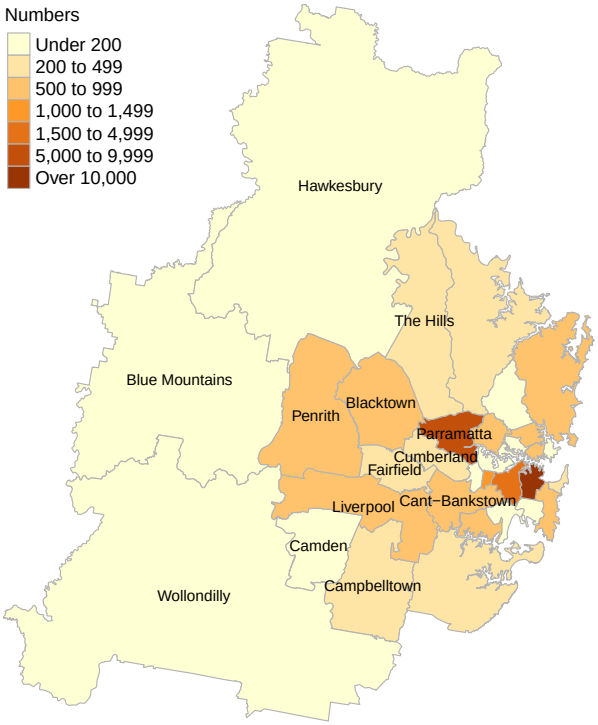

FIGURE 8: WHERE STATE GOVERNMENT EMPLOYEES WORK
Numbers employed in public administration in each LGA in 2016
Source: 2016 Census Place of Work data.

There is a massive concentration of government administrative jobs in inner Sydney

When it comes to schools and hospitals, police and fire brigades, these industries are often dispersed across Sydney because the population is spread widely. But this pattern does not appear to have percolated into State government administration. Figure 8 shows where most workers employed by the state government in public administration worked in 2016.[7] That is, this is where they were working, not where they lived. Apart from Parramatta, there is massive concentration of this type of employment in the Sydney LGA. Nearly 13,700 government workers are found in that LGA. Parramatta, with about 5,500 government workers comes a long way behind. The outlying LGAs in Western Sydney–such as Penrith and Blacktown–have less than 1000 government workers, while those in the outer parts of South West Sydney–such as Cambelltown–have less than 500 government workers.

As this report makes clear, Western Sydney needs more jobs on the ground. Bringing jobs to the West does not just entail new industry developments; it can also be achieved by relocating and expanding existing state public sector employment.

7. This only refers to *public administration*, not all the other areas of government, like schools, hospitals, police etc.

2.5 Which industries are growing, and which declining?

In this section I look at which industries have grown in Western Sydney over the last decade and which have declined. For an overview, I compare Western Sydney with Sydney as a whole. Industry here is measured at the *division* level, which is a very broad description of that industry, such as manufacturing or retail trade. Shortly I look at the more detailed level to flesh out the picture.

In the last decade Sydney's workforce grew by nearly half a million

In the period between 2006 and 2016, the Sydney workforce grew by just over 470,000 workers. At the same time, the workforce in Western Sydney grew by about 200,000. In other words, about 43% of the jobs growth was in Western Sydney and this figure—43%—provides a benchmark to assess particular industries. It is clear, looking across industries (Figure 9), that growth patterns have been very uneven. In some sectors, such as transport, postal and warehousing (91%), retail trade (65%) and construction (53%), Western Sydney had a much greater share than this benchmark.

In other sectors, most notably professional, scientific and technical services (16%) and financial and insurance services (24%), the share held by Western Sydney was a long way behind the benchmark. This matches the story outlined earlier, where Western Sydney residents who work in the occupations which are most common in these industries find themselves commuting to inner Sydney in large numbers.

It was evident earlier that Western Sydney residents who work in more specialised occupations, such as education and health professionals, are able to work in their own LGA in fairly large numbers. In the case of jobs growth, both of the industries relevant to this (education and health) grew at close to the overall average, and this is one reason why those residents were able to work locally.

In summary, the biggest gains in employment over the decade were in four main industries, and three of these were industries where Western Sydney held its share. Two of them—health and education—are based largely on the presence of a large residential population in Western Sydney, and in that sense, they provide local jobs. Another industry—construction—provides large numbers of blue-collar jobs, but unlike these first two, it is highly dependent on the business cycle. As this report shows later, construction employment falls into severe slumps almost every five years (page 117). The proposals outlined in this report for employment in Western Sydney aim to counter this instability.

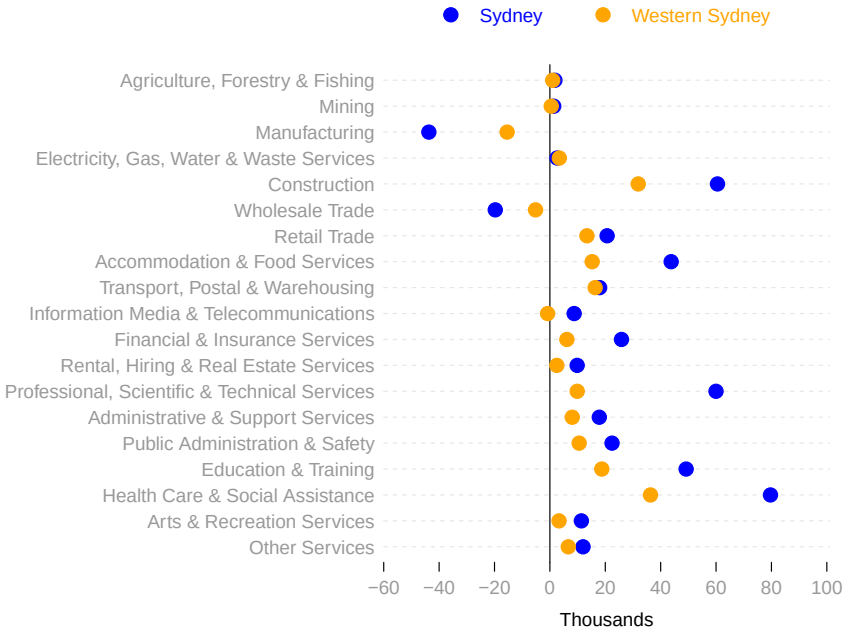

FIGURE 9:
JOB GAINS AND LOSSES 2006 TO 2016 (in thousands)
Source: 2016 Census Place of Work data

Western Sydney missed out on most of the strong jobs growth in professional, scientific and technical services

Finally, the fourth of these industries experiencing large gains—namely professional, scientific and technical services—is the one industry where Western Sydney missed out badly on jobs growth. As noted earlier, the share of this industry's growth held by Western Sydney was a miserly 16%. In other words, of the 60,000 new jobs in this industry which were created in Sydney between 2006 and 2016, less than 10,000 went into Western Sydney.

Western Sydney lost 15,000 manufacturing jobs between 2006 and 2016

Turning to the other side of the ledger, it is clear that job losses occurred mainly in manufacturing and in wholesale trade, with manufacturing the most severely affected. In the case of of Western Sydney the period from 2006 to 2016 saw the loss of over 15,000 manufacturing jobs, and another 5,000 jobs were lost in wholesale trade.

This story of job gains and losses is informative in providing a general picture of the industry landscape. However, these are broad categories, and a more insightful picture can emerge by looking at finely grained industry categories for Western Sydney. This involves looking at the industry *class*, which is a detailed description of the activities in that industry. At this fine level of detail, the numbers become much smaller, but by picking the top 20 in each group, it is possible to gain a detailed and accurate view of where job losses and gains occurred in Western Sydney over the last decade.

TABLE 8: MAIN INDUSTRIES FOR JOB GAINS IN WESTERN SYDNEY

Industry	*Numbers*	*Percentages*
Child Care Services	7,922	145
Hospitals (except Psychiatric Hospitals)	7,074	31
Supermarket and Grocery Stores	6,857	42
Cafes and Restaurants	6,445	84
Other Warehousing and Storage Services	6,258	222
Other Social Assistance Services	6,155	99
Aged Care Residential Services	6,112	85
Takeaway Food Services	5,637	50
Combined Primary and Secondary Education	5,257	143
Primary Education	4,352	27
Banking	3,923	54
Other Residential Building Construction	3,827	858
Secondary Education	3,206	25
Building and Other Industrial Cleaning Services	3,162	73
State Government Administration	3,084	44
Electrical Services	2,972	74
Courier Pick-up and Delivery Services	2,913	218
Real Estate Services	2,777	60
General Practice Medical Services	2,571	49
Non-Residential Building Construction	2,436	130

Notes: Industry is ANZSIC 2006 at 4 digit (class) level. Percentages refer to the percentage gain in jobs between 2006 and 2016.
Source: Census 2006 and 2016, Place of Work.

Looking first at job gains (Table 8) child care services had the largest amount of jobs growth between 2006 and 2016, with nearly 8,000 jobs. This amounted to a growth rate of 145% over the period. This was followed by hospital jobs where the numbers were large, but in percentage terms, much smaller (31%). The next two areas were supermarkets and grocery stores, followed by cafes and restaurants. Other notable features of this list were the massive expansion in warehousing (evident to anyone who drives along the M4) and in apartment construction (the type of construction which comes under 'other residential building construction').

Turning now to the job losses (Table 9) the numbers are somewhat smaller. This is partly for statistical reasons and also because the losses were spread across a large number of small industry classes in manufacturing.[8] Topping this list were the large loss of jobs on the railways, as State governments cut back dramatically on staffing numbers. This has taken place at a time when public transport has struggled to cope with the increased demands of commuting across Western Sydney. Several of these industries are victims of the internet

Large losses of jobs occurred on the railways, as State governments cut back dramatically on staffing numbers

8. The statistical reason is that the largest categories are composite groups, such as 'Manufacturing, NFD' (meaning not further defined) which indicates inadequate detail was collected. These NFD groups are omitted from this list. The large number of small industry classes in manufacturing is an historical artifact, reflecting the very detailed classifications which traditionally made up that category.

age—newspaper publishing and video rental stores, for example—while others reflect the switch from house construction to apartment construction. However, the most striking feature of this list is the myriad losses in so many diverse areas of manufacturing: areas spanning food, clothing, wooden products, paint, steel and metals. Not only were basic areas of manufacturing affected, but so too were more advanced areas such as electronic equipment and pharmaceuticals.

TABLE 9: MAIN INDUSTRIES FOR JOB LOSSES IN WESTERN SYDNEY

Industry	*Numbers*	*Percentages*
Rail Passenger Transport	-1,359	-57
House Construction	-1,274	-17
Newspaper Publishing	-1,273	-62
Other Fabricated Metal Product Manufacturing, nec	-849	-64
Rigid and Semi-Rigid Polymer Product Manufacturing	-827	-37
Iron Smelting and Steel Manufacturing	-799	-25
Other Goods Wholesaling, nec	-682	-41
Video and Other Electronic Media Rental and Hiring	-667	-92
Pharmaceutical and Toiletry Goods Wholesaling	-642	-28
Paint and Coatings Manufacturing	-639	-40
Wooden Structural Fitting and Component Manufacturing	-635	-21
Other Specialised Food Retailing	-593	-22
Other Electronic Equipment Manufacturing	-568	-39
Human Pharmaceutical and Medicinal Product Manufacturing	-553	-19
Clothing Manufacturing	-483	-31
Fruit and Vegetable Processing	-479	-55
Plaster Product Manufacturing	-470	-72
Cleaning Compound Manufacturing	-467	-43
Social Assistance Services, nfd	-461	-24
Milk and Cream Processing	-438	-55

Notes: Industry is ANZSIC 2006 at 4 digit (class) level. Percentages refer to the percentage losses in jobs between 2006 and 2016.
Source: Census 2006 and 2016, Place of Work.

Complexity, not specialisation, strengthens national and regional economies.

Economic geographers have come to understand that complexity, rather than specialisation, is what strengthens both national and regional economies. As with ecological diversity, economic diversity is essential to sustainability. The *Atlas of Economic Complexity*, produced by the Center for International Development at Harvard University, shows how countries prosper if they achieve economic diversity. Unfortunately for Australia, its ranking has slid from 40th in 1996 to 65th by 2016, and is now comparable to countries like Botswana. Australia now lags countries such as Kazakhstan.[9]

Just as rapid climate change brings closer the end of fossil fuel industries, so too can technological change terminate long-standing economic activities. The internet was present for at least 15 years before

9. Country rankings and growth projections. Center for International Development at Harvard University, *Atlas of Economic Complexity*, http://atlas.cid.harvard.edu/.

it became a part of everyday life. It took smart phones and tablets, and the spread of social media and streaming services, to make the internet universal. The death of video rental stores, and the slow demise of newspaper publishing, are just two of the consequences.

The economy of Western Sydney is severely unbalanced

The ways in which regional economies can survive and prosper hinge on industrial diversity and a broad mix of skills and resources. Yet what the brief analysis of the industry profile of Western Sydney has shown is that the economy is severely unbalanced. The region produces jobs which take care of the health and educational needs of its residents—as well as their shopping requirements—but it fails badly to provides a diverse range of jobs. The story of job gains and losses for Western Sydney reinforces this picture: the decline of many branches of manufacturing—activities which can 'export' value-added products from the region—is particularly troublesome. At the same time, the industries of the future—where innovation can lead to strong jobs growth in professional, scientific and technical fields—are failing to produce an adequate supply of jobs in Western Sydney.

Building an airport at Badgery's Creek has been proposed as a way of promoting employment in Western Sydney. In the next chapter I subject this proposal to scrutiny to see if it will meet the promise of more jobs for the West. That analysis concludes with a negative assessment and I then proceed, in Chapter 4, to discuss an alternative proposal for employment creation based on building high-speed rail. Chapter 5 consolidates the story by examining a range of employment proposals which will help meet the employment needs of Western Sydney.

3 Is Western Sydney Airport the answer?

3.1 Introduction

Two main arguments have been advanced by the proponents of Western Sydney Airport (WSA). One is based on forecasts of increased air traffic in Sydney and the other is based on the promise of a large number of new jobs in Western Sydney.

The first argument suggests that the anticipated growth of Kingsford Smith airport is so great that a second airport is essential in the Sydney basin. Forecasts by the Commonwealth Department of Infrastructure and Transport suggest that by 2030–31 some 72 million passengers will pass through Sydney Airport.[1]

The majority of the aviation traffic in the Sydney basin is domestic

There is little doubt that the growth in aviation over the last decade has been substantial—increasing from about 33 million passengers per year in 2009 to the current level of 43 million. It is important to realise that the majority of these passengers are domestic: a ratio of nearly 2 to 1 in favour of domestic over international passengers. This ratio is slowly declining but for a considerable period of time it will remain the case that the majority of airline passengers in Sydney are travelling on domestic flights. If one shifts focus from passengers to aircraft movements, the ratio of domestic to international flights is even higher, reflecting the larger size aircraft involved. This ratio has also declined slowly but currently averages about 3.4 domestic flights to every international flight. Again, the conclusion is clear-cut: the majority of the aviation traffic in the Sydney basin is domestic.[2]

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1. The Commonwealth forecasts expect an annual average growth rate of 3.6% for the period from 2010–11 to 2030–31.Transport Bureau of Infrastructure and Regional Economics (2012), *Air passenger movements through capital and non-capital city airports to 2031–31*, Report 133, Canberra: Department of Infrastructure and Transport, p. 3.

2. The ratio for passengers in the 1980s averaged 2, increased to 2.2 in the 1990s, dropped to 2 in the 2000s, and then fell further to 1.9 in the 2010s. In the case of airline movements, the ratio was 4.7 in the 1980s, fell to 4.6 in the 1990s, then dropped to 3.7 in the 2000s, and currently sits at 3.4. Based on Bureau of Infrastructure, Transport and Regional Economics monthly air traffic statistics, https://bitre.gov.au/publications/ongoing/files/WebAirport_FY_1986-2017.xls.

This dominance of domestic air travel raises the question of whether an alternative to aviation—such as high-speed rail (HSR)—could reduce the burden on Kingsford Smith Airport and remove the need for a second airport in the Sydney basin. The construction of a high-speed rail system—connecting an inland international freight airport with Sydney—would also cast uncertainty over the argument that Western Sydney Airport also needs to accommodate future freight movements. These questions are pursued further in the next chapter.

The second reason advanced for constructing Western Sydney Airport is the economic boost to the region that this is intended to provide. The proponents of WSA promise that a large number of jobs will be created by building and operating the airport. It is also anticipated that a Business Park will be developed alongside the airport, and in some future planning scenarios, a mini-city—an aerotropolis—may also be built. In this chapter I examine the jobs argument, looking first at the airport itself; then at the Business Park proposal; and finally at the aerotropolis idea. I ask the question: are the job projections for these proposed developments realistic?

3.2 The promise of jobs

One of the main selling points for an airport is the supposedly large number of jobs created

One of the main selling points for Western Sydney Area is the claim that a large number of jobs will be created during the construction and operation phases of the proposed airport. In the Economic Analysis appendix to the WSA Environmental Impact Statement (EIS) in 2016 Ernst and Young forecast that 10,000 direct airport jobs would be created by 2031, with this figure potentially rising to 60,000 by 2061. This was based on the assumption that passenger numbers would be around 8.7 million per year rising to around 50 million per year by 2059.[3] In a report critical of the Ernst and Young estimates which was produced in 2016, I concluded that the projections for passenger numbers were inflated, as were the likely number of jobs.[4]

3. These estimates come from Ernst and Young (2016), *Western Sydney Airport Environmental Impact Statement*, Appendix P3 Economic Analysis, Sydney: Ernst & Young. Another set of estimates are contained in John D. Kasarda (2015), *A Western Sydney Aerotropolis: Maximising the benefits of Badgerys Creek*, Sydney: NSW Business Chamber, p. 28, who suggested 3.4 million passengers by 2035 rising to 6 million by 2060. It is unclear how the two sets of estimates are related.

4. Ian Watson (2016), *Employment at WSA: A Labour Market Appraisal of the Proposed Western Sydney Airport*, URL: http://ianwatson.com.au/pubs/watson_employment_at_wsa_24july2017.pdf.

In August 2017, a second Ernst and Young report, *Western Sydney Airport Labour Market Analysis* was released by the Western Sydney Unit, Commonwealth Department of Infrastructure and Regional Development.[5] The analysis I present below is based on this more recent report, though it is worth noting that both the Ernst and Young 2016 and 2017 reports make use of 2011 Census data, and are thus not as up-to-date as the data used in my analysis, which draws on the 2016 Census data. Moreover it is evident that some of the job estimates in the later Ernst and Young 2017 report are based directly on their earlier economic analysis, that is, the Ernst and Young 2016 report (the EIS). In this respect, it appears that the 2016 projections are still the current ones.

As in the 2016 report, the 2017 Ernst and Young report divides jobs into those during the construction phase, and those during the airport operations phase. It further divides the latter into estimates for 2031 and 2041. This reflects the view that the airport will expand in stages, as passenger numbers increase. The projected jobs from the 2017 Ernst and Young report are shown in Table 10.

TABLE 10: EMPLOYMENT AT WSA, ERNST AND YOUNG PROJECTIONS

	Construction		*Airport Operations*	
Indicator	*2018-2016 (Job-years)*	*Each year*	*2031*	*2041*
Direct effect	3,231	404	13,169	24,046
Industrial effect	5,281	660	8,292	12,821
Consumption effect	2,834	354	6,486	10,607
Total	11,346	1,418	27,946	47,473

Notes: Construction jobs are measured in job-years in first column and for each year in the second column. All jobs are full-time equivalent jobs (FTE).
Source: Based on Table 1 Estimated WSA economic footprint, from Ernst and Young (2017), *Western Sydney Airport Labour Market Analysis*, Report for Western Sydney Unit, Commonwealth Department of Infrastructure and Regional Development, Sydney: Ernst & Young

There will be 'direct' and 'indirect' jobs, the latter being employment 'flow-ons'

All of the job projections in both Ernst and Young reports are based on a distinction between *direct jobs*—those actually created by WSA—and *indirect jobs*—those created as 'flow-ons'. This means that extra jobs are created elsewhere in the economy, firstly as a result of the extra demand for materials (eg. the supply chain for WSA) and secondly from the extra demand in shops and for services

5. Ernst and Young (2017), *Western Sydney Airport Labour Market Analysis*, Report for Western Sydney Unit, Commonwealth Department of Infrastructure and Regional Development, Sydney: Ernst & Young.

consumed by the workers who get jobs in construction and at the airport. These flow-on jobs are the result of an economic multiplier, whereby this extra spending leads to extra jobs. The first of these flow-on effects is termed the 'industrial effect' and the second is termed the 'consumption effect'. In the first part of this analysis I concentrate on the direct jobs, and return to the issue of indirect jobs later.

Not all the projected jobs will go to workers living in Western Sydney

The final point worth noting is that all of the estimates are for *gross jobs*, not net jobs. This means that workers who live outside Western Sydney may take up some of these jobs. Thus the net increase in jobs in Western Sydney is not equivalent to the overall estimates shown here. I return to this issue later when I examine recent 'guarantees' of job 'targets' announced for the project (page 56).

3.3 Direct job creation

Construction phase

There will be about 400 construction jobs per year

The jobs projection for construction uses the concept of job-years, whereby the number given is for so many workers over so many years. In the case of WSA, the direct jobs are given as 3,231 job-years. The construction phase extends over 8 years, so the annual average is about 400 jobs per year. The notion of 'job-years' is misleading, as most construction projects aim to retain roughly the same workforce for several years at least. Consequently, in terms of newly created jobs, the annual figure of 400 is the relevant one. These jobs are the direct jobs, and this figure does appear plausible. The other construction-related jobs are the indirect ones, and I deal with these below.

Airport operations

The airport is intended to include a Business Park

Understanding the Ernst and Young job projections for the operation of the airport is complicated. As well as the distinction between direct and indirect jobs, the airport is also assumed to include a Business Park. There is also the possibility that an 'aerotropolis'—virtually a mini-city—may emerge in Western Sydney, centred on the airport precinct. I look at the aerotropolis in a later part of this chapter. Table 11 shows the projected jobs for 2031 and 2041, for both the airport and the Business Park.

TABLE 11: DIRECT JOS AT WSA, AIRPORT AND BUSINESS PARK, ERNST AND YOUNG PROJECTIONS

Area	*2031*	*2041*
Airport	8,730	12,491
Industrial	3,500	3,440
Office	0	3,750
Hotels	74	222
Petrol Station and Food Outlets	200	500
Regional Shopping Centre	0	2,222
Bulky Goods	665	1,420
Total	13,169	24,046

Notes: Full-time equivalent (FTE) jobs in each of these years. Numbers are based on the 2016 EIS economic analysis.
Source: Table 5 Estimated direct operational and Business Park jobs, from Ernst and Young (2017), *Western Sydney Airport Labour Market Analysis*, Report for Western Sydney Unit, Commonwealth Department of Infrastructure and Regional Development, Sydney: Ernst & Young

There is some confusion in the Ernst and Young presentation which needs some clarification. Airport operations can include non-aviation activities, such as restaurants, cafes and duty-free shopping, as well as Government activities, such as customs and airport security. It is not clear whether 'Airport' in this table includes these activities, since they are clearly separate to what might happen at an adjacent Business Park. However, in Figure 9 of the Ernst and Young report, where an industry categorisation of jobs is presented, these 8,730 jobs are shown as aviation.[6] It would seem then, that these other airport activities are not separately dealt with and I base my analysis on the assumption that the 8,730 jobs are *direct aviation jobs* at WSA in 2031. On this basis, I ask the simple question: is this number of jobs realistic?

Are these job numbers realistic? Finding a real world comparison helps answer this question

While assessing the number of indirect jobs can be complicated—as I discuss later—it should not be too difficult to answer a question about the direct jobs. After all, one needs to only look at existing airports with similar numbers of passengers and see what their employment levels are. What real world comparisons should be used? Fortunately, other researchers have also looked at this issue so I can begin by looking at their comparisons.

In an economic study of WSA carried out by Deloitte Access Economics (DAE) for NSW Business Chamber this issue of comparisons also arose. DAE suggested the most useful way to gauge future jobs at WSA was

6. Ernst and Young refer to aviation as an industry, though the actual ABS ANZSIC category is 'air and space transport'. I have assumed that this is just a matter of terminology, since Ernst and Young are also using Census data, and so I follow their usage in this discussion.

through 'static comparisons between a WSA and existing Australian airports' and they named both the Gold Coast and Adelaide as useful comparison airports.[7] With this in mind I have tabulated (in Table 12) the most recent Census data (2016) and previous Census data (2011) for aviation industry employment for the Gold Coast airport and Adelaide airport. Also shown are the passenger numbers for these two airports for the same time periods. Gold Coast airport, with about 6.5 million passengers supported 535 aviation jobs; Adelaide airport, with about 8 million passengers supported 1,600 aviation jobs.[8]

TABLE 12: AIR TRAFFIC AND AVIATION JOBS, GOLD COAST AND ADELAIDE AIRPORTS, 2011 AND 2016

	Gold Coast			*Adelaide*		
Years	*Passen-gers*	*Aviation jobs*	*Ratio*	*Passen-gers*	*Aviation jobs*	*Ratio*
2011	5,297,163	330	62	7,021,407	1,206	172
2016	6,411,315	535	83	7,920,173	1,599	202
Change	1,114,152	205	21	898,766	393	30
Percentage change	21	62	34	13	33	18

Notes: Annual passenger numbers. Jobs are direct aviation industry jobs at that location (ie. Gold Coast LGA and Adelaide Airport SA2.). Ratio refers to number of jobs per million passengers. Note that jobs include both full-time and part-time positions.
Source: Jobs from ABS Census data, Place of Work. Passengers from BITRE, Airport Traffic Statistics.

Comparable airports, like Adelaide, support only 1,600 aviation jobs

In recent years Gold Coast airport has undergone rapid expansion, with an increase in passengers and jobs, and with considerable upgrading of its facilities. As Table 12 shows, passenger numbers grew by 21% in 5 years, leading to a 62% expansion in jobs. In the case of Adelaide, the passenger growth has been weaker—about 13%—and the jobs growth has been 33%. It is also worth noting that the ratio of jobs per million passengers is much lower at Gold Coast airport, compared with Adelaide. It may be that smaller airports do handle large volumes of passengers, but they may not undertake as diverse a range of other airport activities, such as maintenance, which the larger airports undertake. This will be relevant to the proposed WSA. Even if it manages to increase its passenger traffic to large volumes, it may only achieve job ratios similar to Gold Coast airport, rather than Adelaide. It will, after all, remain a *second* Sydney airport.

7. Deloitte Access Economics (2013), *Economic Impact of a Western Sydney Airport*, Sydney: NSW Business Chamber, p. 19.

8. Even if one expands the 'catchment area' for these aviation jobs beyond Adelaide airport, to include the whole state of South Australia, the numbers for 2016 were only 2,087. Furthermore, Adelaide Airport is the major aviation entry point for Adelaide, and would therefore maintain all of the aviation facilities (and jobs) required of a primary airport. By contrast, WSA is a secondary airport for Sydney, and many of the key aviation facilities (and jobs) will presumably remain at Kingsford Smith airport.

To take the best possible comparison which favours the Ernst and Young projections, I tabulate the Adelaide figures with those for Western Sydney. The first set of comparisons is for aviation jobs at the two airports. The second set is for all jobs (ie. across all industries) at Adelaide airport and for the Business Park and airport operations at WSA. Whether this second comparison is useful is unclear because the Business Park activities cover a larger footprint than the Adelaide airport activities.[9]

TABLE 13: COMPARISON BETWEEN ADELAIDE AIRPORT AND WSA, REAL (ADELAIDE) VERSUS PROJECTED (WSA)

Measure	*Adelaide 2016*	*WSA 2031*
Passengers numbers (millions)	8	10
Aviation jobs	1,599	8,730
Ratio jobs to million passengers	200	873
All-industry jobs	5,635	13,169

Notes: Ernst and Young job projections are based on the 2016 EIS economic analysis and Adelaide jobs are based on 2016 Census data for Adelaide Airport. 'All-industry jobs' refers to the total mix of industries employing workers at Adelaide Airport and at the combined WSA/Business Park. Note that the Adelaide job numbers include both full-time and part-time positions, the WSA projections are for full-time equivalent (FTE) jobs.
Source: See Tables 11 and 12 above.

The projected jobs for WSA are inflated fourfold

These real world figures on aviation employment are so vastly different to the Ernst and Young projections that something appears amiss. As I found in my earlier analysis in 2016,[10] this ratio of 873 jobs per million passengers for WSA was even higher than the ratios at premier airports like Sydney Kingsford Smith and Melbourne Tullamarine airports (in 2011). In this case, the ratio is more than four times greater than the Adelaide ratio of 200 jobs per million passengers. Even if one ignores the ratio, and looks at overall jobs, it stretches credibility that nearly 9,000 aviation jobs could be created at WSA when only 1,600 jobs are required at Adelaide airport, an airport regarded as a reasonable real-world comparison for WSA in 2031. In summary, for the direct airport jobs in aviation the Ernst and Young projections appear to be inflated fourfold at least.

One of the key issues for future airports is the issue of automation. Whether it be driverless trucks on Pilbara mining sites or customer

9. The comparison is also generous towards the Ernst and Young projections because the Census data includes both part-time and full-time jobs whereas the Ernst and Young projections are full-time equivalent jobs (FTEs). Consequently, were the Census figures to be converted to FTEs an even smaller number of jobs would be shown for Gold Coast and Adelaide airports.

10. Watson 2016.

self-scanning of groceries in supermarkets, the trend towards job destruction through automation has gained momentum over the last decade. In the case of airport employment, the rollout of automated check-in kiosks and the use of facial-recognition technology have eliminated jobs once done by airline staff and immigration staff.

It is important to remember that Kingsford Smith airport is an old airport and consequently many of its operations are based on labour-intensive practices. By contrast, the newest airports are built to incorporate high levels of automation. The last two decades have witnessed a revolution in goods handling, as RFID (radio-frequency identification) has made possible the almost complete automation of warehousing and inventory management. In the case of air transport, a striking illustration of this has been the baggage handling system at Dubai International Airport.[11] This has exploited the potential in RFID to automate significant parts of the airport's operations. The speed and scale of the system ensures that the movement of baggage to connecting flights is efficient and reliable. Some 17 kms of conveyor belts are involved, with about 15,000 pieces of baggage handled per hour. The system is also coupled to barcode scanning for self-service check-in. New airports around the world, which may be built in coming years, will undoubtedly incorporate much of this new technology. Both customer and baggage check-in, and behind-the-scenes baggage handling, will be characterised by high levels of automation. This has implications for the employment ratios for new airports compared to existing airports: the new ones will have significantly lower employment ratios.

This perspective is clearly in the minds of the planners of the proposed Western Sydney Airport. Paul O'Sullivan, the head of WSA Co, has announced that the airport intends to become the country's 'first digital airport': 'Digital technology will ensure the airport not only offers a better airline and passenger experience, but that we can get the economics right so that we can make it cost effective for airlines'.[12] While he emphasises the 'passenger experience' the underlying message in terms of employment is clear: they intend to use as much automation as possible in order to reduce labour costs and be 'cost competitive' with Kingsford Smith Airport.

11. Siemens AG (2009), *Dubai International Airport: A baggage handling system for the gate to the Arab world*, Konstanz, Germany.

12. Matt O'Sullivan, 'AI boost for "first digital airport" ', *Sydney Morning Herald*, 29 May 2018, p. 8

Quality of jobs

Does aviation employment provide good quality jobs?

As well as the *number* of jobs, it is important to take account of the quality of those jobs. Are they permanent, full-time jobs? Are they well paid? Are the workers likely to have union protection and be employed under good working conditions with health and safety prioritised?

In recent years the media has featured some shocking stories of poor working conditions in Australia's airports. A notable example was the ABC story in March 2017 exposing the effects of split shifts among baggage handlers: many of the workers slept under the terminal because they could not afford the time to return home during their rostered time off.[13]

> ``We get pushed to our limits."
>
> ``Our pay doesn't match it. We don't get rest breaks and we get given a four-hour shift in the morning and then we have a four-or-five-hour break and get a four-hour shift in the afternoon."
>
> ``It is barely enough time to sleep by the time you get home, get up and have to go to work again. So we end up sleeping under the terminal where all the baggage goes between."

Cabin crew have also seen a decline in their working conditions over recent decades, as more low-cost carriers have entered the industry. As one industry insider explained:

> [Airlines] have even erased the everyday transitory costs like hotel accommodation by what is called deadheading, that is instead of finishing work in Perth and staying the night there, they will put you back into an aeroplane going back to Sydney, for example, as a passenger so you can resume work there on arrival. The seat costs them nothing and is far cheaper than a five star hotel. When you see the words 'low cost' or budget airlines, this is what it means.[14]

13. The following quote comes from http://mobile.abc.net.au/news/2017-03-20/airport-staff-sleeping-at-work-cant-afford-to-go-home/8369814?pfmredir=sm.

14. http://bilbo.economicoutlook.net/blog/?p=38879#more-38879

Are these developments widespread? It is hard to gather this sort of information in a systematic way. However, one indication of the spread of 'marginal' jobs is the extent to which part-time work increases, particularly in areas which have traditionally been full-time jobs, such as blue-collar occupations.

Part-time employment in air transport has been increasing over the last decade

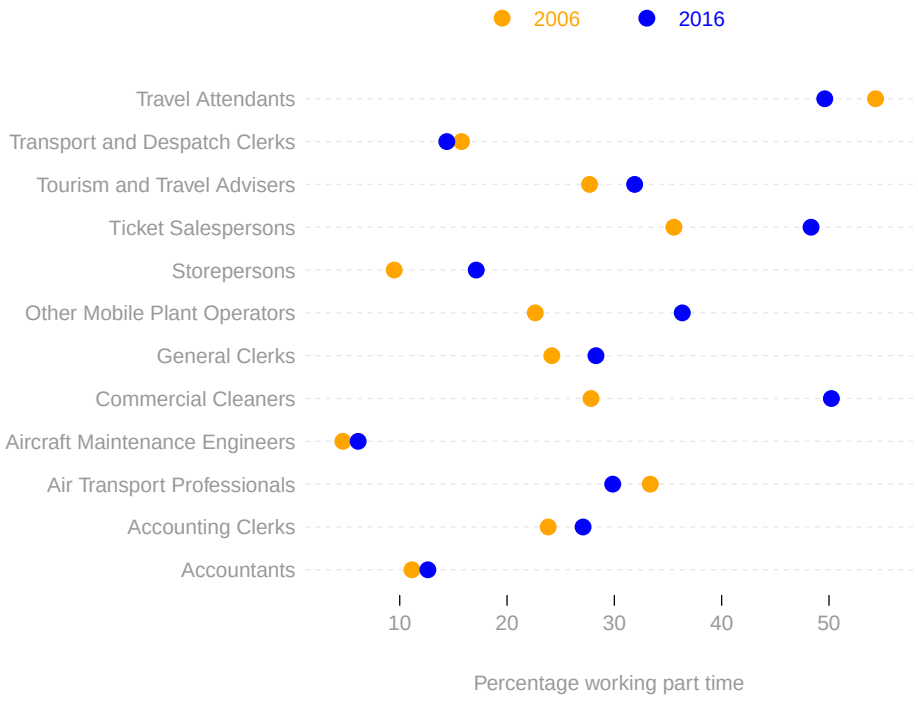

FIGURE 10: CHANGES IN PART-TIME WORK IN MAIN AIR TRANSPORT OCCUPATIONS, 2006 AND 2016.
Source: 2006 and 2016 Census data.

TABLE 14: SELECTED OCCUPATIONS IN AIR TRANSPORT, AUSTRALIA, 2006 AND 2016, CHANGES IN TOTALS AND PART-TIME STATUS

	Counts (all workers)			*Percentages (part-time)*		
Occupation	*2006*	*2016*	*Change*	*2006*	*2016*	*Change*
Travel Attendants	5,285	6,902	1,617	54.3	49.6	-4.7
Air Transport Professionals	4,672	6,346	1,674	33.3	29.8	-3.5
Ticket Salespersons	3,764	4,099	335	35.5	48.3	12.8
Aircraft Maintenance Engineers	3,638	3,869	231	4.7	6.1	1.4
Other Mobile Plant Operators	2,669	3,639	970	22.6	36.3	13.7
Tourism and Travel Advisers	986	439	-547	27.7	31.9	4.2
Transport and Despatch Clerks	768	994	226	15.8	14.4	-1.4
General Clerks	513	449	-64	24.2	28.3	4.1
Commercial Cleaners	399	444	45	27.8	50.2	22.4
Accountants	386	412	26	11.1	12.6	1.5
Storepersons	369	397	28	9.5	17.1	7.6
Accounting Clerks	365	336	-29	23.8	27.1	3.2
Total	34,424	42,715	8,291	25.8	28.3	2.5

Notes: Selected on the basis of top 12 occupations in air transport in 2006. Population all employed persons in air and space transport in Australia, 2006 and 2016.
Source: Census, 2006 and 2016.

Census data show that part-time jobs in air transport have been increasing over the last decade, particularly for blue-collar workers. Figure 10 shows the proportion of part-time workers in the top 12 air transport occupations in Australia in 2006 and 2016 and Table 14 provides the data behind this graph.

Blue-collar jobs in aviation are becoming more part-time

Overall, at a national level the industry has grown from about 34,000 to nearly 43,000 jobs during this period, growth consistent with the increase in air traffic. Some of the largest increases in occupations have been among cabin crew (such as flight attendants and pilots) and airport staff (air traffic controllers, mobile plant operators). The overall share of part-time work in the air transport industry—of 28%—is misleading when it comes to particular occupations. Part-time employment is particularly high among cabin crew like flight attendants, where half of the workers are part-time. Jobs that have traditionally been strongly part-time—such as ticket sales—have become even more so: growing from 36% to 48% part-time. Among blue-collar workers, the increase in part-time jobs has been dramatic: mobile plant operators went from 23% part-time to 36% part-time. Cleaning staff went from 28% part-time to 50% part-time. Thus the overall figure of 28% part-time obscures this picture of pockets of extreme part-time work, that is, occupations where as many as half of the workforce are part-time. Because these selected occupations make up the 12 largest occupations in the industry, these examples are not minor, but an indication of how serious the problem is.

With increased part-time employment has come increased underemployment

One of the most disturbing labour market developments of the last two decades has been the growth in underemployment: where workers can't get enough hours of work. With increased part-time employment has come increased underemployment. The interaction between unemployment and underemployment across the business cycle demonstrates a particular pattern. This is evident in Figure 11: in the recovery following each recession (1982, 1991) the underemployment rate remained high even as the unemployment rate fell. By the early 2000s the underemployment rate surpassed the unemployment rate for the first time, and has remained at high levels ever since.

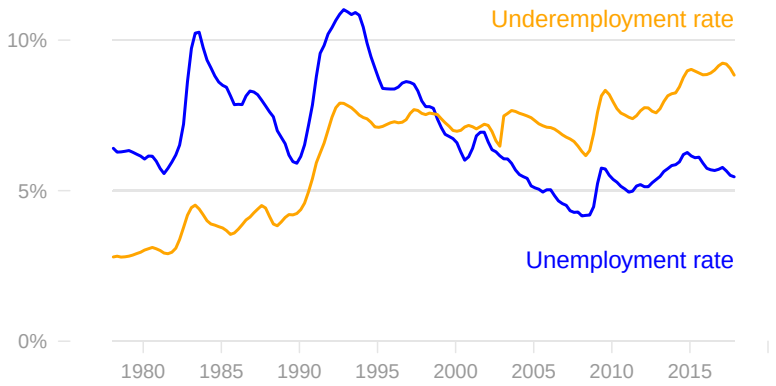

FIGURE 11: UNEMPLOYMENT AND UNDEREMPLOYMENT RATES, AUSTRALIA, 1978 TO 2018
Source: Trend data from ABS *Labour Force Survey*, Cat. No. 6202.0

In the early 2000s, as the unemployment rate fell, so too did the underemployment rate. However, in the period since the end of 2014, as the unemployment rate has begun to fall, the underemployment rate appears to be stuck at an elevated level, leading the ABS to comment about an 'increasing divergence between the rates'.[15]

Employers use 'hours adjustment' to deal with fluctuations in demand

In general terms, employers adjust to fluctuations in the business cycle by varying hours: either reducing or increasing the hours of existing workers, or by engaging or sacking part-time workers. In a severe downturn—such as the recessions of the early 1980s and 1990s—they also sacked large numbers of full-time workers. In the downturn of the early 2000s, and in the wake of the Global Financial Crisis (GFC), they again sacked full-time workers, but to a much lesser extent. As well-known labour market economist Jeff Borland observed, employers increasingly turned to using an 'hours adjustment to downturns' during the 2000s.[16] In other words, underemployment is not an unfortunate accident, but is an integral part of the approach to engaging workers which employers have adopted in the 21st century.

Underemployment is high among blue-collar workers in Australia

In summary, some workers certainly prefer part-time jobs, but what they want are jobs with sufficient hours, with continuity and with predictability. High levels of underemployment show that part-time work in Australia is often not consistent with what workers want. In the case of the air transport

15. ABS, 'Spotlight on Underemployment', *Labour Force, Australia*, Nov 2016, Cat. No. 6202.0., page 11.

16. See 269–89 Jeff Borland (2012), 'Industrial Relations Reform: Chasing a Pot of Gold at the End of the Rainbow?', in: *The Australian Economic Review* Vol. 45. No. 3, pp. 269–89, pp. 275–76.

industry, the data above shows very large increases in part-time jobs in a short time period. This suggests that these changes are not driven by worker preferences. In addition, recent national ABS labour force survey data shows that around 30% of cleaners indicate they want more hours of work and about 24% of mobile plant operators also want more hours of work.[17] As shown earlier, these are two of the occupations which have been badly affected by the rapid growth of part-time work in air transport over the last decade.

This strong growth in part-time employment reflects employer strategies to re-organise their workforce. Often these increases in part-time work are aimed at achieving 'numerical flexibility' for employers, something evident in the use of short-time split shifts. This provides employers with 'just-in-time' labour, such that they only pay for those periods of the day when the workload is greatest. The case of baggage handlers sleeping under airport terminals is but one example of what just-in-time labour can lead to.

WSA is likely to contribute to problems of underemployment

What is the relevance of this for WSA? I would argue that any assessment of the job projections for a project should always consider job quality as well as job quantity. The assessment of WSA in this report suggests that the future job numbers for that project appear vastly inflated. I would also argue that the quality of many of these jobs will be problematic, and likely to contribute to the malaise of underemployment which afflicts the Australian labour market.

3.4 Indirect jobs

The proponents of WSA usually emphasise the 'total jobs' which WSA will create. These figures are in the order of about 11,000 for construction, nearly 28,000 for airport operations in 2031, and nearly 48,000 for airport operations in 2041. These are the headline job numbers which are designed to grab attention. They are, however, quite misleading when it comes to assessing the real employment effects of WSA.

As noted earlier, these totals include the plan to include a Business Park as part of the development of WSA.[18] Consequently, the extent to

17. ABS, *Characteristics of Employment, Australia*, period from 2015 to 2017, Cat. No. 6333.0

18. Unless indicated otherwise, the phrase 'airport operations' includes the airport operations and the Business Park activity. This is because, with one notable exception, Ernst and Young treat the two components together for most of their projections.

which these numbers are realistic hinges on two things. First, will the scale of operations envisaged actually evenuate? That is, will annual passenger numbers actually reach 10 million. Secondly, will the Business Park actually be built and will it reach the size expected? Each of these questions cannot be answered in any definite way.

The job numbers discussed here are, of course, *indirect* jobs. In the case of direct jobs—discussed earlier—there is something tangible and visible in the outcome. One can actually see workers operating machinery building a runway, or cabin crew dealing with passengers on a plane. One can also assess the claims for these job numbers by looking at other airports—as I have done in the last section—and asking: are these job projections realistic? As seen above, the answer to that question was a resounding no.

Indirect jobs are not visible: they are the result of flow-ons

When it comes to *indirect* jobs it's a different matter. These kinds of jobs are not visible in the same way because they are the result of employment flow-ons. They are the extra jobs created during the construction and operation phases which result from purchasing inputs: such as concrete for the runways and steel for the terminals during construction, and fuel and so forth during the operation of the airport. These are termed *industrial effects*, and Ernst and Young estimate, for example, that the airport operations in 2031 will create several thousand jobs in manufacturing, transport, postal and warehousing, and in administrative and support services. As well as these effects, there are also *consumption effects*, extra labour demand which results from the consumer spending of the employed workers. In the case of the airport operations in 2031, Ernst Young estimated that several thousand jobs would be created in retail trade and in accommodation and food services through this form of spending. Table 10 on page 43 summarised these indirect jobs.[19]

These extra indirect jobs cannot be tabulated in the same way that the direct jobs can. The actual numbers emerge from a black-box, a modelling exercise based on regional input-output analysis. This technique has been used for decades by governments to assess the likely outcomes of policy changes—such as reducing tariffs—and by economic consultants to assess development projects—such as coal mine expansions. In the case of WSA, it means that purchases of concrete for the airport, for example, will generate extra employment somewhere else in Sydney—perhaps in Western Sydney—that would not have happened without WSA. Similarly, when the cabin crew return home after a flight, their purchases of groceries or take-aways will contribute to employment in those shops in their communities.

19. See also Figure 9 in Ernst and Young 2017.

If this sounds nebulous, it is. While the input-output tables, and the methods used to create employment multipliers are quite robust, the assumptions required for the process to work are quite stringent.[20] Indeed, so stringent are these assumptions—and the other conditions which have to prevail—that the Australian Bureau of Statistics warns users of its input-output tables:

> [the multipliers] tend to overstate the potential impact of final demand stimulus. The overstatement is potentially more serious when large changes in demand and production are considered.
>
> The implicit assumption is that those taken into employment were previously unemployed and were previously consuming nothing. In reality, however, not all 'new' employment would be drawn from the ranks of the unemployed; and to the extent that it was, those previously unemployed would presumably have consumed out of income support measures and personal savings. Employment, output and income responses are therefore overstated by the multipliers for these additional reasons.[21]

Take, for example, purchases of concrete for the runway at WSA. Most businesses have excess capacity—engineers deliberately design factories and other facilities that way—and so the concrete company may be able to double their output of concrete without purchasing much more equipment, and without hiring more than a few extra workers. Indeed, their existing workers may work overtime, and their part-time workers may be offered more hours, and the extra workers taken on may be far fewer than what the input-output multiplier implies. As noted earlier, Australian employers have become very adept at adjusting production through varying hours, rather than changing employment numbers. Input-output analysis does not take this into account. As the ABS notes: 'multipliers ... do not take account of economies of scale, unused capacity or technological change'.[22]

Ernst and Young note that 'real outcomes may differ'

In their report, Ernst and Young echo many of the caveats which the ABS lists in their set of assumptions. For example, Ernst and Young note that 'constant returns to scale' apply. In other words, the real-world situation of economies of scale—whereby unit costs fall as more of something is purchased—does not apply. They also assume that there is no unused capacity nor

20. These include: all products of an industry are identical and in fixed proportion; each industry has constant returns to scale; unlimited labour and capital are available at fixed prices; there are no other constraints, such as balance of payments, or actions of government, on the response of each industry to a stimulus.ABS (1995), *Information Paper: Australian National Accounts: Introduction to Input-Output Multipliers*, Cat. 5246.0, Canberra: Australian Bureau of Statistics, p. 24

21. Ibid., p. 24.

22. Ibid., p. 24.

technological change. If a company wins a contract for WSA and decides to install the latest labour-saving technology, far fewer workers may be employed in that sector, compared with what was predicted by the input-output model (whose data was last updated in 2005–06). In the ultimate caveat, Ernst and Young declare: 'The findings presented are intended to inform policy and give indications of likely needs and impacts. They are indicative only; real outcomes may differ.'[23]

Will the jobs be in Western Sydney?

Jobs may go to workers outside Western Sydney or displace economic activity in Western Sydney

As well as listing the limitations to their study, Ernst and Young emphasise at the outset that the jobs projected at WSA are not 'net jobs' but rather 'gross jobs'. This means that the jobs may go to workers outside Western Sydney or they may displace economic activity elsewhere (including in Western Sydney). For example, during the mining construction boom in Western Australia and Queensland businesses struggled to fill orders because their skilled tradesworkers had been lured inter-state by higher wages. This meant that the gains in one region of Australia—increased output in Western Australia, for example—were negated to some extent by output losses in other parts of Australia, such as Victoria. These output losses could result in lower levels of employment than might otherwise have eventuated. Consequently, estimates of job gains from mining needed to take into account those job losses which might arise elsewhere, due to this competition for labour. Indeed, an important lesson from the mining construction boom is the need to carefully schedule large infrastructure projects so that training new workers is built into the initial rollout of activity. It is not clear whether the WSA proponents have taken this into account, but it is something which is central to the employment proposals which are advanced in Chapter 5.

The Government has proposed 'targets' for local workers

Whether the jobs created during the construction and operation of WSA actually go to workers living in Western Sydney is also problematic. The proponents of WSA are aware of this dilemma and the Turnbull Government has suggested targets of 30% of the construction workforce and 50% of the airport workforce be drawn from 'local workers'. As the *Sydney Morning Herald* reported in March 2018:

> Urban Infrastructure Minister Paul Fletcher will set the goals as part of a "comprehensive package of employment targets" for the airport that requires WSA to report each year on its

23. Ernst and Young 2017, p. 12.

> employment. But it will not have to issue its first report until 2021, casting doubt over whether there will be any public documents to show progress on local jobs by the time of the next federal and NSW elections.
>
> The government has set the 2021 reporting date because major construction does not get underway until 2020.
>
> "These workforce targets are designed to ensure that Western Sydney Airport will deliver substantial employment opportunities for the people of western Sydney, not just over the construction phase but for many decades into the future as the airport commences operation and continues to grow," Mr Fletcher says in a statement.[24]

About 120 construction jobs would be targeted to go to Western Sydney workers

On the basis of these proposed targets, one can now draw a final assessment of how much Western Sydney residents are *guaranteed* to benefit from an airport at Badgerys Creek. In terms of the airport construction, this would mean just over 120 construction jobs would go to workers in Western Sydney (that is, 30% of the 404 direct jobs mentioned earlier).

When it comes to the indirect construction jobs—which number about 1,000—they are likely to be located throughout the Sydney basin, depending on the location of suppliers. But there is no way that a government could mandate the employment profile of these suppliers when it has no direct relationship with these firms (other than as a customer) so the 30% target does not apply to these indirect jobs. They may, or may not, go to workers already living in Western Sydney. Furthermore, as outlined earlier, there is no way of accurately calculating how many *new* jobs will emerge in the supply chain for the WSA construction.

About 800 airport jobs would be targeted to go to Western Sydney workers in 2031

The same situation would apply to the airport operations. Only direct employment at WSA would be subject to the 50% target. Being realistic and assuming that employment numbers will match those of Adelaide Airport—which is about 1,600 jobs—then WSA will probably employ 800 workers living in Western Sydney. Again, it is uncertain how many of the indirect jobs will eventuate, nor how many of those workers will be living in Western Sydney.

24. https://www.smh.com.au/politics/federal/locals-to-get-share-of-western-sydney-airport-jobs-20180307-p4z38s.html

In total, WSA would be 'guaranteed' to provide just 920 jobs for Western Sydney workers by 2031

In summary, the promise of 'jobs for the West' which can be *guaranteed* to result from WSA by 2031 is likely to number about 920 jobs. Of course, there are likely to be more jobs than this, but how many more, no-one can say for sure. For all the reasons discussed earlier, the job numbers will not come close to the inflated figures which the proponents of WSA have circulated. After 2031, the job numbers may increase further, but this depends on the expansion of the airport and whether the Business Park develops as expected.

The Business Park proposal

WSA is intended to foster the development of an adjacent Business Park. Table 15 shows the expected jobs from the Business Park and two real-world Western Sydney business parks: Sydney Business Park at Marsden Park and Northwest Business Park at Baulkham Hills / Bella Vista. The former is a new business park, which began operations in 2014 with the aim of eventually delivering 17,000 jobs. Northwest Business Park is a much older business park (established in 1983) which hosts over 400 companies and provides employment for over 25,000 people. This comparison should be useful for assessing the early stages of the WSA Business Park (2031) as well as the later stages when it becomes more established (2041). It needs to be kept in mind that the focus of the WSA Business Park will be different, in so far as the airport is intended to foster a different mix of businesses, such as hotels and transport, economic activities which are more relevant to an airport precinct.

TABLE 15: BUSINESS PARK EMPLOYMENT, WSA PROJECTIONS AND REAL WORLD EXAMPLES

Industry	*WSA 2031*	*WSA 2041*	*Sydney Bus Park*	*North-west Bus Park*
Professional, Scientific and Technical Services	0	3,750	154	2,677
Transport, Postal and Warehousing	665	1,420	541	190
Accommodation and Food Services	74	222	323	759
Retail Trade	200	2,722	913	4,315
Manufacturing	3,500	3,440	705	2,236
Total	4,439	11,554	2,636	10,177

Source: WSA Projections from Table 5, Ernst and Young 2017. Sydney Business Park and Northwest Business Park from 2016 Census, place of work.

This comparisons in Table 15 suggest that the jobs projections for transport, postal and warehousing, and for accommodation and food services, are realistic for both 2031 and 2041. This is due to the nearby presence of an airport. In the case of retail the 2031 WSA projections appear realistic, but the 2041 projections appear ambitious.

The job projections in manufacturing and for office work appear very unrealistic

When it comes to the other industries, the WSA projections are highly unrealistic. In the case of both manufacturing and professional, scientific and technical services the WSA projections stretch credibility. For the professional, scientific and technical services category—which covers most of the office-related businesses—the projections for WSA are considerably larger in 2041 than what a thriving Northwest Business Park already supports. In the case of manufacturing, the WSA projections see this peaking in 2031, but these estimates are again well in excess of what Northwest Business Park already supports. It needs to be remembered that Northwest Business Park has been in existence since 1983 and hosts over 400 companies.

Another real-world assessment of these manufacturing job projections entails looking at where most manufacturing jobs in Sydney are already located. Table 16 shows these locations. There are only fourteen such locations where more than 2,000 workers are employed, and only eight where more than 3,000 are employed. Yet the job projections for the WSA Business Park are for 3,500 manufacturing jobs. This would place WSA Business Park in the top five locations for manufacturing in Sydney. Again, one needs to ask: how realistic is this?

TABLE 16: MANUFACTURING EMPLOYMENT IN SELECTED SYDNEY LOCATIONS, 2016

Location	*Numbers*
Wetherill Park Industrial	5,135
Macquarie Park - Marsfield	3,927
Condell Park	3,678
Ermington - Rydalmere	3,517
Smithfield Industrial	3,452
Chipping Norton - Moorebank	3,308
Homebush Bay - Silverwater	3,296
Ingleburn - Denham Court	3,222
Prospect Reservoir	2,743
Sydney - Haymarket - The Rocks	2,508
Minto - St Andrews	2,426
Blacktown (East) - Kings Park	2,317
Marrickville	2,311
Baulkham Hills (West) - Bella Vista	2,236

Notes: Manufacturing locations where more than 2000 workers are employed.
Source: Census 2016, Place of work

A newly-established business park would not match the job numbers found in the older manufacturing centres

Many of these other locations, particularly those in the Liverpool area, are long-term, well-established manufacturing centres, with a history of manufacturing behind them. How likely is it that a newly-established business park could rival these older centres of manufacturing within a few short years? After all, the WSA projections see manufacturing employment peaking as early as 2031, and no further growth after that.

Automation at new green-fields sites will mean fewer manufacturing jobs at the WSA Business Park

What is more, long-term established manufacturing firms are likely to be more labour intensive in their operations than those new firms establishing their factories on green-field sites. The latter will no doubt use more modern equipment and automate many of their manufacturing activities. This suggests that a comparison between the employment potential of WSA Business Park and these older centres is even more unfavourable for the WSA Business Park proposals. Indeed, this issue of automation comes up in the Ernst and Young report and they note that 'industries like construction and manufacturing are also found to be susceptible to automation'.[25]

In this same discussion, Ernst and Young also observe that transport, retail and accommodation and food services are particularly vulnerable to automation and they conclude:

> There is substantial uncertainty over the extent of automation of different occupations, as well as the timeframes over which any large scale automation will happen. We note that this uncertainty is a limitation of the analysis presented in this report ... [26]

This caveat does not stop them concluding that the 'broad results remain a good representation of the likely labour market impacts of Western Sydney Airport'.[27] Unfortunately, the broad results are not the point: the issue is whether projections for jobs in areas like manufacturing and transport are realistic, particularly as these are the kinds of jobs best suited to blue-collar workers in Western Sydney.

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25. Ernst and Young 2017, p. 26.

26. ibid., p. 26.

27. ibid., p. 26.

The aerotropolis proposal

In 2017 the Greater Sydney Commission released its draft Greater Sydney Region Plan, *A Metropolis of Three Cities*.[28] Despite sections on 'liveability' and 'sustainability', the core aims of the plan were economic. While it emphasised green spaces in Western Sydney the driving force for this proposal was the construction of the airport at Badgerys Creek and the development of an aerotropolis nearby. The airport was seen as 'a catalyst to generate a diversity of jobs in the Western City'. At the same time, the ear-marking of large areas of Western Sydney for residential development made it clear that the economic imperatives of expanding Sydney's population—and its real estate and building construction industries—were pre-eminent.

The aerotropolis concept embodies this vision of economic development based around an airport. As the Kasarda Report, commissioned by the NSW Business Chamber, puts it:

> an aerotropolis is a metropolitan sub-region whose infrastructure, land-use, and economy are centred on an airport. It consists of the airport's aeronautical, logistics, and commercial elements, connecting surface transportation infrastructure, and outlying corridors and clusters of aviation-oriented businesses and residential developments that feed off each other and their accessibility to the airport.[29]

As Figure 12 shows, the area immediately adjacent to the proposed airport is ear-marked for industrial development while the area between WSA and the M4 is intended for future expansion as a commercial and industrial area. The residential expansion is two-fold: some 200,000 new residents in a housing estate north-west of Parklea by 2040 and 300,000 new residents for the area between WSA and Liverpool by 2040.

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28. Greater Sydney Commission (2017), *Our Greater Sydney 2056: A metropolis of three cities—connecting People*, Draft Greater Sydney Region Plan, Sydney: Greater Sydney Commission.

29. John D. Kasarda (2015), *A Western Sydney Aerotropolis: Maximising the benefits of Badgerys Creek*, Sydney: NSW Business Chamber, p. 7.

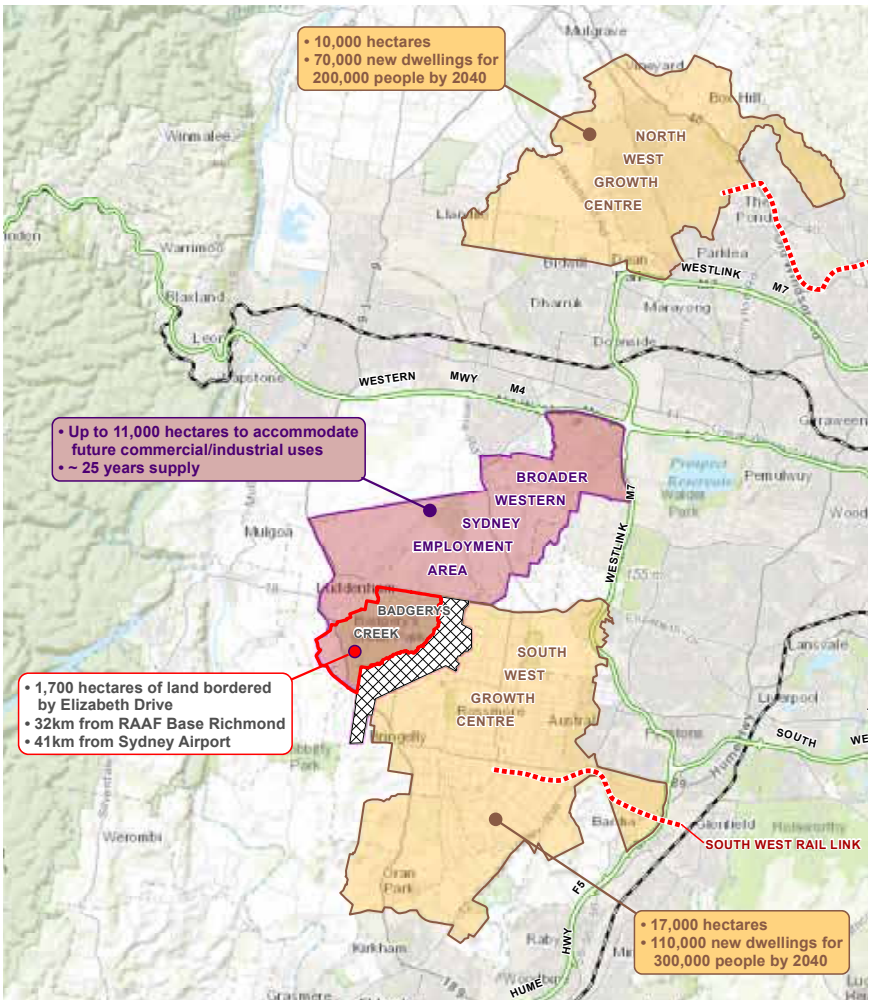

FIGURE 12:
LAND USE PROPOSALS FOR WESTERN SYDNEY
Source: Department of Infrastructure and Regional Development, Exhibit 5 WSA Area Development Zones and Major Transport Connections Eastward, reproduced in Kasarda 2015, p. 16

Activities expected to relocate to the aerotropolis include engineering, consulting, corporate law, ICT, international finance, and marketing

Unlike the familiar image of an industrial park surrounding an airport–familiar to those who travel to Kingsford Smith and Tullamarine airports–the aerotropolis concept aims higher. Among the activities listed are engineering, consulting, corporate law, ICT, international finance, and marketing. The aerotropolis aims to be an environment to which 'advanced business service firms whose executives and professionals frequently travel' will relocate.[30] Presumably these firms are currently based in North Sydney but would either fully (or partly) relocate to the area around Badgerys Creek. Unfortunately for the aerotropolis concept, this aspiration is unlikely to be met given Sydney's segmented geography. The urban history of Sydney over the last thirty years has seen it evolve towards a

30. Kasarda 2015, p. 8.

'global city' in which financial services and high technology, in particular, have gravitated to the CBD, North Sydney and Macquarie Park. When it came to attracting large corporations to relocate to an aerotropolis, Badgerys Creek would face stiff competition with these established centres.

Why might such corporations consider such a move? According to the Kasarda Report, airport areas lend themselves to becoming ideal locations for 'widely dispersed executives [flying] in for sales meetings, board meetings, and high-level decision-making'. Such a location is intended to optimise 'executives' long-distance connectivity while minimising their local ground transport times and costs.'[31] However, as Figure 13 shows, most chief executives and general managers predominantly live in areas such as Eastern, Northern or Central Sydney. These suburbs are close to their current office locations, and also close to Kingsford Smith Airport. Realistically, chief executives and general managers are unlikely to want to see their offices relocate to Badgerys Creek, nor would they be likely to travel out there on a regular basis for meetings. It is far more likely that corporate Australia will continue to use Kingsford Smith Airport as their centrepiece, and leave WSA as a budget-airline and freight-airline centre.

Realistically, chief executives and general managers are unlikely to relocate to Badgerys Creek, nor travel there for regular meetings

When it comes to job numbers, the aerotropolis proponents draw on modelling done by Deloitte Access Economics which suggests that between 20,000 and 32,000 new jobs would be created by the proposed Western Sydney Airport by 2050.[32] These estimates are similar to the Ernst and Young estimates considered earlier in this report. While the Kasarda Report suggests that these job figures are conservative, my analysis of these kinds of job projections suggests that these kinds of modelling exercises produced inflated job figures.

The aerotropolis proponents see Liverpool benefiting from an airport at Badgerys Creek. On the one hand, they envisage large-scale residential expansion—300,000 new residents—but they also see Liverpool becoming an attractive environment for many 'better-educated workers'. In terms of economic activity, the airport is intended to promote many 'aviation-oriented business service firms', including 'R&D and related knowledge-based firms supporting aerotropolis industrial development'.[33]

The aerotropolis proponents see Liverpool benefiting from Western Sydney Airport

31. Kasarda 2015, p. 8.

32. Deloitte Access Economics (2013), *Economic Impact of a Western Sydney Airport*, Sydney: NSW Business Chamber.

33. Kasarda 2015, pp. 24–25.

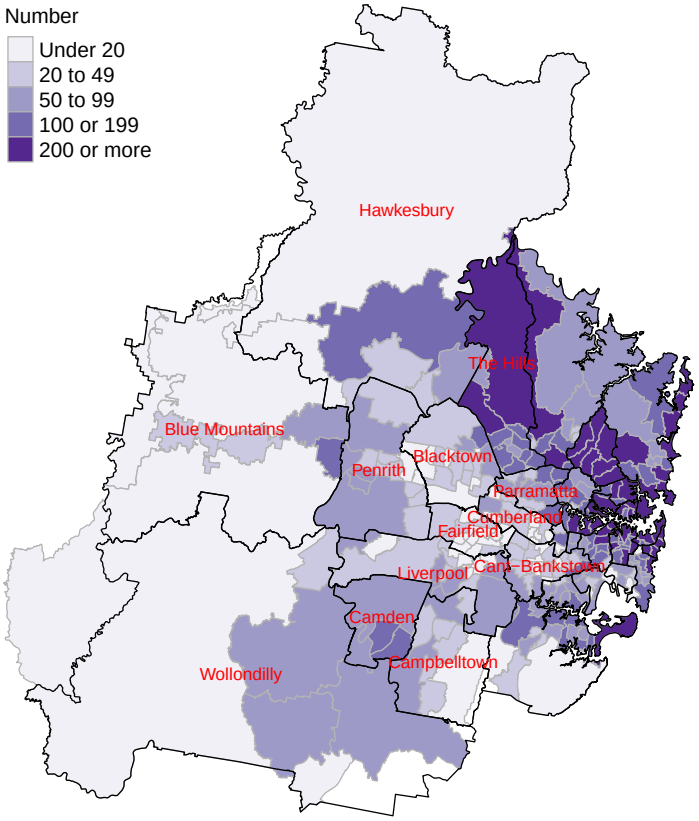

FIGURE 13:
WHERE CHIEF EXECUTIVES AND GENERAL MANAGERS LIVE IN SYDNEY, 2016
Number of chief executives, general managers and legislators in each suburb.
Source: 2016 Census data. Place of usual residence

Why firms would relocate to Liverpool is unclear

Exactly why such firms would relocate to Liverpool is unclear. The Kasarda Report provides an overseas example of Microsoft basing its European headquarters near one new Dutch aerotropolis, but it seems unrealistic to believe that companies which are already firmly established in Sydney's North would relocate to Liverpool.[34] It seems likely that these firms would face considerable difficulties retaining their staff were they to relocate their operations.

The Kasarda Report suggests that the existing labour force, with its multilingual abilities, would be a drawcard for 'internationally oriented firms' choosing to locate in Western Sydney. This is a more convincing argument, since cultural diversity and multilingual skills are clearly one of South West Sydney's main advantages. However, again it seems unlikely that the high-end jobs listed earlier—such as R&D and knowledge-based businesses—will make much extensive use of this labour force. Rather, as the Kasarda Report itself suggests, it will probably be service sector jobs in areas like tourism which will employ such workers.[35] While it is likely that the friendliness and familiarity of the South West Sydney population towards these visitors will be an asset for local tourism, the major tourist destinations for overseas

34. Kasarda 2015, p. 25.

35. With visitors from Mainland China singled out for mention (ibid., p. 27).

tourists to Sydney remain the Sydney Harbour precincts and the Blue Mountains. Neither are well connected to South West Sydney.

It is not a foregone conclusion that building WSA would lead to a successful aerotropolis. Even the Kasarda Report sounds a number of warnings. It warns of investment risks for the new airport while ever Kingsford Smith Airport remains the pre-eminent Sydney airport:

> My experience with greenfield secondary airports elsewhere suggests that passengers and air cargo service providers tend to underutilise new peripheral airports no matter how modern they are when existing hub airports much closer to downtown/CBDs continue to operate and grow. This is a primary reason why governments throughout Asia- Pacific and elsewhere have typically closed their existing hub airports nearer the city centre (as was the case in Hong Kong, Hyderabad, Kuala Lumpur, and Denver) or severely restricted air service at the older city airport (as was done in Bangkok, Shanghai, Seoul, and Dallas-Ft. Worth) at the time the new airport was opened.[36]

Public subsidies would be needed to ensure the success of Western Sydney Airport and the aerotropolis

In other words, due to its close proximity to the Sydney CBD, major tourist destinations and the homes of Corporate Executives, Kingsford Smith Airport will continue as Sydney's pre-eminant airport and this will pose financial investment risks for WSA. The Kasarda Report concluded that public subsidies, in some form, would be needed to ensure the economic success of Western Sydney Airport, and thereby the viability of the aerotropolis concept.[37]

3.5 Chasing one's tail?

The key employment problem in Western Sydney is the ratio of population to jobs

The key employment problem in Western Sydney is the ratio of population to jobs: there are simply not enough jobs for the existing population, and there are not enough jobs in the local region to reduce the burden of commuting. The proposals which are outlined in this report address both these issues.

36. Kasarda 2015, p. 28. Kasarda advocated building extensive transport connections between WSA and the Sydney CBD, KSA and other urban centres in order to mitigate this risk.

37. ibid., p. 29. As the Report recommends: 'New greenfield airports on metropolitan peripheries often take many years (sometimes decades) to generate full returns on initial investment. This is especially so when the new airport competes with an existing major international hub airport closer to the metropolitan city centre. Therefore, investment of some type by the Government in the airport's construction will probably be necessary' (ibid., p. 31).

Every plan for Western Sydney always includes increased residential development

However, as the last section has shown, the plans for WSA invariably entail not only new jobs—and a very limited number—but also an increase in the residential population. Every time a new plan for the West is wheeled out, buried inside one usually finds a proposal for a large residential development. It is true that increased population brings with it additional employment: more local services are needed and this greater demand elicits more output from employers, as well as new employers coming onto the scene. However, increased population also brings with it the challenge of providing additional jobs for all these new residents.

If population keeps growing faster than jobs, things keep going backwards

The history of Western Sydney shows clearly that this balance does not favour the west. More residential population has never provided adequate employment for the growing expansion in settlement. Rather, greater numbers of residents have always found themselves commuting longer distances to other parts of Sydney. Despite decades of promised improvements, the greater west remains largely a dormitory for central and northern Sydney. While the concept of the 'Three Cities' is intended to address the imbalance between jobs and residents, this appears to be no more than rhetoric. The numbers of jobs projected to arise—from the airport, the Business Park, and even from the aerotropolis—will never create an adequate balance between jobs and residents. All these developments include ambitious residential expansion: in the case of the Three Cities with its aerotropolis some 500,000 new residents are intended to live in Western Sydney by 2040. Even the most inflated job projections for these various proposals come nowhere near balancing the ratio of population to jobs. In reality, of course, the actual jobs will be far less; and in fact will depend on public sector expansion in education and health to make any real difference. Most of the new residents will find themselves commuting long distances, travelling on road and rail systems barely adequate for current transport needs.

The alternative which this report proposes would see a major slow-down in residential expansion in Western Sydney. The priority would be on increasing the ratio of jobs to population and improving the liveability of Western Sydney. Scarce woodlands and open space would be preserved, as would market gardening and other food-production activities. Instead of large-acreage industrial and residential estates swallowing up the remaining tracts of open space in Western Sydney—the vision of the Three Cities—this report proposes an orbital rail corridor from Campbelltown-Liverpool to Richmond-Windsor with new employment opportunities spread along the way: an 'employment arc' which combines new employment with

improved transport. This would make use of existing facilities—linking them up more effectively—and also establish new facilities. As outlined in Chapter 5, a range of projects could be based in Western Sydney and could deliver a large number of jobs to local residents. These include:

- the construction of high-speed rail and orbital rail;
- the revitalisation of manufacturing;
- the expansion of community-based banking;
- establishing innovative recycling plants;
- undertaking major environmental repair; and
- the rebuilding of the TAFE system.

I now look at the centre-piece of this strategy, a high-speed rail system linking Sydney and Melbourne (and later Brisbane). Such a scheme offers an alternative to the Western Sydney Airport proposal, and the basis for a large number of new jobs across Western Sydney and beyond.

4 The high-speed rail alternative

4.1 A short history of a long journey

In 2010 the Federal Government was committed to high-speed rail

Australia lags behind the rest of the world when it comes to a fast rail system. Japan's first high-speed rail (HSR) system began in 1964 with the Shinkansen between Tokyo and Osaka; this was some 17 years before the first TGV began operations in France. Japan undertook this venture in order to reduce energy consumption and to lessen the country's dependence on oil (the Shinkansen is powered by electricity). Its other major motivation was to create new development centres and thereby reduce pressure on the large cities.[1] These same needs are present in Australia, particularly on the East Coast, but five decades later no such technology has been implemented here. Nevertheless, HSR has rarely been off the agenda here since the early 1980s, and every Federal government since has investigated its feasibility. It has been studied and reviewed, with new proposals for different routes, different states, different investors and different technologies. It has been studied again, reviewed again, further studies done, and so on, until the present day. While there is still much interest in the concept today, Australia still has no HSR system, even though many millions of dollars have been spent investigating it. An overview of the many attempts to introduce HSR in eastern Australia can be found in Appendix 2. The section which follows deals only with the most significant developments in its Australian history.

What is meant by high-speed rail (HSR)? How should it be defined? A tilt train has been operating in Queensland between Brisbane and Rockhampton since 1998 and has been sometimes referred to as high-speed rail. While the tilting ability does allow faster speeds and a smoother ride on bends, it does not really count as HSR. It has a maximum operating speed of only 170 km/h and runs on existing tracks. The service reduced the rail journey time from approximately 9 hours to 7 hours. In summary, while this may be the fastest train in Australia, it is not in the same league as the very fast trains that have

1. Arup-TMG (2001), *East coast very high speed train scoping study : phase 1-preliminary study*, Final Report, Canberra: Department of Infrastructure, Transport, Regional Development and Local Government, p. 3.

long been operating overseas. These generally reduce regular rail travel times by more than half.[2]

While there is no single definition of HSR, the European Commission defines a high speed train as one:

> capable of reaching speeds of over 200 km/h on upgraded conventional lines and of over 250 km/h on new lines designed specifically for high speeds. Today, trains running on the most recently installed lines can reach speeds of 360 km/h, while trains running on upgraded conventional lines can reach speeds of up to 250 km/h.[3]

High-speed rail presents serious competition to air travel

For the purposes of this report tilt trains running on Australia's existing track network are excluded from the definition of HSR. The trains discussed here are of two basic technology types: those steel wheel varieties travelling on on a dedicated steel track and the magnetic levitation (Maglev) types. The differences in technologies will be discussed later, but both technologies allow trains to achieve maximum speeds between 300 and 600 km/h. They thus present serious competition to air travel.

Australia's first attempts to introduce a HSR system began in 1986 when a joint venture by four commercial enterprises proposed a HSR link from Sydney to Melbourne. Inspired by a CSIRO initiative, their 1990 feasibility study proposed a route between Sydney, Canberra and Melbourne, with a number of intermediate regional stations. They costed this at $6.6 billion, a budget which required favourable tax treatment, and something which the Hawke Labor government rejected. The project did not proceed.[4]

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2. It should also be noted that a major derailment in 2004 of the Queensland tilt train aroused safety concerns. It needs to be kept in mind that the trains run on existing narrow tracks over relatively tight bends and this has been seen by some as an accident waiting to happen. See Alison Caldwell, 'Tilt Train Future in question after Queensland crash', *The World Today*, 16 November 2004. http://www.abc.net.au/worldtoday/content/2004/s1244722.htm. 'Train Lurched then Bang', *Sydney Morning Herald*, 16 November 2004. https://www.smh.com.au/news/National/Train-lurched--then-bang-Total-darkness/2004/11/16/1100384521470.html.
3. Quoted in 'Benefits of high-speed train lines', *Eltis, The Urban Mobility Observatory*, http://www.eltis.org/discover/news/benefits-high-speed-train-lines-0.
4. P. Williams (1998), *Australian Very Fast Trains, A Chronology*, Background Paper 16, Canberra: Parliamentary Library, URL: http://www.aph.gov.au/library/pubs/bp/1997-98/98bp16.htm.

High-speed rail between Sydney and Canberra was proposed in the late 1990s

High-speed rail perhaps came closest to realisation in the late 1990s when a Sydney to Canberra route was proposed. The Speedrail Consortium was the preferred partner for a joint Commonwealth, NSW and ACT governments' proposal to link Sydney, Campbelltown, the Southern Highlands, Goulburn and Canberra. The Consortium was to build the system, at 'no net cost to the taxpayer', and to own and operate the network for 30 years, after which it would be transferred to the government. Prime Minister Howard announced:

> This nation building project is concrete proof of my Government's determination to harness the latest proven transport technology and Australian ingenuity to deliver ourselves—and our children—visionary new transport system of which we can all be proud.[5]

However, fearing subsidies would be required, the government scrapped the proposal in 2000.[6] Instead, the government commissioned a scoping study for a HSR system linking Brisbane, Sydney, Canberra and Melbourne.[7] Phase 1 of the study was released in 2001 but in 2002 the government decided not to proceed, rejecting the project because of the requirement for public funding.[8]

Different states also proposed HSR during the 2000s, but none eventuated

Different states also proposed HSR projects during the 2000s, but none eventuated. In 2004 the NSW government proposed fast rail between Sydney and Western Sydney, and this was later adopted by Kevin Rudd as part of Labor's election platform.[9] In 2009 Canberra Airport management suggested Canberra airport should be the location for a second Sydney airport, on the

5. John Howard, Mark Vale, News Release, 4 August 1998, https://web.archive.org/web/20070905082057/http://www.railpage.org.au/vhst/dotrelease.html.
6. Philip Laird (2001), 'Where we are now: National patterns and trends in transport', in: *Back on Track: Rethinking Transport Policy in Australia and New Zealand*, ed. by Philip Laird et al., Sydney: UNSW Press.
7. Arup-TMG (2001), *East coast very high speed train scoping study : phase 1-preliminary study*, Final Report, Canberra: Department of Infrastructure, Transport, Regional Development and Local Government.
8. J. Anderson, Media Release, 'Government ends scoping study on east coast very high-speed train network', 26 March 2002, http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=Id%3A%22media%2Fpressrel%2FOH766%22.
9. J. Hildebrand, 'Rudd's road and rail cash', *Daily Telegraph*, 19 December, 2006, https://www.dailytelegraph.com.au/news/nsw/rudds-road-and-rail-cash/news-story/a99bab89efe5d18b846654dd773aba27?sv=32e57c02d538d999b05f021753d3778e.

condition that a HSR link was built between the two cities. They argued it would be a cheaper option than developing a site from scratch.[10]

In 2010 the Government made a firm commitment to HSR

In 2010 the Rudd Labor Government adopted a firm commitment to high-speed rail. The Minister for Infrastructure and Transport, Anthony Albanese, announced an implementation study for a high-speed rail network connecting Brisbane, Sydney and Melbourne. The report for Phase 1 was released in July 2011. Albanese himself has always argued for a second Sydney airport as well as the HSR project. However, the NSW Premier, Barry O'Farrell, disagreed with Albanese and argued that if HSR went ahead, a second airport would not be needed. O'Farrell also pointed to problems with the proposed location for the airport: "... find me an area that is not going to end up causing enormous grief to people who currently live around it".[11]

The 2013 report remains the most comprehensive inquiry into HSR in Australia

The Phase 2 study for this proposal was released in 2013. It was a detailed 514 page study—plus appendices—and to this day it remains the most comprehensive inquiry into HSR in Australia. This chapter draws on this study at length (and refers to it hereafter as *The Report*).[12] The 1,748 km line was to have four city centre stations, four city-peripheral stations and 12 regional stations. The first stage of the high-speed rail line was planned to run between the cities with the most traffic, Sydney and Melbourne, and be completed by 2035. The Sydney-Canberra section was expected to be operational by 2025. The second stage was to link Brisbane to Sydney and was given a completion date of 2065.

Travel times between Sydney and Melbourne were expected to be 2 hours 44 minutes; Sydney to Brisbane was 2 hours 37 minutes; Sydney to Newcastle was 39 minutes; and Sydney to Canberra was 64 minutes. These were express-times, and all-stations services were also

10. J. Gibson, 'Fast train to Canberra for second airport', *Sydney Morning Herald*, 3 March 2012, http://www.smh.com.au/national/fast-train-to-canberra-for-second-airport-20090210-83iw.html#ixzz1o3y6qyRd.

11. J. Saulwick, K. Munro, 'O'Farrell calls for high-speed trains instead of second Sydney airport', *Sydney Morning Herald*, 6 April, 2011, https://web.archive.org/web/20121107221329/http://www.smh.com.au/nsw/ofarrell-calls-for-highspeed-trains-instead-of-second-sydney-airport-20110405-1d2zj.html.

12. Department of Infrastructure and Transport (2013), *High Speed Rail Study*, Phase 2 Report, Canberra: Commonwealth Government, URL: https://infrastructure.gov.au/rail/trains/high_speed/%20files/HSR_Phase_2-Main_Report_Low_Res.pdf. For the full list of appendices, which includes analysis of the preferred route, see https://infrastructure.gov.au/rail/publications/high-speed-rail-study-reports/phase_two_appendicies.aspx. for the proposed route.

contemplated (which added about 15 minutes to the journey time for the Sydney to Melbourne route).[13] Travel times were based on maximum speeds of 350 km/h, but it is worth noting that with technology improvements, maximum speeds in excess of this are regularly achieved overseas.[14] It should be noted, however, that in normal operations speeds are limited in all services to less than the maximum.

The projected cost for the entire project was about $114 billion (in 2012 dollars), consisting of $64 billion for Brisbane to Sydney and $50 billion for the Sydney–Canberra–Melbourne route. However, *Beyond Zero Emissions*, working with German engineers, modelled a 1799-kilometre route using fewer tunnels and bridges for $84 billion.[15]

Travel times between Sydney and Melbourne were expected to be 2 hours 44 minutes

Following the publication of the *The Report* a High Speed Rail Advisory Group was established and in August 2013 released a report, *On Track: Implementing High Speed Rail in Australia*. This Group unanimously endorsed *The Report* and and called for a commitment to building high-speed rail and protecting the necessary rail corridor through national legislation. The Labor government endorsed these recommendations and allocated $54 million to establish a rail authority and begin acquiring the corridor.

This whole impetus towards establishing high-speed rail in Australia was halted in its tracks in 2014 when Prime Minister Tony Abbott abolished the High Speed Rail Authority and scrapped its $54 million allocation. Since then Anthony Albanese has endeavoured four times in Parliament to re-establish the Authority, but without success and Senator Farrell introduced the same bill into the Senate in September 2017 with a similar outcome.[16] At the

The impetus towards HSR was halted in its tracks in 2014

13. *High Speed Rail Study, Phase 2 Report*.

14. Japan's Maglev train has recorded the highest speed to date, at 603 km/hr in testing. France's TGV has a top speed of 575 km/hr. See C. Edmond, 'These are the World's Fastest Trains', *World Economic Forum*, 29 September 2017, https://www.weforum.org/agenda/2017/09/these-are-the-world-s-fastest-trains/.

15. Vince Chadwick, 'Very Fast Train? Here's France's very fast way to do it', *Sydney Morning Herald*, 22 December 2013. Dr Chris Hale, of the Department of infrastructure engineering at University of Melbourne has observed that the $50 billion cost of the Sydney–Melbourne construction phase extends over 10 to 15 years.

16. Malcolm Farr, News.com, 21 November, 2016, http://www.news.com.au/finance/business/travel/albanese-launches-attempt-4-to-get-parliament-to-accept-his-highspeed-rail-vision/news-story/a34b64e02aafb8564195369fdd973470; A. Albanese, Media Release, 4

same time, another Liberal Parliamentarian, John Alexander, has argued for high-speed rail as a strategy to promote regional development.[17] This plan relies on private sector funding through 'value capture', an approach which would privatise the gains and limit the benefits of HSR. The Preface to this report argues:

> Contrary to popular belief, High Speed Rail's prime purpose is not an alternate mode of transport between capitals. Rather is it a tool to effect dynamic regional growth as land near regional stations will then compete with the most expensive land in the world, namely that of Sydney and Melbourne.[18]

While the economic and social benefits generated by HSR would no doubt be welcome in regional towns, it is doubtful if spreading unaffordable house prices more widely would be. Housing affordability in the major cities is one of the major contemporary social problems facing governments and caution is needed before extending the problems further afield. As Dallas Rogers of Western Sydney University observes: 'We need to make sure we address the housing affordability problem in Australian cities before we transport our urban affordability problem to the countrywide on a high speed train.'[19]

The current Federal Government has shown no discernible interest in reinvigorating the project

The John Alexander initiative has not yet produced an outcome. Their report was presented to Parliament in February 2017 and the Government was given six months to respond, but so far nothing has happened. It seems clear that the current Federal Government has no discernible interest in pursuing HSR. Their 2017 report, *The National Rail Program: Investing in Rail Networks for Our Cities and Regions*, reinforces this view because it cannot transcend a piecemeal approach to track upgrading:

September, 2017, http://anthonyalbanese.com.au/labor-takes-high-speed-rail-bill-to-senate.

17. See Standing Committee on Infrastructure, Transport and Cities (2016), *Harnessing Value, Delivering Infrastructure: Inquiry into the role of transport connectivity on stimulating development and economic activity*, Canberra: Parliament of the Commonwealth of Australia, URL: http://parlinfo.aph.gov.au/parlInfo/download/committees/reportrep/024018/toc_pdf/HarnessingValue,DeliveringInfrastructure.pdf;fileType=application%2Fpdf.

18. ibid., p. ix.

19. Jennifer Duke,' High speed rail to push housing unaffordability out to the regions', *Domain*, 12 April 2016, https://www.domain.com.au/news/high-speed-rail-to-push-housing-unaffordability-out-to-the-regions-20160412-go42b9/.

> In recent years there have been a number of proposals put forward for faster rail connections between our cities and surrounding regional areas …While the benefits of high-speed rail are easy to visualise, what is not well understood is that our existing regional rail services, often using tracks built in the nineteenth century, run at well below the speeds and frequencies that conventional rail can achieve.[20]

In contrast to this perspective, this report argues that the benefits which HSR will bring are not comparable to a slightly improved conventional rail network. This current Government's view completely ignores the findings of *The Report*, the 2013 HSR study, which found a high-speed rail project to be both feasible and desirable.

The only inter-city HSR proposal currently on the table is CLARA. The Consolidated Land and Rail Australia consortium proposes HSR connecting Melbourne and Sydney. They argue that without any public funding their project will open the way for two new cities in Victoria and six in NSW. Their vision for HSR discusses three options: Japan's Super Conducting Maglev, France's TGV and China's CRH3C trains. These can reach top speeds of 603, 574 and 380 k/hr respectively.[21] The first stage of the project—and the subject of the government's award to develop a business case—would connect Melbourne to Shepparton by HSR.[22]

CLARA argue that the business case will investigate the development of two new sustainable 'SMART' cities, connected via HSR along a new dedicated corridor. They describe these cities as

> new cities where data is open, energy is renewable, water is valued, homes are affordable and people can live within 19 minutes of all they need; cities where world class healthcare meets high tech education; where new and existing businesses

20. Department of Infrastructure and Regional Development (2017), *The National Rail Program: Investing in rail networks for our cities and surrounding regions*, Canberra: Commonwealth Government, URL: http://investment.infrastructure.gov.au/files/national_rail_program/national_rail_program_booklet.pdf, p. 13.

21. Using Maglev technology travel time between Sydney and Melbourne would be just under two hours.

22. The trip currently takes about 2 and a half hours and CLARA argues that this could be reduced to half an hour. See CLARA, *High Speed Rail*, http://www.clara.com.au/high-speed-rail.html; Department of Infrastructure and Regional Development, 'Faster Rail, Investigating faster rail linkages between our cities and surrounding regional areas', https://infrastructure.gov.au/rail/trains/faster_rail/index.aspx; Clay Lucas, 'Canberra opens public purse for private fast-rail project's plan', *Sydney Morning Herald*, 9 March 2018, https://www.smh.com.au/national/canberra-opens-public-purse-for-private-fast-rail-project-s-plan-20180309-p4z3mr.html S. Martin, 'High speed rail consortium to seek green light from Malcolm Turnbull', *The Australian*, 13 January 2017.

> will converge to create more vibrant regional economies; cities built to unlock all human potential; cities made possible by High Speed Rail that can place citizens in our capitals in less time than a morning commute.[23]

The funding for the CLARA project would be via value capture: 'the development of these two SMART cities would fund the infrastructure, including the faster rail line ...' Journalist, Paddy Manning, has observed:

> [CLARA is] an extreme, privatised version of 'build it and they will come', and is what happens when governments give up on the kind of nation-building that created our bush capital or the Snowy Mountains Hydro-electric Scheme.[24]

It is also important to realise that aiming to funnel commuters from the far-flung regions into the centre of Sydney or Melbourne—one of the main selling points for CLARA—is not good regional policy. Far better would be to expand employment, housing and infrastructure in regional centres and use HSR as something which spreads benefits into the regions.

The same appraisal applies to the Committee of Sydney proposal to link Sydney, Wollongong and Newcastle by a fast train network, intended to create a 'mega region' and halve commuting times to Sydney.[25] Again, it simply funnels more people into Sydney rather than aiming to develop viable regional economies.

Because of the likelihood that major Government financing will ultimately be needed for CLARA to proceed, it seems unlikely that this initiative will win Government backing. Certainly, the Government documents issued for the Expression of Interest suggests that the Government is more interested in small improvements in the existing rail network.[26] In summary, there seems to be no serioues intention of

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23. 'Faster Rail Prospectus – Proposal Fact Sheet, Consolidated Land and Rail Australia (CLARA) – Melbourne to Greater Shepparton', Department of Regional Development and Cities, https://infrastructure.gov.au/rail/trains/faster_rail/files/Fact-Sheet-CLARA.pdf, *The Clara Plan*, http://www.clara.com.au/the-clara-plan.html.

24. Paddy Manning (2017), 'Is Nick Cleary's ambitious CLARA project the answer to Australia's fast rail question?', in: *The Monthly* (December 2016–January 2017).

25. M. Griffiths and B. Kontiminas, 'Fast rail could turn Sydney, Wollongong, Newcastle into "mega region"', ABC News, 5 June, 2018. http://www.abc.net.au/news/2018-06-05/fast-rail-the-key-to-mega-sydney/9833800.

26. P. Fletcher and M. McCormack, Media Release 'Faster rail on the horizon for key commuter corridors', 9 March 2018, http://minister.infrastructure.gov.au/pf/releases/2018/march/pf020_2018.aspx.

building a genuine high-speed rail system in Australia, despite the enormous benefits which it might bring.

4.2 The case for high-speed rail

As noted earlier the 2013 *High Speed Rail Study, Phase 2 Report* (*The Report*) represents the pinnacle when it comes to assessing the viability of high-speed rail in Australia. The following sections look at a number of aspects of HSR and draw upon its detailed findings. A number of other reports, as well as extensive overseas literature, also inform the findings. The conclusion arrived at is that HSR in Australia is not only a viable option for inter-city travel, but will provide considerable employment and environmental benefits.

Consumer demand

HSR would be an attractive option for many travellers

In asserting the viability of HSR *The Report* took into account all existing means of travel along the east coast of Australia, namely air, car, rail and coach. Using market research and international evidence *The Report* ascertained that HSR would be an attractive option for many travellers. As Christopher Nash argues, in cost-benefit terms, the break-even point for HSR would be around 9 million passengers per annum.[27] *The Report* estimated that in 2065, HSR would attract approximately 83.6 million passenger trips a year, which would be nearly ten times Nash's break-even level. This assumed that travel for business would represent 35% of trips and that inter-city travel would account for about 49% of trips (and 62% of travel kilometres). It was assumed that regional travel would represent about 50% of passenger trips and 38% of passenger kilometres.[28]

The Report proposed implementing HSR in stages, in order to deal with the capital costs and the size and complexity of the programme. It recommended that Sydney to Canberra be built first, followed by Canberra to Melbourne. This was to be followed by Newcastle to Sydney, then Brisbane to Gold Coast, and finally Gold Coast to Newcastle.[29]

The Report drew on overseas data to calculate the ratio between air travel and HSR patronage. For HSR journey times of less than 2 hours, HSR occupies approximately 80% of the market. Where journey times

27. OECD/ITF (2014), *The Economics of Investment in High-Speed Rail*, ITF Round Tables 155, Paris: Organisation for Economic Co-operation and Development, pp. 56–7.

28. Department of Infrastructure and Transport 2013, p. ix.

29. ibid. p. 293.

exceed 4 hours the percentage drops to about 30%. For trips up to 3 hours market share ranges from about 55% to 70% as would be the case between Sydney and Brisbane and Sydney and Melbourne.[30]

Trips diverted from air travel account for 51% of HSR passengers

In terms of total person travel kilometres, the projection is for 40% to be on HSR, 27% by air travel, 31% by car, 1% by traditional rail, and 1% by coach.[31] Trips diverted from air travel account for 51% of HSR passengers, while 26% are forecast to divert from car travel, 2% from rail and 1% from coach. About 19% are expected to be induced by the availability of the HSR service itself.[32] The diversion from air is higher for business travel, (66%), while the diversion from car is higher for non-business travel (30%). Inter-city travel accounts for the majority of HSR demand: 75% is diverted from air travel, currently the main mode for such journeys. On the other hand, car travel is the current mode for short regional travel and the diversion to HSR would account for 72% of short regional demand.[33]

Much of the demand for the HSR service would be business. *The Report* projects that 63% of inter-city HSR travel would be for business as would 60% of long regional travel (over 250 kilometres).[34] Some of the explanation for the preference for HSR lies in its ability to provide services between city centres, rather than stopping the service on the metropolitan periphery where the passengers continue their journey by other means (the situation with airports like Melbourne's Tullamarine Airport and the proposed Western Sydney Airport at Badgerys Creek). This benefit is estimated to account for about 23% of demand. The other major benefit is the high-speed, resulting in shorter journey times, which account for 51% of demand. Time taken at check-in, security and traversing airports is calculated to account for 10% of HSR demand. Overall about 75% of HSR demand is estimated to arise from its high-speed and from its frequent, direct fast rail services and city-centre accessibility.[35]

30. ibid. pp. 83–84.

31. Department of Infrastructure and Transport 2013, p. 90.

32. ibid. p. 86.

33. ibid. p. 91.

34. ibid. p. 90.

35. ibid. p. 94

Dobruszkes, Givoni and Dehon make the valid point that 'In-vehicle travel time is usually considered by scholars, but of course it is door-to-door travel time (along with experience) that actually matters.'[36] Well-situated HSR stations can mean HSR travellers save hours spent at airports, thereby reducing their door-to-door travel time. Compared with planes, HSR does not suffer delays because of fog or other adverse weather conditions. One advantage for business HSR passengers over airline travel is that some meetings can actually be held while travelling and less time is wasted at airport check-ins. The result is time and cost savings to business.

FIGURE 14:
DINING CAR OF A HIGH-SPEED RAIL TRAIN
Source: Beijing to Hangzhou high-speed rail.

Passenger comfort is also an important consideration

Passenger comfort is also an important consideration, since HSR offers passengers more flexibility in how their travel time is spent. The advantages include: ample leg room, quiet, smooth travel, the ability to walk around, the option of eating or drinking in the dining car, and no danger of developing deep vein thrombosis (DVT). Furthermore, a top-class sleeper service costs about one fifth of a first class airline ticket. Many HSR trains now come equipped with facilities for passenger information and entertainment, such as wifi internet. It thus comes as no surprise that many passengers overseas have chosen HSR travel over air.[37]

36. F. Dobruszkes et al. (2016), 'Assessing the competition between high-speed rail and airlines: A critical perspectiv', in: *Evaluating High-Speed Rail: Interdisciplinary perspectives*, ed. by Daniel Albalate and Germà Bel, Taylor & Francis Group, p. 172.

37. 27 Reasons why trains are better than planes, *Daily Telegraph* 14 April 2015 https://www.telegraph.co.uk/travel/rail-journeys/27-reasons-trains-are-better-than-planes/. Current HSR interior train designs tend to be flexible and allow operators a choice in the space design. Carriages can be designed as leisure areas like lounges, bars and cinemas or working spaces. Carriages can be configured for week day, weekends, holiday or business travel. Different facilities, for example, areas for stowing luggage and bicycles, would also

According to *The Report*, the east coast travel market is expected to increase by 60% by 2035, 100% by 2050 and more than 130% by 2065 when the full HSR service is projected to be in operation. Sydney to Melbourne is the world's second busiest air route and Brisbane to Sydney is the eighth busiest in the world. The projected increases in air travel were built into the calculations for consumer demand for HSR.[38] Overseas experience shows a long-term growth in demand. Compound annual growth rates were in excess of 2% in Japan and 8% in Korea over protracted periods.[39] Based on overseas experience, it seems reasonable to assume that HSR could account for 55% to 70% of the market share for trips of 2 to 3 hours. This makes HSR for travel from Brisbane to Sydney, and Sydney to Melbourne, not only a viable proposition, but it also makes it clear that a second Sydney airport would be unnecessary.

Commercial and economic performance of HSR systems

The Report finds that the HSR programme could be expected to make only a small financial return on investment but that most stages of the programme would generate sufficient operating revenue to cover asset renewal and operational costs. As a result, there was no long-term requirement for government subsidies for HSR operations. It also follows that the low financial return rules out private sector involvement.[40]

Most stages of the programme are expected to generate sufficient operating revenue to cover asset renewal and operational costs

The Report concludes that construction of the HSR programme would deliver positive net economic benefits. The cost-benefit analysis estimates a real economic internal rate of return of 7.6% on investment in the HSR programme as a whole. About 90% of the economic benefits accrue to users of the system, because of the city centre locations, and because of the faster access and check-in times, leading to an overall reduction in travel times.[41]

In assessing the costs of the HSR project it is important that costs be offset against reduced demand for other means of transport and their consumption of resources. When it comes to the construction costs of

be possible.

38. Department of Infrastructure and Transport 2013, p. 101.

39. OECD/ITF (2014), *The Economics of Investment in High-Speed Rail*, ITF Round Tables 155, Paris: Organisation for Economic Co-operation and Development, p. 10.

40. Department of Infrastructure and Transport 2013, p. 354.

41. ibid. pp. 419–511.

the HSR system, the savings to the government of not having to build a second Sydney airport must also be taken into account. Once the cost of externalities are factored in—costs such as road maintenance and costs to the health system from illnesses caused by aircraft pollution and aviation fuel transportation—then HSR rail emerges as an even more attractive economic prospect.

As would be expected, the socio-economic returns are greater than the financial returns. This has been the case overseas, where HSR has been in operation for many years. The OECD reviewed this issue and argued that 'economic viability'—which takes account of the wider economic costs and benefits—favours HSR. On the other hand, 'commercial viability'—a much narrower criterion—does not favour private sector involvement in HSR. This makes the case for public ownership and operation of a HSR system an imperative.[42]

Freight

HSR need not be limited to passenger travel

A new HSR system need not limit itself to passenger travel. Another source of revenue for HSR could be freight transportation, something which also carries many other benefits. Consumption patterns are changing and Australian consumers are increasingly buying on-line from all over the world. Road freight largely services the Australian import market, and carries around 75 per cent of general non-bulk freight items. Freight volumes are forecast to more than double by the year 2050.[43] HSR has great potential to replace both truck movements and air freight along the east coast of Australia. The Department of Infrastructure and Regional Development notes: 'Australia's national land freight task is expected to grow by around 75 per cent between 2011 and 2031'.[44]

The Department also raises issues of the cost effectiveness of road building and maintenance:

42. OECD/ITF 2014.

43. A great opportunity for HSR freight is opening up in Australia and around the world. See NTC Australia (2016), *Who Moves What Where: Freight and Passenger Transport in Australia*, Information Paper Final Report, Melbourne: National Transport Commission, URL: https://www.ntc.gov.au/Media/Reports/(D62E6EFC-36C7-48B1-66A7-DDEF3B04CCAE).pdf; and Bureau of Infrastructure, Transport and Regional Economics (2017), *Yearbook 2017: Australian Infrastructure Statistics*, Canberra: Department of Infrastructure and Regional Development, URL: https://bitre.gov.au/publications/2017/files/yearbook_2017.pdf.

44. Department of Infrastructure and Regional Development (2016), *Trends—Transport and Australia's Development to 2040 and Beyond*, Canberra: Commonwealth Government, URL: https://infrastructure.gov.au/infrastructure/publications/files/Trends_to_2040.pdf, p. 5.

> In Australia, governments still primarily own and finance road infrastructure and assets, with all three levels of government raising revenue for transport-related activities …the cost of building and maintaining our roads is increasing at a rate faster than road-related revenue collected from motorists in taxes and charges.[45]

Rail freight allows for the recovery of construction costs and can also ultimately become a revenue source. Without HSR in Australia, an increase in air freight can be expected, particularly 'as demand for just-in-time delivery increases for items such as high value manufacturing and mining products, perishables such as food, urgent medical products and market flowers'.[46] Perishable or non-bulk products are increasingly transported domestically and internationally and these represent a promising market for HSR. Specially-designed cargo carriages can accommodate air freight containers, replacing trucks as well as reducing the need for air freight to regional airports. Because international air freight can be easily transported on HSR this has the potential of linking regional areas into global markets in a cost-effective manner. This opens the possibility for an increase in the production of agricultural products for global markets along the rail corridor, thereby promoting greater regional prosperity.

China is also forging ahead with HSR freight

As with its high-speed passenger trains China is also forging ahead with HSR freight. The freight trains are modelled on the existing bullet trains but are cheaper to manufacture than the passenger trains because fewer parts are needed.[47] In Russia, high-speed freight trains are also being developed. They will operate initially on the Moscow to Kazan HSR line, with plans for extending to both China and Europe. The 12-car trains to be produced in Russia would carry both passengers and freight using specially-designed containers and the trains expect to reach speeds of 350 km/h.[48]

The concept of incorporating freight into a HSR network is a sound one. It allows for flexibility at very little extra cost, because it provides the option of using some passenger train carriages for freight, depending

45. ibid. p. 5

46. ibid. p. 5

47. Lu Bingyang and Mo Yelin, 'Bullet-Train Maker Puts Freight Plans Back on Track', *Business & Tech*, 3 November 2017. https://www.caixinglobal.com/2017-11-03/101165540.html.

48. Keith Barrow (2017), 'RZD develops plans for high-speed rail freight', in: *International Railway Journal* (October 18), URL: https://www.railjournal.com/index.php/high-speed/rzd-develops-plans-for-high-speed-rail-freight.html; 'Russia and China plan to launch first high-speed freight train in 2019', https://www.railjournal.com/index.php/high-speed/rzd-develops-plans-for-high-speed-rail-freight.html; TASS Russian Newsagency, 8 June 2017, http://tass.com/economy/950596.

on passenger demand. Alternatively, freight services can be operated overnight when passenger demand is low. Thus not only does freight transport generate revenue, but it promotes a fuller utilisation of the rail infrastructure.

As outlined earlier in this report, one of the arguments for an airport at Badgery's Creek is the provision of 24 hour international freight deliveries into Sydney. Because HSR lends itself to freight transport as well as passenger travel, an inland international airport could be connected to Sydney as part of the roll-out of the Sydney to Melbourne high-speed rail system. This would make locating a 24 hour international freight airport within the Sydney basin unnecessary.

While there are currently plans underway to construct a Melbourne to Brisbane inland freight rail system, this project will not support high-speed rail. It will, of course, reduce truck movements, but it will not usher in a new era of high-speed rail in Australia.

Environmental benefits

The Report suggests that the environmental benefits will be relatively small in comparison to other benefits, but this does not mean that such benefits are not of great importance. These benefits will dramatically increase if the energy for HSR system is renewable, the most likely energy technology expected to be in place by the time the first train is ready to leave the station. One estimate from Japan suggests that the 'emission of CO2 per unit of transport volume of 700 Series Nozomi (one of Japan's bullet trains) is one-tenth that of a Boeing 747 and its energy consumption is one-sixth'.[49]

HSR can become a major contributor to carbon emission reductions

A study by Simon Robertson compared the potential carbon dioxide emissions from a high-speed rail service from Sydney to Melbourne with that of air travel, with 50% of passengers using each mode. Robertson found that the Sydney to Melbourne HSR operations could be expected to lead to a reduction of 14% in annual carbon dioxide emissions. If the HSR service were powered, or partly powered by renewables, then emission reductions would be greatly reduced or eliminated.[50]

French company Alstrom designed the very fast AGV now in service in Italy. These trains, which can be safely operated at speeds up to

49. Y. Kasai in C.P. Hood, 'The Shinkansen and the Environment: Friend or Foe, Japanese Studies Centre', Cardiff University, 2003.

50. Simon Robertson (2013), 'High-speed rail's potential for the reduction of carbon dioxide emissions from short haul aviation: a longitudinal study of modal substitution from an energy generation and renewable energy perspective', in: *Transportation Planning and Technology* Vol. 36. No. 5, pp. 395–412.

360 km/h, are being constructed with both environmental and cost considerations in mind. The train was designed to be light and energy efficient. Alstrom claims the trains emit only 2.2 grams of CO2 per passenger km, 13 times less than a bus, 50 times less than a car and 70 times less than a plane. The trains incorporate 98 per cent recyclable or reusable materials such as aluminium, steel, copper and glass. The train is also capable of producing its own electricity through a state-of-the-art braking system. When energy generated by the motors during braking is not being consumed by the train, it is fed back into the electric grid.[51]

A 2009 study commissioned by the British research organisation Greengauge 21 found that HSR produces only one-third of the carbon emissions of car travel and one-quarter the emissions of an equivalent trip by air. With the decarbonisation of the electricity supply they found the advantages would greatly increase over a 20 to 30 year period (even taking into account improved carbon performance from both road and aviation sectors).[52] In fact Europe's Eurostar HSR company have pledged to eliminate the use of fossil fuel energy for all of their train journeys by 2030.[53]

HSR can be powered by renewables, such as solar, wind and batteries

Over the last decade, both solar and wind production have developed rapidly in Australia. Rooftop solar in Australia, per capita, is now the highest in the world, and a large number of solar farms, based on photo-voltaic cells, are currently under construction. High-speed rail belongs within this framework: both wind and solar, in conjuction with batteries, can be installed along the HSR corridor. In this way, HSR can become a major contributor to carbon emission reductions in Australia.

In addition to these emission savings, more reductions could be expected by the diversion of passengers from car travel to HSR (some 26% of car passengers in the estimates of *The Report*.) Consequently even greater reductions in carbon dioxide emissions can be expected, as well as other reductions in traffic congestion and reduced road maintenance. The benefit for Australia in building a new system is that renewable power can be incorporated into the system design from inception, with no need for retrofitting.

Furthermore, if HSR freight does replace a large number of truck

51. Alstrom, 'The AGV, a new and revolutionary very high speed train'. http://www.alstom.com/Global/Group/Resources/Documents/News%20and%20Events/file_48533_23444.pdf.

52. Greengauge 21, Fact Sheet, *High-Speed Rail (HSR) and Carbon Emissions*. http://www.greengauge21.net/wp-content/uploads/HSR-CarbonEmissions.pdf.

53. https://www.eurostar.com/rw-en/about-eurostar/community-environment/treadlightly.

movements, the environmental savings would be considerable.[54] Figure 15 illustrates the environmental savings rail can make over heavy vehicle transport.[55]

EXTERNALITY TYPE	URBAN		RURAL	
	HEAVY VEHICLE	RAIL	HEAVY VEHICLE	RAIL
Air pollution	25.59	4.23	0.25	0
Noise	4.27	1.79	0.43	0
Urban separation	2.85	1.03	0	0
Greenhouse gas emission	5.69	0.38	5.69	0.38
Water pollution	3.84	0.13	1.54	0.13
Nature and landscape	0.42	1.03	4.28	1.03
Total	**42.66**	**8.59**	**12.19**	**1.54**

FIGURE 15: RAIL AND ROAD ENVIRONMENTAL EXTERNALITY COST PROJECTIONS FOR 2031. *Note*: Measured in $2014, per net tonne kilometre.

Other benefits from HSR

HSR could enhance regional development

The Report emphasises that HSR could enhance regional centres as alternatives to metropolitan centres, but such an outcome will not happen automatically. It requires a high level of government planning and co-operation between Federal, State and Local governments. Experience from overseas has shown that HSR can result in permanent relocations of people and jobs both within and outside the rail corridor. One risk is that regions which miss out on having a HSR station will gain few benefits and may actually lose jobs and residents. There is the risk that large regions will benefit at the expense of small regions. Current strategies are not guaranteed to address these concerns. However, with proper planning, with an improved National Broadband Network and with other complimentary infrastructure and services, HSR has considerable potential to improve access for regional residents to better health, educational, cultural and sporting facilities.

There are other non-transport related benefits of HSR and these rely on government initiatives to ensure those benefits are reaped. Technological development is one. Policy could promote a rail supply

54. The cost to human and animal life caused by heavy vehicles must also be factored into the equation. No figures are available for the number of native animals killed on Australian roads by heavy vehicles. However, during 2017 some 185 people died from 168 fatal crashes involving heavy trucks. See Bureau of Infrastructure, Transport and Regional Economics, *Fatal Heavy Vehicle Crashes Australia – Quarterly Bulletins*.

55. From Table 3.4 in Inland Rail Implementation Group (2015), *Inland Rail: Melbourne to Brisband Inland Rail 2015*, Attachment A: Programme Business Case, Canberra: Australian Rail Track Corporation, URL: https://s3-ap-southeast-2.amazonaws.com/ehq-production-australia/5de589db79424a8f1344e2e42e171fc205104b99/documents/attachments/000/029/855/original/InlandRailBusinessCase.pdf?1448785278, p. 82.

industry and the potential for exports. The International Transport Forum (ITF) notes that this was a feature of the early developments of HSR in both Japan and France.[56] Economic development should obviously be a major objective of HSR projects. It can unlock areas for development on the edge of existing urban areas. In the United Kingdom, for example, the proponents of the High Speed 2 system emphasised its role as an 'engine for growth', particularly the connectivity among businesses and between businesses and consumers which it promoted. Mineral resources for HSR could all be sourced from Australia. With the tracks, engines and carriages and other equipment made in Australia, a considerable volume of Australian steel would be needed and this would be of great benefit to an industry struggling with excess capacity. As argued throughout this report, HSR offers the potential to revitalise Australian manufacturing.

4.3 High-speed rail and job creation

HSR would create a large number and a large variety of jobs

The construction phase of this project would obviously be a major jobs boon for regional communities. With 1,748 km of line, the rail infrastructure (including city and regional stations), would turn the HSR project into a major 'nation-building' project. It would create both a large number and a large variety of jobs, many of which would be entry-level jobs. It would also mean that many of the jobs created would be local jobs.

The Report discusses route options and provides a preferred route. Central Station was chosen as the main HSR station in Sydney: the benefits for business and leisure travellers outweigh differences in capital costs. A regional southern highlands station was proposed to the east of Mittagong, near the Mittagong airport. Figure 4-29 of *The Report* shows the preferred route from Sydney to Goulburn. It should be noted that the route through south western Sydney encompasses the same general area which would have surrounded the proposed Western Sydney Airport. A peripheral station was also planned for Holsworthy, which would encourage long term economic activity in that area.[57] As mentioned earlier, solar, wind and battery systems could be installed along the rail corridor and the installation and maintenance of these facilities would provide many local jobs.

56. OECD/ITF 2014, p. 16.

57. Department of Infrastructure and Transport 2013, p. 204.

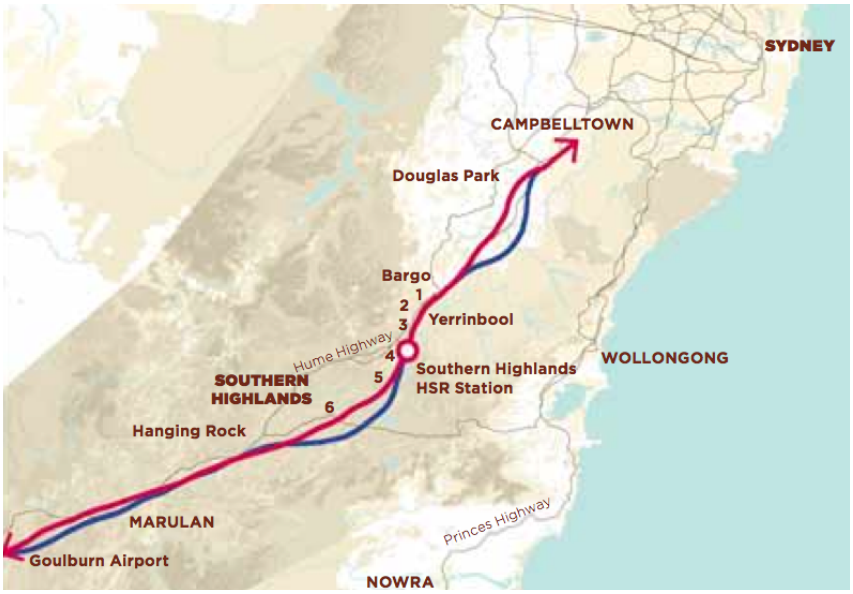

FIGURE 16:
POSSIBLE ROUTE FOR HSR
Preferred route in *The Report*.
Source: Figure 4-29.

Building HSR stations would create employment

Building the HSR stations would also provide employment opportunities. As well as their construction, their operations provide local employment. The main HSR stations in Europe provide many of the same facilities which major airports currently provide. These include hire car facilities, thus linking rail travel into the local tourism sector. This is sometimes referred to as 'inter-modal' mobility, and overseas HSR stations have developed this capacity: 'Travellers increasingly demand high levels of service and they no longer expect the station to be just a place to pass through'.[58] In summary, such stations play a social and economic role and generate both income and employment in their local areas.

Building HSR can be counter cyclical, and can target disadvantaged groups

Major infrastructure projects can be staged to provide a counter-cyclical economic benefit: ramping up during economic downturns and easing off during boom periods. This issue is pursued further in the next chapter. In addition, such projects also allow the targeting of socially disadvantaged groups, such as the long-term unemployment and the NEETs discussed in Chapter 2. A major HSR construction project, such as Sydney to Melbourne, would clearly be an ideal contender for this kind of enterprise.

In France, the construction of the Tours to Bordeaux line was funded under a contract which provided for 10 percent of those employed to be drawn from the ranks of the long-term unemployed. About 8,500 people were directly employed on the project. It also provided indirect jobs for locals in regional areas along the route, in tasks such as

58. UIC (2017), *Smart Stations in Smart Cities*, Paris: International Union of Railways, URL: https://uic.org/IMG/pdf/smart_stations_in_smart_cities.pdf, p. 69.

construction of fencing, concreting, and service provision (security guards and catering services).[59]

In Australia regional centres like Shepparton, Albury-Wodonga and Wagga Wagga could be expected to benefit from increased employment opportunities and *The Report* recommended that the stations be located no more than 20 kms outside of towns and be linked to local public transport. In the French Tours to Bordeaux example the municipalities of two towns insisted on 38 kms of extra track to connect their towns to the main line. This negated the need for extra stops on the main line.[60]

Californian HSR is expected to create 200,000 jobs over the lifetime of the project

The Californian HSR project is a visionary project to ultimately link San Francisco with Los Angeles. It will involve the construction of 1,300 kms of track and will have created approximately 200,000 jobs over the different phases of the project, for periods ranging from five to fifteen years.[61] Using the methodology outlined earlier in the report, this would probably equate to about an average of about 13,000 jobs per year over the life of the project. Once operational, the first phase of the project is estimated to directly employ around 3,400 people. The project is also expecting considerable indirect employment to flow from the economic activity associated with development and implementation of the system.

In the light of the criticisms levelled at the job projections for Western Sydney Airport (see Chapter 3) it seems reasonable to regard these figures for Californian HSR as inflated. The argument about the need for caution in looking at estimates for indirect jobs for WSA should also be applied to the Californian HSR project. As is well known, the proponents of any project will always highlight the more optimistic aspects of that project. Nevertheless, the amount of construction employment generated by building more than a thousand kilometres of track–along with bridges and tunnels and stations–would be far greater than would arise from building an airport. In addition, the employment which flowed from the fabrication of locomotives and rolling stock, and then the operations of a HSR system, would be considerable.

The Californian Rail Authority has taken steps to ensure that disadvantaged populations benefit from the project by implementing a *Community Benefits Programme*. This includes 30% small business

59. Vince Chadwick, 'Very Fast Train? Here's France's very fast way to do it', *Sydney Morning Herald*, 22 December 2013.

60. Chadwick ibid.

61. For an overview of the project, see http://www.hsr.ca.gov/docs/newsroom/fact%20sheets/Connecting_California.pdf.

participation and also incorporates a 'Disadvantaged Worker' employment scheme. 30% of project hours must be performed by targeted workers from economically disadvantaged regions and 10% of those individuals must meet specific criteria of disadvantage.[62] The Authority has negotiated a comprehensive Construction Careers Programme with the State Building and Construction Trades Council of California. This guarantees access to disadvantaged and unemployed workers, prioritizing those from the state's poorest areas. Those who complete the programme will be qualified for permanent careers as electricians, pipe fitters and sheet metal workers.[63]

In early 2018 the Californian Rail Authority sought proposals for the domestic manufacture of the high-speed trains. The successful tenderer would be required to purchase 100% of the component parts inside the USA. If this plan comes to fruition, many more thousands of jobs would result.[64] Madeline Janis, director of the *Jobs to Move America Project* and the national policy director of the *Los Angeles Alliance for a New Economy*, commented:

> If the project sticks to its core commitments, it could become one of the greatest economic development programs in the state's history, providing both a train system that will benefit Californians for generations and tens of thousands of new, good, U.S. and Californian jobs.[65]

4.4 What is possible?

Australia is one of the few countries in the world without a high-speed rail system

Australia is one of the few countries in the world without a high-speed rail system. China, Japan, Spain, France, Germany, Italy, Turkey, South Korea, USA, Taiwan, Poland, Belgium, Switzerland, The Netherlands, the United Kingdom, Austria and Uzbekistan all have HSR networks. Denmark plans to complete theirs during 2018 and construction of India's first HSR system between Mumbai and Ahmedabad is due to commence in 2018. Morocco's HSR line between Tangier and Morocco will begin services in 2018 and Russia will start construction of its HSR system in 2018.[66]

62. http://www.hsr.ca.gov/docs/newsroom/fact%20sheets/Jobs_Factsheet.pdf.

63. ibid.

64. M. Janis, 'High Speed Rail Creation for California', *Los Angeles Times*, 7 January 2018.

65. ibid.

66. D. Hunkar, 'High Speed Rail Lines in the World by Country', *Top Foreign Stocks by Country*, 21 June 2017, http://topforeignstocks.com/2017/06/21/high-speed-rail-lines-in-the-world-by-country-2017/; 'Talga reaches Bukhara',

High-speed rail is hardly a new idea. Japan was the first country to develop a modern HSR system. Its Tōkaidō Shinkansen, which became known as the 'Bullet Train', began operations in 1964 and today the HSR system covers 2,400 km of tracks. Japan's first bullet train spurred the development of similar technologies around the world, with Italy the first in Europe to open a HSR line in 1978.[67] The original Tōkaidō Shinkansen's top speed of 210 km/h has since been dwarfed by Europe's TGVs, which it sporned, and Japan's more recent Tōhoku Shinkansen, all of which can now reach speeds of 310 km/h.[68] The technology incorporated into these trains is now highly sophisticated and is designed to ensure safety and comfort are maintained at high speeds while also improving energy performance.

FIGURE 17:
SHINKANSEN N700A HSR TRAIN
Japan's most advanced operating Shinkansen

China has seen the most impressive expansion of high-speed rail. The first line was built in 1999 and began commercial operations in 2003. China now has 25,000 ks of HSR track, two-thirds of the world's total, and is still expanding. It expects to reach 38,000 kms by 2025.[69] There

Railway Gazette, 26 August 2016, http://www.railwaygazette.com/news/passenger/single-view/view/talgo-250-reaches-bukhara.html; 'Russia to start construction of first high-speed railway in 2018', *New China*, http://www.xinhuanet.com/english/2017-08/17/c_136531729.htm; M.E. Taylor, 'Morocco Ready to Roll out Africa's first high-speed train', *Face to Face Africa*, 15 March 2018, https://face2faceafrica.com/article/morocco-ready-to-roll-out-africas-first-high-speed-train.

67. See Randy James (2009), 'A Brief History of High Speed Rail', in: *Time* (20 April), URL: http://content.time.com/time/nation/article/0,8599,1892463,00.html and https://www.mobility.siemens.com/mobility/global/en/interurban-mobility/rail-solutions/locomotives/vectron/adaptability/passenger-locomotive/history/pages/history.aspx.

68. The Shinkansen turns 50: *The History and Future of Japan's High Speed Rail*, Nippon.com, https://www.nippon.com/en/features/h00078/.

69. F. Tang, 'Full speed ahead for China's fast rail network with US$112 billion

are several HSR technologies currently operating in China. The 30 km Shanghai airport link train—the Pudong-Shanghai Maglev—is based on German technology and began commercial operations in 2004. It remains the fastest HSR system in service with an operating speed of 430 km/h (though it has reached 500 km/h during testing). The Maglev, or magnetic levitation, system differs from other HSR systems which depend on wheels on tracks. The Maglev has no wheels and floats on a magnetic field between the train and the guideways.[70]

FIGURE 18: MODEL OF PUDONG-SHANGHAI MAGLEV TRAIN
Maglev Museum in Shanghai.

The state-owned China Railway Rolling Stock Corporation, one of the world's largest train manufacturers, has announced that it had begun work on a new, faster version of the Maglev that will be able to reach a top speed of 600 km/h.[71] Japan has already trialled its version of the Maglev, based on a different levitation technology, and has reached a top speed of 603 kmh. It covered 1.8 km in just under 11 seconds. This train is planned to go into operation by 2027.[72]

While Maglev trains are state-of-the-art, it remains the case that most HSR systems throughout the world use wheels-on-track technology. They do, nevertheless, reach impressively high speeds. China's Harmony CRH 380A running between Shangai and Nanjing is the fastest of the wheels-on-track genre and can achieve a top speed of

investment', *South China Morning Post*, 6 April 2018, http://www.scmp.com/news/china/economy/article/2126548/full-speed-ahead-chinas-fast-rail-network-us112-billion.

70. S.E. Boslaugh,' Maglev train', *Encyclodedia Britanica*, https://www.britannica.com/technology/maglev-train.

71. A.J. Hawkins, 'China is building a magnetic levitation train that can go an insane 373 mph', *The Verge*, 1 November, 2016, https://www.theverge.com/2016/11/1/13487382/maglev-train-china-crrc-speed-record.

72. J. McCurry, 'Japan's maglev train breaks world speed record with 600 km/hr test run', *The Guardian*, 21 April, 2015, https://www.theguardian.com/world/2015/apr/21/japans-maglev-train-notches-up-new-world-speed-record-in-test-run.

379 kph. Italy's AGV Italo, running between Rome and Naples, has achieved a speed of 359 kph.[73]

When considering which HSR systems to adopt, Maglev has often been rejected in favour of a wheels-on-tracks system because of its construction costs. This can be misleading. Laurence Blow has argued that many factors need to be taken into account before such an assessment should be be made:

> When planned properly, meaning when it can be matched to the terrain to take advantage of its performance abilities, Maglev construction is no more expensive—and in some cases, significantly less expensive—than conventional steel-wheel-on-steel-rail systems.[74]

Attempts are sometimes made to compare Shanghai's Maglev with conventional HSR systems operating elsewhere. However, such comparisons are not reliable because of the differences in terrain (which influences construction costs). Tunnelling, for example, can be very expensive, while raw material costs can differ between locations. The availability of mass-produced rails or guideways can also influence the final cost.

One disadvantage of the Maglev often cited is its incompatibility with wheels-on-track HSR systems. While they cannot share the same lines, passenger and freight transfer between the two is relatively straighforward. Another objection is the higher cost of building carriages for the Maglev, but because the carriages are larger this cost differential decreases. It is sometimes argued that Maglevs cannot carry freight but this is not so. Shanghai's Trans Rapid Maglevs were designed to accommodate standardised air freight.[75]

Where the gains for Maglev come into the picture are on the operational side. Both maintenance and track replacement costs favour

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73. TWM, 'Top Ten Fastest Trains in the World 2018', https://themysteriousworld.com/10-fastest-trains-in-the-world/.

74. Laurence E. Blow (2010), *Dispelling the Top Ten Mythos of Maglev*, High Speed Rail Conference White Paper, North American Maglev Transport Institute, URL: https://faculty.washington.edu/jbs/itrans/dispelling-myths-blow.pdf.

75. This discussion of Maglev trains draws upon these sources: L.E. Blow, op cit; 'Transrapid', *Wikipedia* https://en.wikipedia.org/wiki/Transrapid; Display, Maglev Museum, Shanghai; 'Managing Maintenance on the Tokaido Shinkansen', *Railway Gazette*, 1 August 2003, http://www.railwaygazette.com/news/single-view/view/managing-maintenance-on-the-tokaido-shinkansen.html; I. Katsutoshi, 'Maintenance Programme on Shinkansen Structures', 1 June 2018, https://www.e-periodica.ch/cntmng?pid=bse-re-003:1989:57/1:57/2::819; Y. Suyama, '50 Years of Tokaido Shinkansen History', *Japan Railway and Transport Review*, No. 64, Oct. 2014, http://www.ejrcf.or.jp/jrtr/jrtr64/pdf/18-27_web.pdf.

the Maglev, since steel wheels moving fast on steel tracks is invariably more costly to maintain. As well as the levitation advantage, Maglev benefits by using non-wearing electronic and electro-magnetic components rather than mechanical components. Furthermore, Maglev has lower energy consumption than its wheels-on-track competitors. At 250 km/h the Shanghai Maglev is calculated to use 92 units of primary energy compared to a wheels-on-track train at 143. In summary, Maglev operational and maintenance costs are dramatically lower than for conventional HSR.

Maglev has advantages for operations and maintenance

Whichever system might be adopted in Australia, it seems clear that HSR is a highly competitive alternative to air travel, as is the case in both Asia and Europe.[76] In China over 4 million people travel on its bullet trains each day, a number which continues to grow strongly.[77] A recent study comparing usage of HSR to flights found that on several routes across Asia and Europe passengers preferred HSR because it was faster, cheaper and more convenient. The International Union of Railways found that for journeys of less than two and a half hours passengers preferred to travel by HSR.[78]

The International Transport Forum concluded that there were two extreme positions taken towards developing high-speed rail: 'paralysis by analysis' (which clearly characterises Australia's HSR history to date) and a 'build it and see' approach. The Forum argued for a middle position, with a step-by-step approach to the rollout. Sequencing would prioritise the routes with the heaviest traffic thus maximising the early benefits.[79] *The Report* took a similar approach. In terms of the 'paralysis problem', it is clear that vast quantities of research have been completed around the world looking at the viability of HSR. Pedro and Silva, who examined this range of studies, concluded 'the competitiveness of modern HSR against other modes is an irrefutable fact'.[80] Perhaps it is time to move on.

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76. 'High speed trains are now taking on plane travel in Asia and Europe', *Traveller*, 15 January 2018, http://www.traveller.com.au/high-speed-trains-are-now-taking-on-plane-travel-in-asia-and-europe-h0gl70.

77. Sun Wenyu, 'Chinese High Speed Rail Accounts for over half of all railway passenger volume', *People's Daily Online*, 10 November 2017, http://en.people.cn/n3/2017/1110/c90000-9291147.html.

78. E. Gray, 'Faster than Flying: the high-speed rail routes taking on the air industry', *Railway Technology*, 19 February 2018

79. OECD/ITF 2014, p. 15.

80. Marisa J. G. Pedro and João de Abreu e Silva (2013), 'A contextual analysis of the impacts of high speed rail on regional development and mobility', in: *Selected*

A high-speed rail system for eastern Australia is well overdue and the only thing standing in its way is political will

The completion date of 2065 for the full Brisbane to Melbourne HSR project proposed in *The Report* can be seen as conservative in light of overseas experience. The technology has been around for a considerable time and other countries continue to make refinements. Their experiences make the implementation of state-of-art technologies a straightforward matter for Australia. The exhaustive 2013 feasibility study (*The Report*) contains an implementation plan, but it lies gathering dust in an office somewhere in Canberra. The travel speeds and journey times which that report considered are today quite conservative and would make the proposed HSR system even more competitive in 2018 than it was back in 2013.

A second Sydney airport would delay implementing HSR

If a second Sydney airport is built it will only delay the implementation of HSR further and could make the acquisition of the necessary rail corridor unaffordable. *The Report's* assumptions regarding the feasibility of a HSR project for eastern Australia were based on the absence of a second Sydney airport. The choices for the Australian government are clear: a second Sydney airport or high-speed rail. If it chooses the former, the chances of eastern Australia ever having a HSR system are very slim indeed.

The Australian Railway Association has proposed a national plan for railways, arguing:

> The objective of a National Rail Industry Plan for the Benefit of Australia is to obtain maximum economic growth, efficiency, productivity and social benefits from the substantial investments currently being made. This will include in the areas of growth and employment; individual and company capabilities; productivity and innovation; integration of transport modes; local and export market opportunities; housing options and to provide the rail industry with greater certainty into the future.[81]

HSR requires a serious commitment to long-term public investment

While all these objectives are laudable, they are meant to be met 'from the substantial investments currently being made'. In reality, the 'substantial investments' are far from substantial and this range of objectives will not be met at current levels

Proceedings, 15–18 July, 13th World Conference on Transport Research, URL: http://www.wctrs-society.com/wp-content/uploads/abstracts/rio/selected/3367.pdf, p. 10.

81. ARA (2017), *A National Rail Industry Plan for the Benefit of Australia*, September, Kingston ACT: Australian Railway Association, URL: https://ara.net.au/sites/default/files/National%20Rail%20Industry%20Plan_full%20report.pdf, p. 7.

of expenditure. HSR requires a serious commitment to long-term public investment, a commitment sadly lacking over the last half-decade. Instead governments have consistently pulled away when they are confronted with the reality of a definitive financial commitment.

It is safe to say that a high-speed rail system for eastern Australia is well overdue. To quote Paddy Manning 'fast-rail networks are spreading out on every continent bar two: ours, and Antarctica'.[82] The only thing standing in its way is political will.

82. Manning 2017.

5 Employment proposals for Western Sydney

5.1 Overview

The benefits of economic development need to be retained within the system

The employment strategy proposed in this report consists of a number of self-reinforcing elements. This means that the financing, production, employment, training and servicing elements of a project should all be carefully integrated. Instead of ad hoc arrangements, all these elements need to reinforce the same underlying principles of decentralised local control and community prosperity. The benefits of economic development need to be retained within the system, not extracted by outsiders, particularly rent-seekers.[1] At the same time, the environmental costs of production must be fully incorporated into the production process, so that environmental degradation is not just ignored as an 'externality'. The concept of the circular economy, shown in Figure 19, emphasises this principle. (This concept also features in the later discussion of innovative recycling plants in Western Sydney).[2]

The importance of local decision-making and control

Greater local control over economic processes is integral to the success of a circular economy. When outsiders make decisions about local regions—such as imposing waste dumps or environmentally destructive projects—they are not forced to confront these externalities. On the other hand, when local communities make the key decisions about the economic development of their region the opportunity to follow the principles of a circular economy are greater. In the same way that employment creation needs to start with the local employment needs—as discussed earlier in this report—so too does the manufacturing and financing of projects need to be based on local control as much as possible. This chapter outlines the ways in which the employment strategy can be implemented in ways which are consistent with local decision-making and control.

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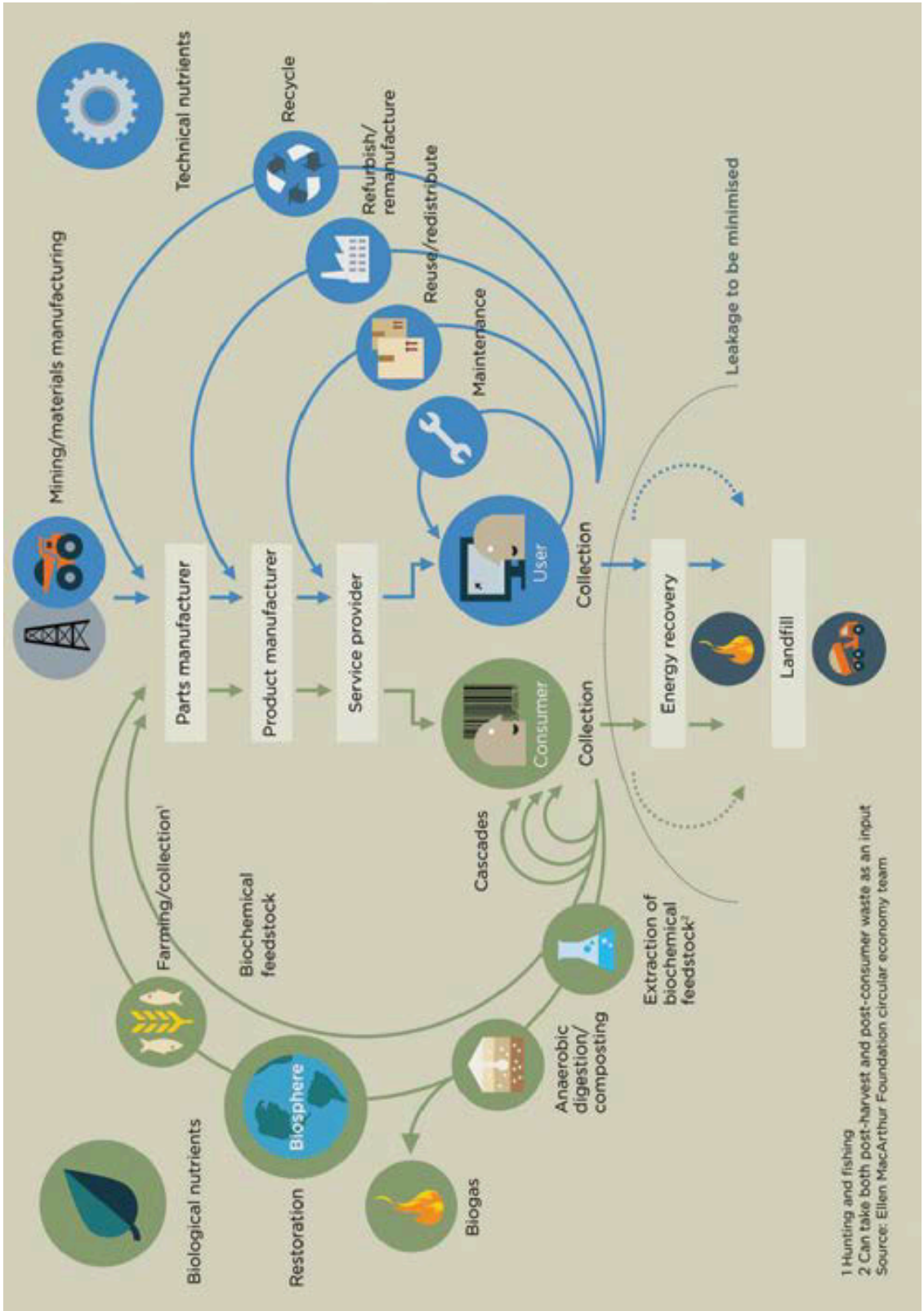
1. The technical meaning of 'rent seekers' are those persons engaged in 'unproductive' economic activity, a concept which has varied historically. The early economists, for example, regarded only agriculture as productive. In common usuage, the term refers to the 'free loaders' who insert themselves into economic processes as 'middle men' and extract huge fees in various ways.

2. The circular economy is based on the notion that the 'waste, by-product and, at the end of their useful lives, the products themselves, have a contribution to make in subsequent cycles of production.' Renu Agarwal et al. (2015), 'Authentic productivity', in: *Public Administration Today* No. 43 (July), pp. 10–13, URL: https://search.informit.com.au/documentSummary;dn=340093121820397;res=IELBUS, p. 13 Circular economy diagram taken from this article.

FIGURE 19:
THE CIRCULAR ECONOMY
An industrial system that is restorative by design
Source: Diagram 1.



Avoiding fashionable funding approaches which have negative outcomes

What does this mean in practice? When it comes to financing, for example, a number of currently fashionable funding approaches need to be avoided. These are mostly forms of rent-seeking; they are are unnecessary, inefficient and lead to negative outcomes. For example, 'private-public partnerships'—a form of corporate welfare—cedes control to unaccountable outside bodies. 'Asset recycling'—a euphemism for privatisation—provides no net gain for the community. 'Value capture' simply spreads asset inflation across larger tracts of countryside.

Using local supply chains where ever possible

When it comes to employment and training, the goal should be to retain the benefits within the region. Supply chains—for example for the components of the high-speed rail rolling stock—should involve local firms as much as possible, while the apprentices and trainees recruited for the project should come from the local community. Finally, the rebuilding of a high quality TAFE system should be geared to the needs of local industries and communities.

Development around an employment arc

A key component of decentralised and local control is development around an *employment arc*, a corridor stretching from Liverpool/Campbelltown across Western Sydney to The Hills and Windsor/Richmond, taking in areas of St Marys, Blacktown and Penrith. Unlike the orbital rail proposal which is part of the Three Cities / Western Sydney Airport proposal, the scheme for orbital rail would see more than a single rail corridor linking the south west with the north west. This single corridor is the vision for 2056 being promoted by the NSW Government (as shown in Figure 20). By way of contrast, this report proposes at least two concentric corridors, linking not just Campbelltown with Penrith and Richmond, but also Liverpool with Blacktown and Windsor. Such a scheme would include numerous cross-linking sections—similar to a metro system—and a partial example of this is shown in Figure 21. An orbital rail pattern such as this could foster employment zones around these 'nodes', as well as providing better transport integration across the region. It could be designed to leave intact large tracts of open space, tracts which are currently ear-marked for large new housing estates.

The corridors envisaged here will make use of this open space to improve the environment of Western Sydney: this approach involves a mix of parkland, with recreational and transport bicycle pathways, as well as training institutions and corporate offices located in spacious campus-style settings. Small-scale commercial development, including manufacturing facilities, would also be consistent with this approach.

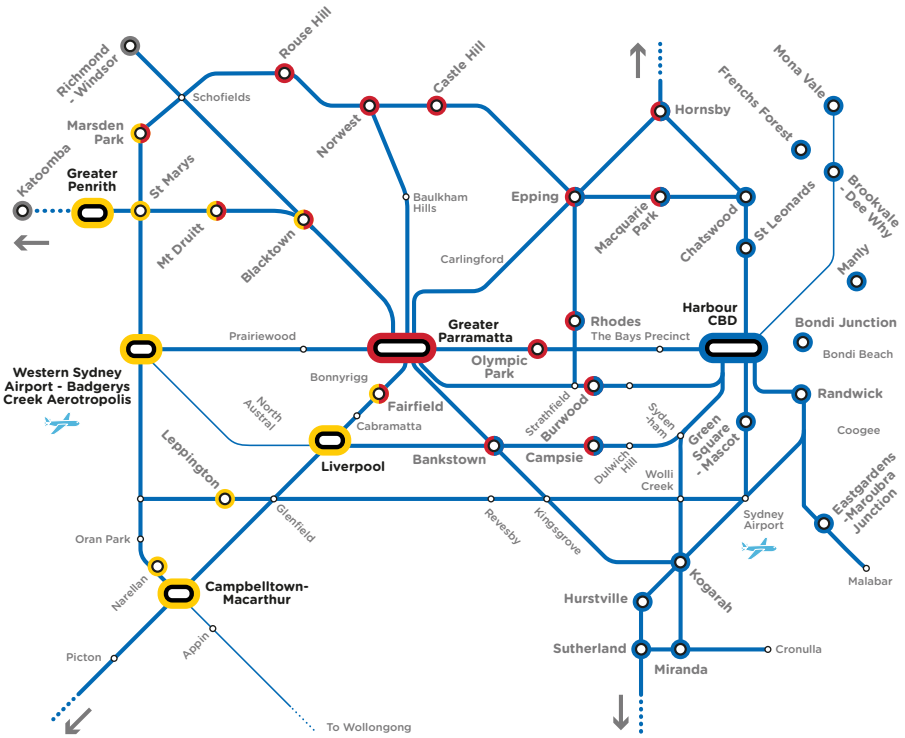


FIGURE 20:
SYDNEY'S RAIL NETWORK IN 2056.
Source: From the NSW Government's proposal in Transport for NSW (2018), *Future Transport Strategy 2056*, Sydney: NSW Government, p. 109.

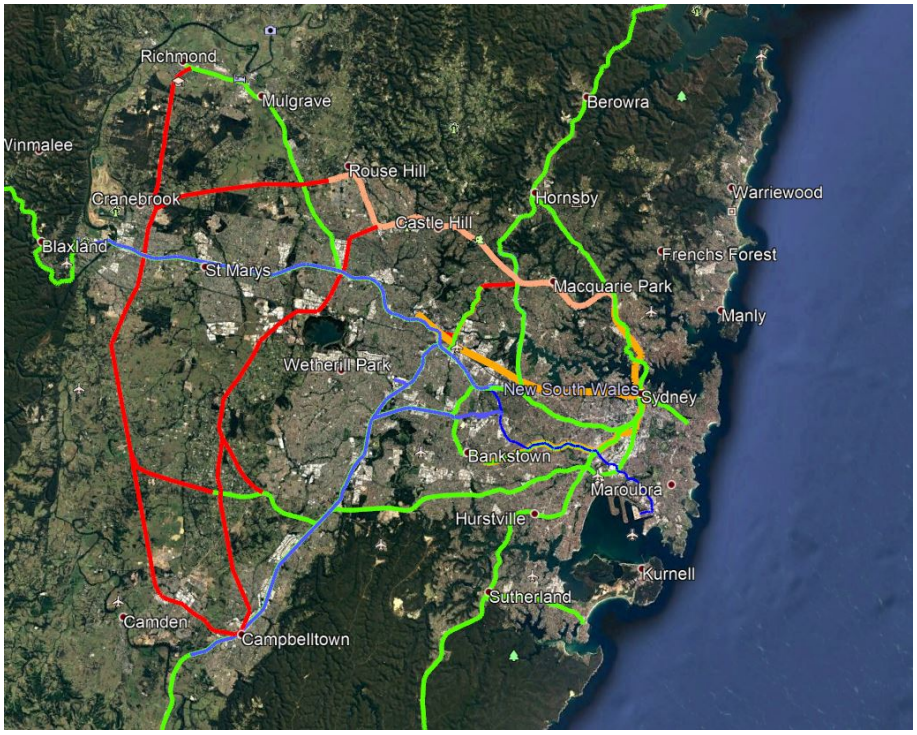


FIGURE 21:
POSSIBLE ROUTES FOR ORBITAL RAIL.
Possible orbital rail route shown in red; current passenger route shown in green; orange is forthcoming metro; blue is freight.

The core project for employment in Western Sydney which this report proposes is a publicly-funded high-speed rail (HSR) system linking Sydney and Melbourne (with the extension to Brisbane over time). The following elements make up this proposal:

- the project should be managed by a public high-speed rail corporation whose corporate headquarters is located within the *employment arc*. This corporation should undertake the full range of activities needed to design, construct and coordinate the project;
- expertise and technology transfer could be obtained through a joint-venture with a foreign company experienced in HSR;
- the full manufacture of the rolling stock—both locomotives and carriages—should take place in Australia, with production split between New South Wales and Victoria;
- the manufacturing sites in NSW should be shared between Newcastle, Wollongong and Sydney, with the latter based in Western Sydney;
- wherever feasible, components needed for the manufacturing should be sourced from small and medium enterprises (SMEs) located within western Sydney;
- regional development along the route of the HSR, with state-based Commissions established by the NSW and Victorian governments to oversee this process;
- continuous 'downstream' benefits from servicing the HSR (maintenance and upgrading) and from meeting the needs of its passengers (station hospitality and on-board services).

High-speed rail as the core employment generator

The additional elements of the employment strategy include the expansion of community-based banking, the development of innovative recycling plants in Western Sydney, and the rebuilding of a high-quality public technical and further education system, namely, TAFE. These proposals are discussed in detail in the remainder of this Chapter. In addition, the prospects for creating employment in Western Sydney by rolling-out programs of 'environmental repair' is raised. There are no details offered in this report, but such projects might include:

- the rehabilitation of the Nepean-Hawkesbury river banks and catchments;
- the replanting of large tracts of open space to restore tree cover to Western Sydney, thereby assisting with air quality and temperature control;
- the extension of parklands across Western Sydney, both as recreational spaces and as cycle commuting corridors, with an increase in sporting facilities to match population needs.

5.2 The funding model

Understanding money

Where is the money coming from? This is the most common question raised when any major public project is proposed. As Chapter 4 showed, various approaches to high-speed rail in Australia have grappled with issues of funding, and schemes such as 'value capture' have sometimes been advanced as a possible funding model. 'Public-private partnerships', as well as other forms of rentier funding, have also been favoured by state governments.[3] The Chapter on HSR concluded by arguing that the Federal government needs to commit resolutely to fully funding the rollout of a 21st century HSR system on the East Coast of Australia. In this section, I outline how this approach makes good economic sense.

After three decades in which many governments around the world have been retreating from commitments to major infrastructure investment, the tide has begun to turn. The Global Financial Crisis (GFC), and the long economic downturn which has ensued, have left many governments questioning much of the mainstream macro-economic wisdom, a wisdom which totally failed to foresee the GFC.[4] A decade of quantitative easing (QE) in Europe, Japan and the USA has demonstrated that literally trillions of dollars can be spent by central banks without rampant inflation breaking out, a result totally at odds

3. Rentier capitalism refers to financiers whose activities are neither innovative nor economically productive but which rely on various forms of fee gouging for their profitability. In Ricardo's day this criticism was directed at the landlords; today, numerous corporations in the finance sector fit this description, with well-known airport and toll-road operators coming readily to mind.

4. This had led some central bank officials, IMF officials, and private sector economists to question the usefulness of the currently dominant macro-economic models, such as Dynamic Stochastic General Equilibrium (DSGE) models. See, for example, Michal Andrle et al. (2017), *On the sources of business cycles: implications for DSGE models*, Working Paper Series No. 2058, May, Frankfurt: European Central Bank and Willem Buiter (2009), *The unfortunate useless of most 'state of the art' academic monetary economics*, MPRA Paper No. 58407, Munich: Munich Personal RePEc Archive, URL: https://mpra.ub.uni-muenchen.de/58407/. Some economists, such as Olivier Blanchard (formerly research director at the IMF), recognise their limitations, but cling to the hope that they can be rehabilitated (Olivier Blanchard (2016), *Do DSGE Models Have a Future?*, Policy Brief 16-11, Washington: Peterson Institute for International Economics). Post-Keynesian economists, such as Steve Keen (who predicted the GFC), have thoroughly rejected the neo-classical framework embedded in DSGE models and begun developing models based on Hyman Minsky's insights into economic instability. See, for example, Steve Keen (2017), *Can we avoid another financial crisis?*, Cambridge: Polity Press and Hyman P. Minsky (2008b), *Stabilizing An Unstable Economy*, New York: McGraw-Hill [1986].

with traditional monetarist views about the money supply. This suggests that funding major projects like HSR are not problematic undertakings for a Federal government in Australia.[5]

The significance of fiat currencies and floating exchange rates

To understand how a Federal government can fund a major infrastructure project requires 'unlearning' a number of economic fallacies and confronting a number of popular misconceptions surrounding money, banking and government finances. Since the demise in 1971 of the Bretton-Woods system of fixed exchange rates (in which gold underpinned the value of the US dollar) most governments have operated with 'fiat currencies'.[6] These are sovereign currencies whose existence relies solely on government decree, backed up by the obligation to pay taxes in that currency. Many countries have also adopted floating exchange rates (Australia did so in 1983) which frees their central banks from the need to 'defend' the value of the currency against the attacks of speculators. Consequently, currently fashionable fears about government spending—such as governments going 'broke' or leaving a debt burden to our grandchildren—ignore the currency sovereignty of govenments which issue their own currencies. Popular views that governments should run fiscal surpluses are completely ill-founded in an era with fiat currencies and floating exchange rates.[7] Similarly, a number of textbook economic theories—such as the 'loanable funds theory' and the 'money multiplier'—are now largely discredited, with the efforts of post-Keynesian economists assisting greatly in this task.[8]

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5. The monetarist view that Governments could control the money supply—and that Central Banks should target this—was discredited in the early 1980s and soon abandoned in both the USA and the UK. In 1981 the UK Treasury Committee on Monetary Policy concluded that there was no proven connection between the money supply and inflation, or with the level of government spending. The Committee confirmed what post-Keynesians have long argued: that bank credit was the driving force for the money supply. Cited in John Medhurst (2014), *That Option No Longer Exists: Britain 1974–76*, Winchester: Zero Books, p. 3.

6. For useful analyses of this breakdown see Eric Helleiner (1996), *States and the Reemergence of Global Finance: From Bretton Woods to the 1990s*, Ithaca: Cornell University Press and Yanis Varoufakis (2011), *The Global Minotaur: America, Europe and the Future of the Global Economy*, London: Zed Books.

7. The Australian Treasury's periodic *Intergenerational Reports* remain locked into this obsolete mindset.

8. This discussion of money, banking and government finances draws heavily on the post-Keynesian literature. See, for example, Richard A. Werner (2005), *New Paradigm in Macroeconomics: Solving the Riddle of Japanese Macroeconomic Performance*, London: Palgrave Macmilllan; Richard A. Werner (2010), *Towards Stable and Competitive Banking in the UK: Evidence for the ICB*, Policy Discussion Paper 3/1-10, University of Southhampton: Centre for Banking, Finance and Sustainable Development; Steve Keen (2011), *Debunking Economics—Revised and Expanded Edition: The Naked Emperor Dethroned?*, London: Zed Books;

Banks are not intermediaries; rather loans create deposits

The misleading idea that banks are 'intermediaries', which simply recycle the community's savings by loaning out deposits, has been increasingly replaced by the more accurate theory that banks are *money creators*, that 'loans create deposits'. In other words, when a borrower takes out a loan, they sign a 'promissory note' to pay the money back. This note becomes an asset for the bank. At the same time, the bank places the money into the borrower's account—creating a deposit—which is classified as a liability for the bank. In bookkeeping terms, the asset matches the liability, and the bank has actually *created* money.

Both the Bank of England and the Bundesbank, for example, now openly acknowledge that this account of modern banking is a more accurate way of understanding the monetary system than the older 'loanable funds theory'. As the Bank of England puts it: 'When banks make loans they create additional deposits for those that have borrowed the money'.[9]

Local and state governments face financial constraints: Federal government do not

What is the situation with regard to government finances? Local and state governments do not issue their own currencies and do indeed face financial constraints: their revenues must cover their expenditure, otherwise they must borrow money or sell assets. This is one reason why they embrace public-private partnerships and privatise their public assets. When state Premiers invoke the household analogy of 'living within their means', their excuses have some degree of plausibility.[10] However, the Federal government, as the

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Josh Ryan-Collins et al. (2011), *Where Does Money Come From? A Guide to the UK Monetary and Banking System*, with a forew. by Charles A.E. Goodhart, London: New Economics Foundation; L. Randall Wray (1998), *Understanding Modern Money: The Key to Full Employment and Price Stability*, Northampton: Edward Elgar.

9. Stuart Berry et al. (2007), *Interpreting movements in broad money*, Quarterly Bulletin Q3, London: Bank of England, URL: https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2007/interpreting-movements-in-broad-money.pdf?la=en&hash=580D640862106F144F43F7F9D295DC57341F8BF3, p. 377. Writing in the mid 1950s Joseph Schumpeter showed that the recognition that 'banks "create credit", that is, that they create deposits in their act of lending' has been well understood in the past, but this insight has been regularly suppressed by mainstream economists. As he observed: 'It proved extraordinarily difficult for economists to recognise that bank loans and bank investments do create deposits.' Joseph Schumpeter (1994), *History of Economic Analysis*, Edited from Manuscript by Elizabeth Boody Schumpeter, New York: Oxford University Press, p. 1114. See also Josh Ryan-Collins et al. (2011), *Where Does Money Come From? A Guide to the UK Monetary and Banking System*, with a forew. by Charles A.E. Goodhart, London: New Economics Foundation.

10. This does not mean that turning to private financing makes any sense. State governments can always borrow funds at lower interest rates than their private 'partners'. Often the motivation for public private partnerships is political, rather

issuer of the currency, faces no financial constraints. Any analogies with household finances are false: the government owns a bank—the central bank (the Reserve Bank of Australia)—and can never become insolvent.

Federal Governments face real resource constraints

Of course, Federal Governments face constraints when it comes to *real resources*, such as skilled labour, materials and technology. This is one reason why investment in skills and infrastructure is so important: it reduces such constraints in the future. Such constraints mean that excessive spending by any sector—whether government or private—can be inflationary. There are, moreover, a series of political constraints, encapsulated in various regulations and conventions, setting out the mechanics of how national governments should spend money. For example, it has become the convention that government supply bills authorise central banks to issue government bonds to cover the difference between government revenue and government expenditure. While central banks have generally been prohibited from purchasing government bonds directly, they regularly do so in the secondary bond markets (the avenue which quantitative easing, QE, has mostly followed).

The arbitrary nature of government conventions around financing expenditure surface when governments decide to fund certain items 'off budget'. For example, the Federal Government uses an accounting device called 'financial asset investment' to 'loan' money to a government-owned corporation to fund some infrastructure project which meets with their approval. In 2018, the following projects were being funded within this framework: the National Broadband Network; the inland rail line; the Western Sydney Airport Corporation; the expansion of the port of Sydney; the Sunshine airport redevelopment; and, potentially, the Snowy 2.0 scheme.

Where does this argument lead? In theory, the Commonwealth Treasury can fund any activities the government deems worthwhile. There are no printing presses in the basement; there are simply keystrokes entered into the Treasury accounts held at the Reserve Bank. Nor does this process require the issuing of government debt to cover the spending. This convention of issuing government bonds to cover any 'shortfall' between revenue and expenditure is an arbitrary one and simply reflects the 'government is like a household' metaphor transcribed into financial practice.

A useful distinction, dating back to the 1940s, is between 'sound finance' and 'functional finance'. As Abba Lerner eloquently expressed it:

than economic. The main point concerning state government finances is that unless Federal government funds flow to the states, they are indeed revenue constrained.

> The central idea is that government fiscal policy, its spending and taxing, its borrowing and repayment of loans, its issue of new money and its withdrawal of money, shall all be undertaken with an eye only to the *results* of these actions on the economy and not to any established traditional doctrine about what is sound or unsound. This principle of judging only by *effects* has been applied in many other fields of human activity, where it is known as the method of science as opposed to scholasticism. The principle of judging fiscal measures by the way they work or function in the economy we may call *Functional Finance*.[11]

In other words, where sound finance focuses on a narrow 'balance the books at all costs' perspective ('budget repair'), functional finance provides a more strategic vision of how modern monetary economies actually work. Even when they don't openly admit it, sensible governments invariably attune their fiscal policy to the level of economic activity. This is partly due to the fact that few governments wish to preside over recessions, a sure recipe for losing office. As functional finance shows, sensible government policies around taxation and spending should be geared towards counter-cyclical interventions. When economic growth stalls, government spending may need to ramp up; when economic growth spurts, it may need to be eased off. There are no hard and fast rules because a large number of factors need to be taken into account: the rate of GDP growth, the level of unemployment and underemployment, wages growth, consumer inflation and asset inflation, levels of capital investment, the current account, levels of private debt and so forth.

Focussing on the *effects* of fiscal policy means aiming for an economy which eliminates 'economic insecurity' (as Lerner put it). By way of contrast, principles of sound finance within the Eurozone have condemned the economies of Southern Europe to a decade of austerity, leading to unemployment rates well over 20% and the mass emigration of their educated youth.[12]

Principles of functional finance inform infrastructure planning

Principles of functional finance should form the underlying logic behind funding major infrastructure projects. Without this perspective, government projects face the risk of over-heating the economy, driving up the costs of both materials and labour. On the other hand, withdrawing

11. Abba Lerner (1943), 'Functional Finance and the Federal Debt', in: *Social Research* Vol. 10. No. 1, pp. 38–51, p. 39.

12. For the absurdity of European austerity in the wake of the GFC see Yanis Varoufakis (2016), *And the weak suffer what they must: Europe, austerity and the threat to global stability*, London: The Bodley Head Ltd; Yanis Varoufakis (2017), *Adults in the room: my battle with Europe's deep establishment*, London: The Bodley Head Ltd.

spending too soon—as American President Roosevelt did during the mid 1930s and as Australian Treasurer Wayne Swan did during 2011—runs the risk of plunging the economy back into recession or near-recession.[13]

Whether the Federal government follows the convention of issuing debt, or engages in forms of direct spending, sometimes referred to as overt monetary funding (OMF), is not without consequences. The key difference is that OMF results in the creation of new money, while issuing debt simply recycles existing money. Why does this matter? Primarily, because it is the creation of new money which fosters strong economic growth. To some extent, selling government bonds does assist in increasing the circulation of money, drawing it out of the financial sector (where it is often tied up in assets) and feeding it into current expenditure. This can promote economic growth, but it is the creation of new money which overwhelmingly spurs economic activity.

Federal governments, however, are not the only source of new money. Commercial banks, through issuing loans, also create new money. Indeed, their activities create more than 90% of all new money in the economy. I look in some detail below at where all this money goes, and draw some important conclusions about the problems of credit creation by commercial banks. The focus of the Royal Commission into Financial Services has been on customers being ripped off, or other shonky practices by bankers. While these represent scandalous business practices, the real scandal within banking in Australia is the massive asset inflation which their licence to create money has produced, and the starving of investment funds for productive economic activity. In the following section I explain this in more detail. This prepares the ground for outlining the proposal for how employment creation can be funded by the Federal government as part of a counter-cyclical economic strategy.

13. For the New Deal experience see Nancy Ellen Rose (1994), *Put to work: relief programs in the Great Depression*, New York: Monthly Review Press. Some economists like to draw a distinction between government funding of infrastructure and government recurrent spending, arguing that revenue must always cover the latter. They invoke the 'living within one's means' phrase to cover this, but concede that infrastructure spending enhances future productivity and is therefore justified. The *Sydney Morning Herald's* economics editor, Ross Gittins, regularly draws this distinction. While there is certain merit to the idea that infrastructure is an 'investment' in the future, the distinction itself is artificial and has no bearing on the financial capacity of the Federal government, which is unlimited in monetary terms (though clearly limited in terms of commanding real resources).

Commercial bank operations

The vast majority of the money supply comes from credit creation by commercial banks

What funds most economic activity, and the jobs which flow from that? In a modern economy the vast majority of the money supply comes from credit creation by commercial banks. As explained earlier, banks are *not* financial intermediaries who take deposits from customers which they then lend out to other customers. Rather, they create money by making loans to credit-worthy customers. In so doing, they create a bank asset (the loan) and a bank liability (the money deposited in the borrower's account). The bank then covers these liabilities by sourcing reserves in the interbank market or from the central bank.[14] Ultimately, commercial banks are responsible for the vast majority of the money supply in a modern economy, and decisions about how they allocate that credit are fundamental to the type of economic growth which unfolds.

There are three main avenues down which the creation of credit may go:

1. activities which contribute to GDP, that is, the production of new goods and services;
2. personal consumption; and
3. financial transactions involving changes in the ownership of assets.

Only the first allocation consistently leads to long-term economic growth and sustainable employment growth.[15] The second allocation can fuel consumer price inflation while the third allocation can fuel asset inflation, particularly property bubbles. The latter invariably leads to economic crises, which if left unchecked, can lead to recession and economic stagnation. Figure 22 shows the Australian situation since the late 1970s. Asset bubbles have arisen whenever credit creation has run

14. There is nothing mysterious about money creation. The bank simply relies on double-entry bookkeeping when it enters the 'loan' into its balance sheet. In effect, the bank purchases a promissory note from the borrower (the loan contract) and in return credits a borrower's account as if they had 'deposited' the money. It enters a liability into its balance sheet (the deposit) which is matched by an asset (the promissory note). There is no transfer of any pre-existing money, but the net creation of new money. By contrast, buying bonds or raising money in capital markets does not create new money, but only transfers pre-existing money. Of course, the interbank payments system requires that banks cover their liabilities, but the wholesale credit market provides the reserves banks require. Banks can also acquire reserves from the Central Bank. The key point is that as long as there is a favourable difference between the interest which banks earn from their loans and the interest they must pay for reserves to cover those liabilities (the 'interest rate spread'), then banks will continue to make loans and thereby create credit.

15. This analysis draws strongly on the work of Richard Werner. See, for example, Werner 2005.

ahead of growth in GDP. The large gaps between the blue and orange lines illustrate periods when large amounts of credit were allocated to this third avenue, that is financial transactions involving changes in the ownership of assets, primarily housing.

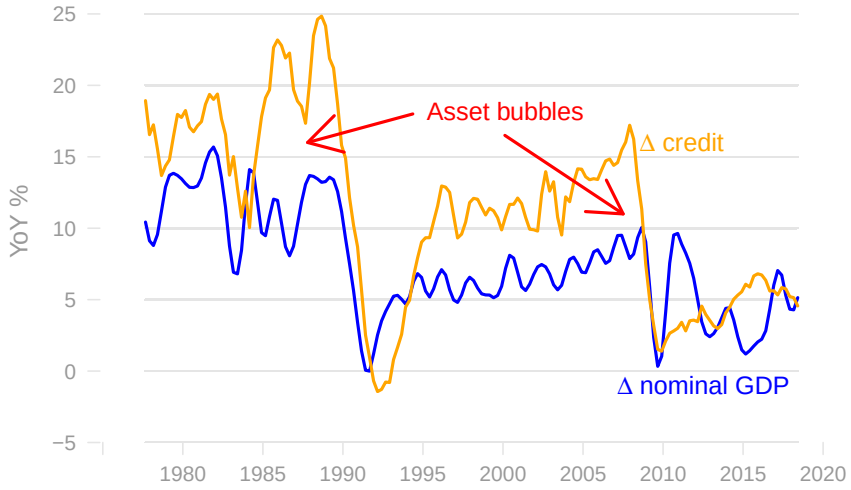

FIGURE 22:
CREDIT AND ECONOMIC GROWTH, AUSTRALIA, 1977 to 2017
Credit growth and nominal GDP growth (year on year percentage growth)
Source:ABS National Accounts and RBA Credit statistics

While at first glance investment in housing might appear a 'productive' activity, the vast majority of housing debt is spent on exchanging ownership of existing housing stock. As Figure 23 shows, the ratio of spending by owner-occupiers on established dwellings to new dwellings was about 2 to 1 during the 1970s. However, with the 'financialisation' of the economy during the 1980s, this ratio steadily grew, reaching over 7 to 1 in the early 2000s.

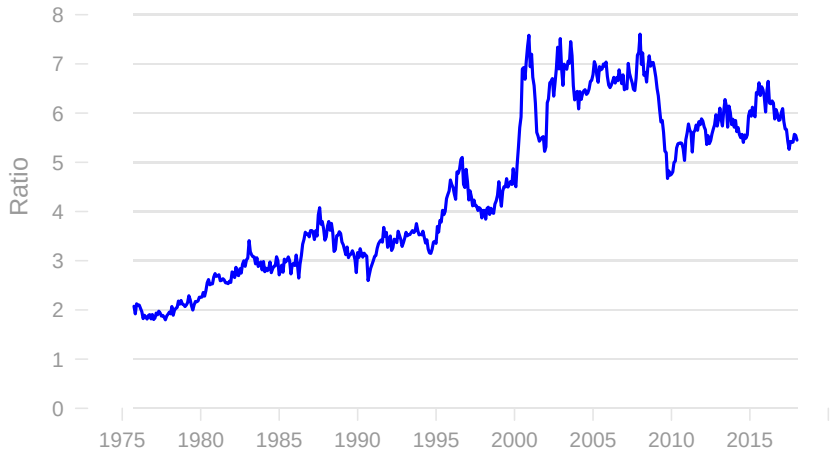

FIGURE 23:
RATIO OF SPENDING ON ESTABLISHED DWELLINGS VERSUS NEW DWELLINGS, AUSTRALIA, 1975 to 2018
Ratio of seasonally adjusted spending by value of dwellings
Source:ABS *Housing Finance Australia*, Cat. No. 5609.0, Housing Finance Commitments (Owner Occupied)

The shift in allocation over this period from productive

investment–namely investment in business activities–and its direction into asset inflation–namely dwellings–is evident in Figure 24. This decisive fall in business investment, and the consequent rise in dwelling investment, helps explain both the economic stagnation of the last decade and the housing affordability crisis in Australia.

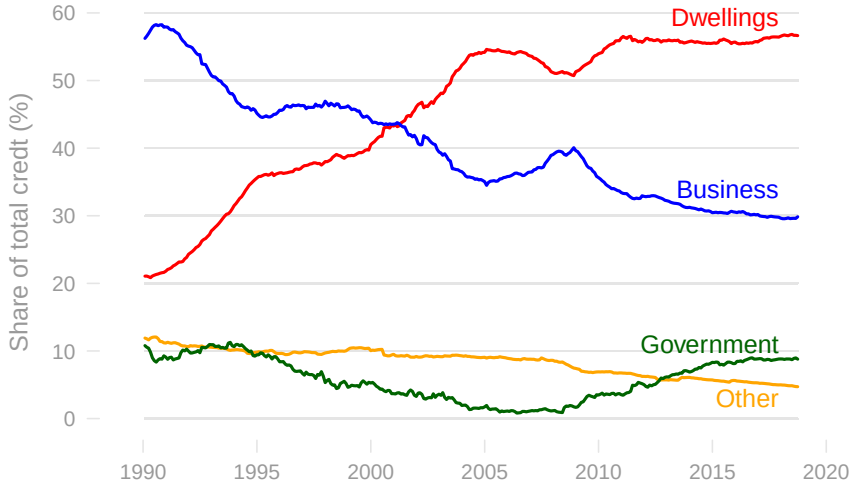

FIGURE 24:
AVENUES FOR CREDIT ALLOCATION, AUSTRALIA, 1990 to 2017
Shares of total credit held by different destinations
Source: RBA Credit statistics

The business share of credit for investment has been falling over time

Not only has the business share of credit creation been falling over time, but the volatility of access to credit is greater for businesses than for those borrowing for dwellings (both owners and investors). Australian banking is dominated by the 'big four' (Commonwealth, Westpac, NAB and ANZ). In 2017, 80% of credit creation was allocated by these big four banks, an increase of 10 percentage points since 2002.[16] Their preference for extending credit for housing over the long run was evident in Figure 24 and this bias is also notable in Figure 25, which shows patterns in credit growth across the business cycle.

16. The take-over of St George Bank by Westpac during 2010 contributed about half of this concentration.

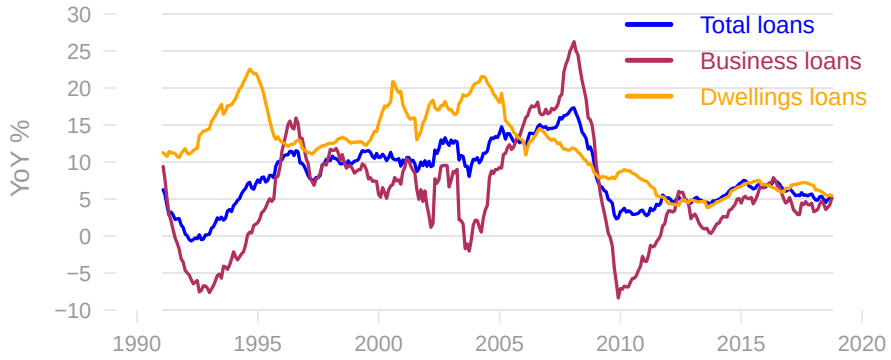

FIGURE 25:
GROWTH IN BANK LOANS, AUSTRALIA, 1991 TO 2017
Year on year percentage changes
Source: RBA Credit statistics

The volatility of access to credit is also greater for businesses

Figure 25 depicts the growth in bank loans over the last 26 years and distinguishes between loans to businesses and loans to purchase dwellings. Throughout the 1990s, as the Australian economy tried to rebuild in the wake of the recession, the growth in bank lending to housing far outpaced lending to businesses. Only during the minerals boom of the early 2000s did credit growth to business outpace housing, but this massively collapsed in the wake of the GFC. Businesses then faced a severe 'credit crunch' for several years. This volatility in the availability of credit for businesses contributes to Australia's current economic malaise and undermines long-term stable economic growth.[17]

Small and medium businesses rely heavily on bank credit for start-ups and for expansion

The situation is particularly acute for small and medium businesses (SMEs), which rely heavily on bank credit for start-ups and for expansion. Larger businesses have access to retained earnings, and to capital markets, and to some extent they are sheltered from this volatility. Indeed, the interactions of large business with the banking system actually contributes to the problems of non-productive investment discussed earlier. As the Reserve Bank found, large companies use internal funds for investment, but they draw on external funds, such as bank credit, to finance mergers and acquisitions.[18] Such activities create new money for *changes in ownership*, not for the production of new output. By contrast, those SMEs which are actually engaged in the production of new output can face difficulties in funding their expansion. According

17. The volatility of business loans in evident in both the amplitude and the frequency of cycles in Figure 25.

18. Ellis Connolly and Ben Jackman (2017), *The Availability of Business Finance*, Quarterly Bulletin December, Sydney: Reserve Bank of Australia, p. 57.

to ABS surveys they are twice as likely as large business to identify a lack of access to additional funds as a barrier for their business.[19]

> `The bigger issue is a lack of access to the loans needed for businesses to survive and grow. Already it is too hard.' (Peter Strong, chief executive of the Council of Small Business of Australia)

The creation of credit is fundamental to economic activity and stable economic growth. But the current financial system in Australia undermines both stability and growth. This raises the question: how does society regain control over the creation and allocation of credit? Historically, a number of methods have been used. Much of the post-war development of Japan, Korea and Taiwan was based on various forms of 'credit guidance' whereby the central bank encouraged credit creation for productive purposes and repressed credit for speculative activities.[20] China also adopted this approach from the 1980s onwards. All of these economies achieved long periods of strong and sustained economic growth, until they began to abandon them under pressure to adopt the Washington Consensus of 'free market' economics and a greater role for share markets in their economies.[21]

The role of community-based banking in economic growth

Another approach to credit allocation, which is consistent with a philosophy of local control, is government support for community-based banking. In contrast to Australia (and the UK), where a handful of large banks control most of the credit creation, in countries like Germany the majority of credit is created by small community-based banks. As Figure 26 shows, 70% of the banking sector is locally-owned and controlled by small banks.[22]

19. Connolly and Jackman 2017, p. 60. As Peter Strong, chief executive of the Council of Small Business of Australia, pointed out when discussing the Financial Services Royal Commission: 'The bigger issue is a lack of access to the loans needed for businesses to survive and grow. Already it is too hard …', Clara Waters and Clancy Yeates, 'Concerns investigation could backfire for small business', *Sydney Morning Herald*, 28 May 2018, p. 23.

20. In Japan this was known as 'window guidance' and despite official denials, and considerable secrecy, there is strong empirical evidence that it continued throughout the 1980s. See Werner 2005, pp. 267–294.

21. This process of unwinding the successful Japanese post-war model is documented in Richard Werner's book (and video), *Princes of the Yen*.

22. Diagram from Richard A. Werner (2010), *Towards Stable and Competitive Banking in the UK: Evidence for the ICB*, Policy Discussion Paper 3/1-10, University of Southhampton: Centre for Banking, Finance and Sustainable Development

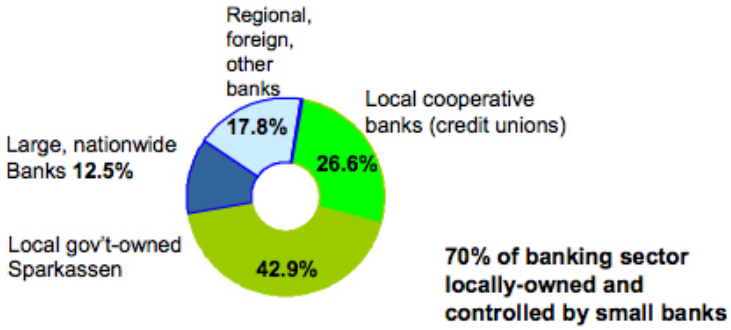

FIGURE 26:
BANKING IN GERMANY
Source: Werner (2010) Figure 4.

As Richard Werner observes, this has a number of advantages, including:

- local decision-making favours small firms;
- local decision-making creates and allocates new money locally;
- local banks tend to engage in sustainable banking.[23]

In discussing the first point, Werner notes:

> Banking relies on credit risk analysis in a world of imperfect information. Judgements need to be made about the creditworthiness of potential borrowers. The more information can be gathered, the better the decision is likely to be ... in Germany local bank managers can get to know local borrowers over years, and are thus able to make better decisions. There is a case to be made that by knowing the local bank managers since one's early childhood, there is a greater incentive for borrowers to behave responsibly and avoid default: social pressures may act as an incentive device that helps mitigate the general banking problems of moral hazard and adverse selection.[24]

Credit creation by local community-based banks is more likely to result in productive investment rather than speculation

In other words, credit creation by local community-based banks is more likely to result in productive investment in local economic activity, rather than the large-scale speculative investments which characterise the activities of the major banks. In particular, the availability of credit for SMEs is greater

23. Werner 2010, pp. 16–17.

24. ibid., p. 16. Steve Keen has argued, however, that small business loans remain a high risk proposition for banks, and he suggests that the banking sector needs the capacity to take on equity in small business, not just debt. In this way, the gains made by banks in underwriting a small number of successful small businesses could offset the losses incurred by a larger number of unsuccessful ones. In a sense, this makes banks venture capitalists, as well as credit creators.

when sourced from community-based banks. These banks are in a stronger position to assess the credit-worthiness of their borrowers, and they are also more committed to the goal of local development.

When it comes to supporting employment growth in Western Sydney, local community-based banks could play a crucial role. They could fund the cash-flow requirements of those SME manufacturing firms which won government contracts to build the HSR rolling stock. While the fabrication of the final products might involve larger firms, many of the components could be sourced from SMEs. This would not only assist in revitalising manufacturing in Western Sydney (more on this below), but also in fostering community-based banks. In this way the jobs deficit in Western Sydney for advanced commercial and clerical occupations (identified in Chapter 2) could also be tackled. As outlined earlier, it is these sorts of jobs which are needed to reduce some of the burden of commuting amongst residents of Western Sydney. Support for community-based banking should, of course, extend well beyond manufacturing. Local governments, and local businesses, could be encouraged to move their banking activities to these community-based banks. The other initiatives in the jobs proposals—innovative recycling plants and environmental repair programmes—could also foster community-based banking if the contracts awarded by government for these activities were also funnelled through these banks.

The role of government

This report has argued that the funding of these employment initiatives, and in particular the rollout of HSR in Eastern Australia, needs to come from the Federal government. As the issuer of the currency, only the Federal government is in a position to fund these proposals (though the funds may be disbursed through state and local government channels, as well as private sector contractors).

As mentioned earlier there are two textbook methods for funding government expenditure:

1. debt finance; and
2. money finance.

In the first, governments borrow from the private sector through issuing bonds. For the second, governments create money directly, or borrow from the central bank. Despite its effectiveness in creating new money, the money finance approach has fallen out of favour in recent decades and 'the possibility of money-financed fiscal expenditure has today virtually disappeared from the policy debate'.[25] However, the current

25. Werner 2005, p. 257.

preference for bond-issuance is misconceived because no new money is created. It is therefore not expansionary of economic activity at a macro level.[26] Bond markets and capital markets do not create credit, they merely 'divert existing purchasing power'. Only commercial banks and the central bank can do that.[27]

Money finance in preference to debt finance

These shortcomings suggest the 'money finance' approach is preferable as it does not incur debt and interest payments. This approach involves direct money creation to fund expenditure. If the expenditure increases the productive capacity of the economy, as major infrastructure projects usually do, then neither personal consumption nor asset inflation will eventuate. There is an extensive literature dating back to the 1940s which examines the operations of Overt Monetary Financing (OMF), the term often used for direct money creation by the Government. The principles are well understood and have been used extensively in periods prior to the 1980s.[28]

In recent years, following the global financial crisis, central banks have turned again to question of how fiscal expansion can counteract the current climate of economic stagnation which characterises most Western countries. Adair Turner summarises the current debate on monetary finance as follows:

> the technical issues surrounding monetary finance are already well understood (or should be) and ... the technical feasibility and desirability in some circumstances of monetary finance is not in doubt. Monetary finance of increased fiscal deficit will always stimulate aggregate nominal demand: in some circumstances it will be a more certain and/or less risky way to achieve that stimulation than any alternative policy lever: and the scale of stimulus can be appropriately calibrated and controlled—there is no knife edge nonlinearity which makes dangerously high

26. As Werner puts it 'bond issuance renders fiscal policy growth-neutral due to quantity crowding-out' (Werner 2005, p. 257).

27. ibid., p. 301. Recent research has modified this insight by suggesting that bond-issuance assists with the velocity of circulation of money. Without governments taking on debt through bond-issuance, more money would remain tied up in passive financial instruments. By luring those funds into bonds, governments are able to inject money back into the world of active financial transactions.

28. See for example, Lerner 1943; Stephanie Kelton (2011), 'Limitations of the Government Budget Constraint: Users vs. Issuers of the Currency', in: *Panoeconomicus* Vol. 1, pp. 57–66; L. Randall Wray (1998), *Understanding Modern Money: The Key to Full Employment and Price Stability*, Northampton: Edward Elgar; William Mitchell et al. (2016), *Modern Monetary Theory and Practice: An Introductory Text*, University of Newcastle, Callaghan: Centre of Full Employment and Equity.

inflation inevitable.[29]

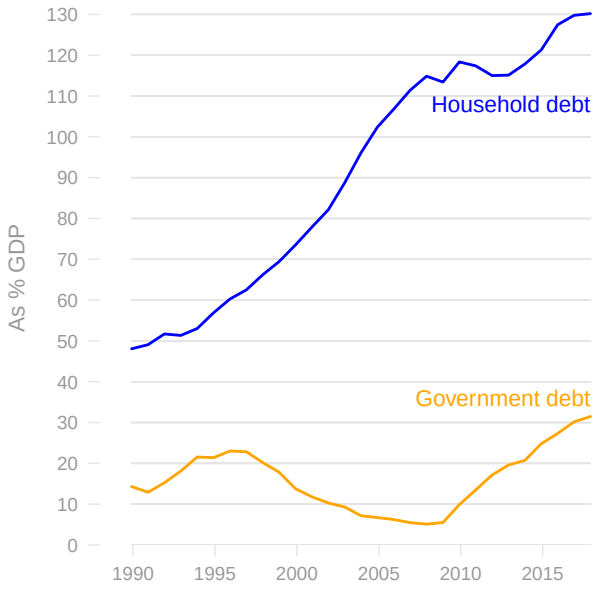

FIGURE 27: HOUSEHOLD AND GOVERNMENT DEBT, AUSTRALIA, 1988 to 2017
Level of debt as percentage of annual GDP as at December in each year
Source: ABS National Accounts, Finance and Wealth.

Counter-cyclical macro-economic effects of monetary finance are crucial

The counter-cyclical macro-economic effects of monetary finance are a key component of this report's approach to employment creation. When economic activity stalls, government spending compensates; when economic activity booms, government spending retreats. However, there is more at stake here than a simple Keynesian strategy of intervening in the business cycle. Rather, the wider issues of debt and financial fragility have become primary concerns for central banks around the world.[30] It is well understood by anyone who distinguishes carefully between public and private debt that the latter is the more serious issue facing Australia.

As Figure 27 clearly shows, household debt in Australia has soared since the liberalisation of the financial sector in the 1980s. At the end of that decade household debt stood at just under 50% of GDP while by the end of 2017 it had reached 130% of GDP. Over the same period,

29. Adair Turner (2015), 'The Case for Monetary Finance—An Essentially Political Issue', in: *Paper presented at the 16th Jacques Polak Annual Research Conference*, November 5–6, International Monetary Fund, Washington, DC, URL: https://www.imf.org/external/np/res/seminars/2015/arc/pdf/adair.pdf, p. 1.

30. These were central concerns for post-Keynesians such as Hyman Minsky, an economist 'rediscovered' in the wake of the GFC. See Hyman P. Minsky (2008a), *John Maynard Keynes*, New York: McGraw-Hill [1975] and Minsky 2008b. In the wake of the GFC, economists as well as central bankers have become particularly alert to the dangers of financial fragility. See, for example, Bernhard Winkler et al., eds. (2011), *A Flow-of-Funds Perspective on the Financial Crisis: Volume II Macroeconomic Imbalances and Risks to Financial Stability*, Palgrave Macmillan Studies in Economics and Banking, SpringerLink.

Australian Federal government debt has seldom been above 20% of GDP, and for much of the 2000s it remained below 10%. Current levels of government debt reflect the impact of the Global Financial Crisis, and the decisive fiscal stimulus which the Rudd Labor Government provided to the economy to avoid recession.[31]

The importance of reducing levels of private debt

The problems which result from elevated levels of private debt are considerable. It can lead households to reduce their current spending, which in turn leads to reduced demand for output and sluggish economic growth. Where households do attempt to maintain current spending—in a climate of stagnant wages growth—they may end up further indebted. Moreover, in a climate of inflated housing prices, the level of debt which new home owners take on may place them perilously close to financial disaster if a job is lost or hours of work reduced. All of these problems surface at the household level. From the perspective of the economy as a whole, the only way in which the private sector (which includes households and businesses) can reduce debt without the economy dipping into recession is for another sector to take on the role of boosting spending. In other words, the government sector needs to fill the gap in spending to ensure that Australia does not slide into recession.[32]

In Australia, only increased government spending can help households de-leverage, that is, 'net save' and thus reduce their level of debt. Thus rather than the naïve view that governments should 'balance' their books over the business cycle, and that fiscal deficits are only appropriate during a severe downturn, a more sophisticated perspective (based on the concepts of flow-of-funds and sectoral balances) regards ongoing fiscal deficits as a necessity while ever the private sector is heavily indebted.[33] The larger risk for any economy is

31. It is sometimes objected that expressing debt (a stock measure) as a percentage of GDP (a flow measure) is misleading. Instead, it is argued, one should consider either the assets which offset those liabilities, or the flow of income with which to service the interest on the debt. The point, however, with this percentage is to use GDP only as a benchmark, providing a convenient way to compare government to household debt using the same measure.

32. While the external sector can also fill this gap, this has proved an intermittent source of growth for Australia over the last three decades, with booms in demand for commodities (and high prices) followed by sharp contractions (and lower prices). Australia has historically run ongoing current account deficits. Unlike countries like Norway, with their oil revenues, Australia has relied on Federal governments fiscal deficits over long periods of time to maintain stable economic growth.

33. This perspective combines accounting identities with theoretical insights into business cycles to provide a much better understanding of modern economies where banks play a major role in economic growth. The flow-of-funds approach dates back to the 1950s (see Lawrence S. Ritter (1963), 'An Exposition of the Structure of the Flow-of-Funds Accounts', in: *The Journal of Finance* Vol. 18. No. 2,

not sluggish economic growth and stagnation, but a financial collapse: that is, a repeat of the GFC when large numbers of indebted businesses (including banks) became insolvent.[34]

In summary, the financial strategy advanced here goes beyond a traditional Keynesian 'pump-priming' strategy which only seeks to lift the Australian economy out of its economic malaise.[35] Rather, this report argues in favour of a post-Keynesian strategy which warns of the risks of financial fragility (based on private sector debt) in addition to problems of economic malaise. Federal government funding for high-speed rail, and the other employment initiatives proposed in this report, obviously need to be tailored to current levels of economic activity in order to avoid inflationary pressures and skills shortages. However, there should be no abrupt curtailment of projects once stronger economic growth resumes. The task of helping households to de-leverage is a long-term one: Federal governments must be prepared to run fiscal deficits over a long-time frame, the kind of time-frame which the full rollout of HSR requires. The longer time frame also makes it possible to steadily increase skills formation among the workforce, something which the proposals for rebuilding the TAFE system will foster. An increase in the skills capacity of the workforce will have the added bonus of helping to reduce the risks that expansionary fiscal policy will overheat the economy.

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pp. 219–230) and the integration of this with sectoral balances can be found in the work of the New Cambridge economists of the 1970s, such as Francis Cripps and Wynne Godley (see the stock flow consistent (SFC) approach in Wynne Godley and Marc Lavoie (2012), *Monetary Economics: An Integrated Approach to Credit, Money, Income, Production and Wealth*, Second Edition, Basingstoke: Palgrave Macmillan). It is also integral to the framework adopted by Modern Monetary Theory (see William Mitchell et al. (2016), *Modern Monetary Theory and Practice: An Introductory Text*, University of Newcastle, Callaghan: Centre of Full Employment and Equity). Recent attempts to move beyond DGSE models and implement SFC models have been undertaken by Bank of England economists, see Stephen Burgess et al. (2016), *A dynamic model of financial balances for the United Kingdom*, Staff Working Paper No. 614, London: Bank of England.)

34. The classic exposition of the financial instability hypothesis can be found in the work of Hyman Minksy, see Minsky 2008a; Minsky 2008b. Recent attempts to use SFC to understand financial risks include Richard Barwell and Oliver Burrows (2011), 'Growing Fragilities? Balance Sheets in the Great Moderation', in: *A Flow-of-Funds Perspective on the Financial Crisis: Volume II Macroeconomic Imbalances and Risks to Financial Stability*, ed. by Bernhard Winkler et al., Palgrave Macmillan Studies in Economics and Banking, SpringerLink, pp. 4–109.

35. As a number of post-Keynesians have argued, the implementation of Keynesian economics by governments during the post-war years was based on the 'neo-classical synthesis' developed by John Hicks, an approach which Joan Robinson labelled 'bastard Keynesian'. The 'pump-priming' metaphor was popularised by the doyen of this synthesis, Paul Samuelson, during the 1960s. See Minsky 2008a.

5.3 Stabilising construction

Construction employment falls into severe slumps almost every five years

The size and the volatility in the investment flows into the housing market which were discussed earlier present major problems for the economy. They not only contribute to financial instability and unaffordable housing, but they also mean that the construction sector is particularly prone to booms and slumps. As Figure 28 shows employment in the construction industry falls into severe slumps almost every five years. The mining construction boom in Queensland and Western Australia during the mid-2000s was the only period in recent history when annual changes in employment consistently stayed positive for more than about five years.

Australia avoided recession in the wake of the Global Financial Crisis through decisive government action. In the case of construction this took the form of a major school building program: Building the Education Revolution.[36] However, despite its positive side in boosting employment, the program also highlighted a number of weaknesses: costs were higher than they should have been and local school involvement in the decision-making was often poor, so that some schools received buildings that were not appropriate to their needs. These problems demonstrated a familiar theme when it comes to major public sector projects. State governments often lack the in-house expertise to manage such projects, having become increasingly dependent on outside consultants over the last few decades. At the same time, when national projects come under the watch of commissions or authorities, a lack of adequate funding, blurred vision about their role, or conflicts of interest often compromise the outcome. This has been evident in the roll out of the NBN and the failures of the Murray-Darling Basin Authority. There are lessons to be learnt here for how a High Speed Rail Corporation should be funded and function.

36. The program was called Building the Education Revolution and allocated $16.2 billion to fund new buildings in schools. See the summary in https://www.aph.gov.au/About_Parliament/Parliamentary_Departments/Parliamentary_Library/FlagPost/2010/August/Building_the_Education_Revolution.

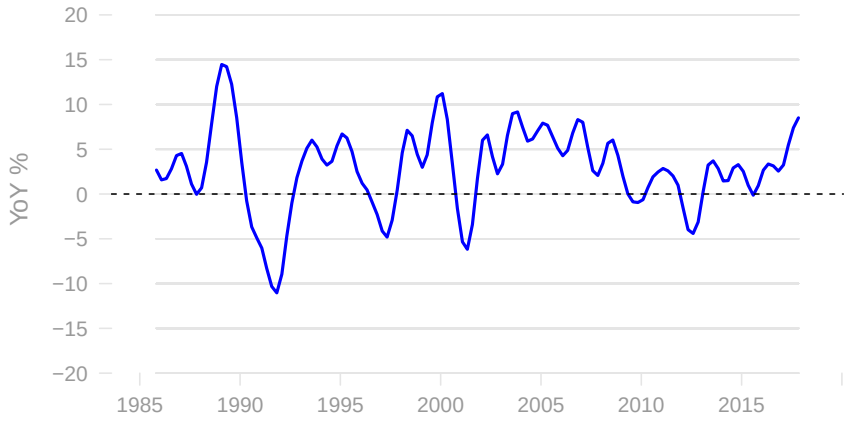

FIGURE 28: EMPLOYMENT IN CONSTRUCTION ACTIVITY, AUSTRALIA, 1984 TO 2017
Year on year percentage changes
Source: ABS Labour Force Statistics (Detailed Quarterly), trend data.

Building high-speed rail can stabilise employment in construction

Despite its problems, the school building program did stabilise employment in construction and prevented a recession in that industry. This example should be borne in mind when it comes to constructing the high-speed rail network. While much of the construction work may be carried out by private sector contractors, rebuilding the expertise among public sector designers and supervisors will be crucial. This should be one of the key priorities when setting up the High Speed Rail Corporation. This stabilisation of employment in construction will be particularly important once the apartment-building frenzy in Sydney and Melbourne comes to a halt, and once the major transport infrastructure projects in Sydney begin to phase out.

High-speed rail as a counter-cyclical measure

The great advantage of a high-speed rail project is the long time frame. This means that planning the rollout can be done carefully, and that the pace of the rollout can be varied. As argued throughout this report, it should be seen as a counter-cyclical measure, which releases labour in periods of heightened economic activity, and soaks up labour in period of stagnation. This will moderate any wage pressures which a project of this scale might cause. At the same time, it can moderate these pressures, and provide a secure future for young unemployed workers, by including a major training component into the rollout. This forms part of the revitalisation of technical training discussed in this report.

High-speed rail and regional economic activity

The counter-cyclical aspect can also be thought of in spatial terms, as well as across the business cycle. Because of the length of this project–initially from Sydney to Melbourne–there is ample scope

to bring employment opportunities not only to Western Sydney, but also to regional areas. The rollout into these geographical areas can be planned so as to complement the level of economic activity in these regions. In other words, the rollout can slow down or speed up to match the needs of these regions.

5.4 Revitalising manufacturing

Manufacturing has a crucial and strategic role in the economy

Recent research by the *Australia Institute* provides an important context for any discussion of manufacturing in Australia. As economist Jim Stanford explains, manufacturing in Australia has fallen on hard-times since about 2008, partly due to an overvalued exchange rate and partly due to major policy mistakes by governments. This has led some commentators to write off manufacturing and suggest that it is an old, dying industry on the way out. Better, they say, that Australia should concentrate on services. This negative perspective is both misleading and short-sighted and overlooks the crucial, strategic role which manufacturing plays. As Stanford argues:

> Manufacturing is the most important source of innovation in the economy. It supports higher-than-average productivity growth and good jobs. It contributes disproportionately to Australia's exports. And it anchors far-reaching supply chains spreading throughout the domestic economy that support hundreds of thousands of jobs in other sectors (including resources and services). For all these reasons, the benefits of strong manufacturing are felt throughout the national economy.[37]

Australia lost 200,000 manufacturing jobs between 2008 and 2015

Jim Stanford's report charts the decline of recent years, highlighting the employment losses since the GFC. Prior to that period, manufacturing was in a slow decline relative to services (that is, in percentage terms).[38] But the numbers employed hovered around 1 to 1.1 million. After the GFC, the numbers actually fell in absolute terms, and 200,000 job were lost between 2008 and 2015. This left employment levels at well below 900,000 by the middle of this decade. Both output and investment have also declined steeply since the GFC. The figures which Stanford presented in this report—released in the middle of 2016—were prior to the final shutdown

37. Jim Stanford (2016), *Manufacturing (Still) Matters: Why the Decline of Australian Manufacturing is NOT Inevitable, and What Government Can Do About It*, Briefing Paper, Canberra: Centre for Future Work at the Australia Institute, p. 1.

38. As Jim Stanford put it: this represented 'a gradual reduction in *relative* economic significance expected in a mature industrial economy—as the faster expansion of services outstrips slower growth in manufacturing.' (ibid., p. 4).

of the automobile industry in Australia. Stanford concluded his survey of this downturn by noting the steep drop in investment since 2011:

> This is a very worrisome sign that many companies are ready to abandon manufacturing in Australia altogether (as the auto assembly sector has done), without a convincing signal from governments that the viability of industry will be maintained.[39]

By the middle of 2017, when the Australia Institute produced a follow-up report on manufacturing, the signs for recovery were more promising. Between 2016 and 2017 manufacturing employment increased strongly (by 40,000 jobs) and while it remains too soon to tell if this marks a longer-term trend, the bleak period after 2011 may be receding.[40]

Australia's trade deficit in manufactures grew by 40% in just four years

What does this mean for Australia's global position? Australia's exports of manufactured goods has shrunk dramatically, while manufacturing imports have surged. The trade deficit in 2015 in manufactures was $150 billion and overwhelmed the export income which Australia's trade in minerals and petroleum produced (about $110 billion). This trade deficit in manufactures, which grew by 40% in just four years, from 2011 through to 2015, constituted 'an enormous drain on the national balance of payments'.[41]

Yet manufacturing remains essential to high living standards in a modern economy

Despite this gloomy picture, there are strong grounds for remaining optimistic.[42] In particular, manufacturing remains an essential part of a modern economy. It is fundamental to innovation, spending more on R&D than any other sector. Manufacturing remains essential for productivity growth, in a way service sectors can never match. Increased investment in manufacturing therefore boosts the country's material standard of living. I highlighted the importance of job quality in the assessment of aviation employment in Chapter 3. One of the main advantages of modern manufacturing jobs are their quality: they provide a greater proportion of full-time and high-wage jobs than other comparable sectors. Finally, the benefits to other sectors of the economy are substantial. Because manufacturing requires so many

39. Stanford 2016, p. 3.

40. Jim Stanford and Tom Swann (2017), *Manufacturing: A Moment of Opportunity*, Briefing Paper, Canberra: Centre for Future Work at the Australia Institute, p. 9.

41. Stanford 2016, p. 3.

42. Jim Stanford's 2017 report on manufacturing catalogues a number of improvements in the sector compared to a year earlier, leading him to conclude that there is a 'legitimate cause for cautious optimism' (Stanford and Swann 2017, p. 18).

inputs from other industries, it provides an economic 'anchor' 'stabilizing the whole supply chain'.[43]

In response to those commentators who believe that there is no future for manufacturing in Australia, Jim Stanford makes a number of salient points. Australia's manufacturing decline is unusual, it is not a phenomenon happening 'everywhere' around the globe. Indeed, a large number of comparable countries have actually expanded their manufacturing in recent years. Nor is Australia's cost structure too high, when taken in the context of the exchange rate. Australia will never be competitive against low-cost manufacturing exporters, and attempting a 'race to bottom' in labour costs and standards would be a destructive strategy. Instead, if Australia competed on the basis of innovation, quality and productivity, then its manufacturing future could be a promising one. This has been the path taken by countries like Germany, the Netherlands and Japan. In common with many other researchers, Stanford concludes that an overvalued exchange rate is what continues to undermine Australia's success in manufacturing.[44] That overvalued exchange rate is largely the result of the minerals commodity boom, and is the price Australia pays for having become a giant quarry.[45]

Governments must again become customers for local manufacturing firms

While a range of strategies are needed to revitalise manufacturing, a key element is governments again becoming customers for manufacturing firms through major procurement programs. Instead of buying trains from Korea, for example, Australian governments could commit to buying them locally. As this report argues, projects like high-speed rail, and the expansion of orbital rail, are ideally suited to this approach. Not only would this boost the local steel industry, but it would provide direct employment in the design and fabrication of the rolling stock. It would also indirectly boost employment among parts suppliers in areas like electronics, glass, fabrics and so forth. Finally, the tracks, tunnels and bridges which would form the backbone for HSR would ensure the long-term survival of the steel industry in Australia.

Small and medium manufacturing businesses are the basis of Germany's economic success

Despite the large employment losses in the manufacturing sector discussed above—including those in Western Sydney outlined in Chapter 2—the picture is far from doom and gloom. In the case of Western Sydney, a solid basis still exists for expanding manufacturing. If one shifts focus from *workers* in manufacturing to the *businesses* which

43. Stanford 2016, p. 6.

44. Ibid., pp. 6–8.

45. Stanford notes that even with the fall in commodity prices the large inflows of foreign capital, associated with banking and property, keeps the exchange rate overvalued (Stanford and Swann 2017, p. 15).

employ them one still finds a considerable number of small and medium (SME) manufacturing businesses (Figures 29 and 30). These SMEs have been the basis for a highly successful manufacturing sector in countries such as Germany. As the earlier discussion on community-banking explained, German firms have benefited from access to credit in ways quite alien to the Australian experience. This is one reason for advocating the expansion of community-banking in Australia: it forms a key element in supporting small and medium manufacturers.

There is still a solid base of manufacturing businesses spread across Western Sydney

Figures 29 and 30 show the numbers of SMEs at the local level across Sydney (with LGA names shown to help orient the reader). It is clear that there is a considerable spread of small manufacturing businesses in Blacktown LGA and the areas to the north, as well as pockets in the Liverpool and Campbelltown LGAs. When it comes to medium manufacturing businesses, the numbers are much sparser, but there are some concentrations in the southern parts of Blacktown LGA, and also in the Liverpool LGA. While the counts are small, there are also a reasonable number of medium manufacturing businesses in the Penrith LGA. In other words, there is still a solid base of manufacturing businesses spread across Western Sydney in an arc from Campbelltown to The Hills. This geographical spread largely follows the *employment arc* discussed earlier.

The fit-out of the Waratah trains created 300 jobs in the Hunter Valley

The construction of the Waratah Trains for the Sydney rail network by Downer EDI Rail illustrates both what to do, and what not to do. While the design of the trains took place in Australia, the actual manufacturing of the rolling stock took place in China at the Changchun Railway Vehicles Co (CRC). The final assembly, fit-out and commissioning of the trains did occur in Australia, at Cardiff in the Hunter Valley. During this phase, about 300 jobs were created and some $200 million was injected into the Hunter economy.[46]

46. Details of the Waratah trains project can be found at: http://www.reliancerail.com.au/.

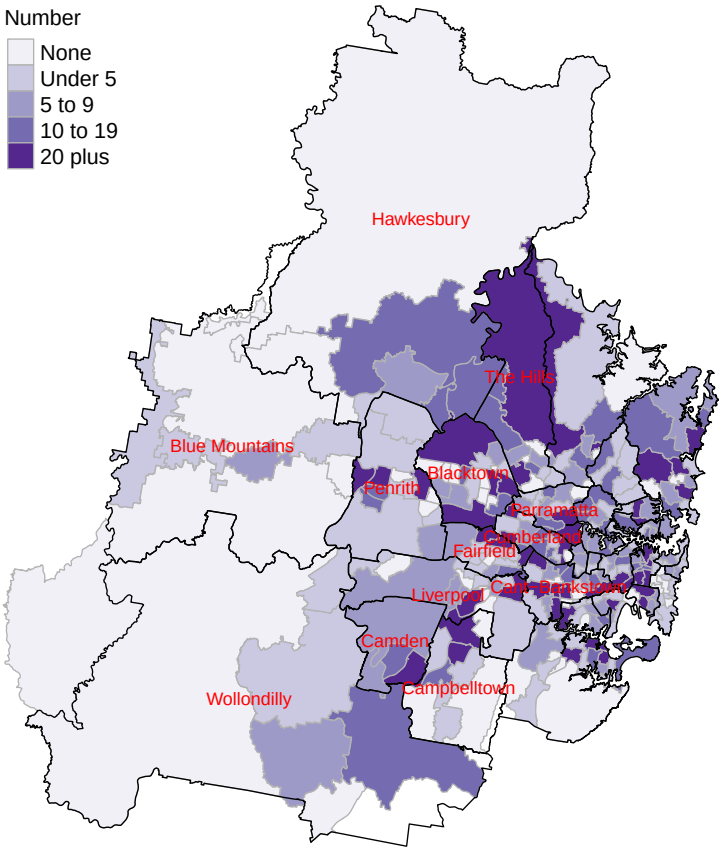

FIGURE 29: SMALL MANUFACTURING BUSINESSES
Sydney, June 2017
Notes: Small defined as employing 4 to 19 employees.
Source: ABS Business Register.

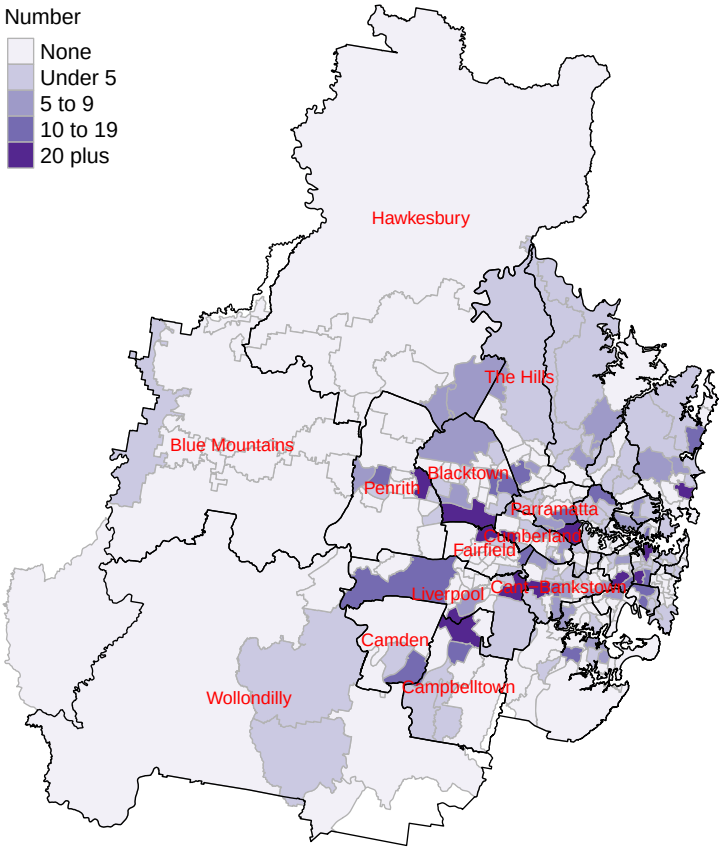

FIGURE 30: MEDIUM MANUFACTURING BUSINESSES
Sydney, June 2017
Notes: Medium defined as employing 20 to 199 employees.
Source: ABS Business Register.

The positive side to this story was that the design work and the final assembly and fit-out of the trains took place in Australia. The downside was that the main manufacturing took place in China. The lesson for high-speed rail rolling stock manufacturing is clear. The capacity to undertake the full manufacturing process in Australia still exists, and can be enhanced through joint ventures. This means the employment and other downstream benefits would be much greater.

The capacity to undertake the full manufacturing process in Australia still exists

5.5 Building innovative recycling plants

Until recently, most recycled materials in Sydney have been shipped to China, but as Karl Williams has observed: 'If you collect rubbish and ship it to China that's not recycling, that's just collecting'.[47] The decision by Chinese authorities to no longer accept lower-grade waste from Australia (plastic scraps or mixed, unsorted paper) provides a golden opportunity for Australian governments to 'get recycling right'. Instead of building polluting incinerators or adopting quick-fix solutions ('ship it overseas'), Australian governments now have the opportunity to build 21st century innovative recycling plants.

China's decision to no longer accept lower-grade waste presents a golden opportunity for innovation in Australia

While the situation in Europe is not perfect—only 40% of the continent's waste is reused or recycled—governments in those countries have invested heavily in building higher quality plants which convert waste into new products. Moreover, because the waste stream is better sorted, the recycling products are of a higher grade, making them more attractive to buyers.[48] Unfortunately, much of the waste in Europe is still incinerated, though organic waste is increasingly used for biogas. The challenge which remains, particularly for plastics, involves recycling into new products, rather than simply finding better methods of disposal.[49]

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47. Dr Karl Williams, University of Central Lancashire, quoted in Nick Miller, 'Europe's better class of rubbish', *Sydney Morning Herald*, May 5–6, 2018, p. 22

48. ibid.

49. Current initiatives for plastic reycling include gasification and pyrolysis, techniques which produce intermediate products (such as gas or oil) but which ultimately entail combustion processes as the end result. See http://www.syngas-products.com/media-centre/press-releases/54-first-power-export-from-avonmouth-13mw-advanced-thermal-energy-recovery-facility/ and Neil Tangri and Monica Wilson (2017), *Waste Gasification & Pyrolysis: High Risk, Low Yield Processes for Waste Management*, A Technology Risk Analysis, GAIA, URL: http://www.no-burn.org/wp-content/uploads/Waste-Gasification-and-Pyrolysis-high-risk-low-yield-processes-march-2017.pdf.

The European Commission has realised the problem and it sees the Chinese decision as an opportunity: it has 'created a "positive crisis" in the global plastics market, forcing innovation and more efficient recycling.' The Commission intends to provide €100 million in funding for developing 'smarter and cleaner' recyclable materials.[50]

The European Commission sees the plastics challenge as an integral part of the circular economy. As the European Environmental Agency puts it:

> A circular economy could increase the efficiency of primary resource consumption in Europe and the world. By conserving materials embodied in high value products, or returning wastes to the economy as high-quality secondary raw materials, a circular economy would reduce the demand for primary raw materials.[51]

If waste products are simply incinerated in a more efficient manner—even if this is used for social benefits such as heating—the depletion of raw materials may continue unabated. Only by recycling waste into *new raw materials* can the circular economy be promoted. For both plastics and paper, this means innovative manufacturing processes. Turning plastic waste into outdoor furniture, for example, and turning paper scraps into new packaging materials or newsprint.

The best strategies for waste are to reuse and recycle materials, rather than dispose of waste through combustion

The *waste hierarchy*, developed in the 1970s, is still the optimum strategy for dealing with waste. This places *prevention* at the top, *reuse* next, followed by *recycling* and *recovery*. At the bottom is *disposal* (basically, landfill or incineration). In terms of the circular economy outlined at the beginning of this chapter, it is clear that the top three elements should form the basis for a waste strategy in Western Sydney. Some initiatives—such as moves to restrict the use of single-use plastic bags—appear on the horizon and fit within the prevention goal. Other initiatives which were popular in the 1980s—such as 'reuse sheds' at landfill tips—have also re-emerged in recent years. These fit within the reuse goal. Thus it is important when considering an over-arching waste strategy for Western Sydney that initiatives like these are extended further and that not all attention is focussed solely on the recycling and recovery elements.

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50. Laignee Barron, 'The EU Targets Plastic Waste as it Aims to Make All Packaging Recyclable by 2030', http://fortune.com/2018/01/17/eu-pushes-plastic-recycling/

51. Quoted in http://www.plasticsrecyclers.eu/circular-economy.

Nevertheless, the scale of the waste problem means that recycling is still the dominant challenge for the next few decades. In this light, building 21st century recycling plants which have minimal environmental impact on surrounding neighbourhoods should be prioritised. For this reason, the employment arc—based on orbital rail—lends itself to the locational decisions involved. In this way, inflicting noise pollution and large numbers of truck movements on local residents can be avoided. Rejecting combustion solutions in favour of innovative recycling should also avoid the air pollution problems associated with current plans for waste incineration at Eastern Creek.

A useful example of innovation in recycling is the development of micro-recycling plants for electronic waste. The University of New South Wales recently launched the world's first 'microfactory', which recycles e-waste, such as discarded phones and laptops:

> Using technology developed following extensive scientific research at UNSW's Centre for Sustainable Materials Research and Technology (SMaRT Centre), the e-waste microfactory has the potential to reduce the rapidly growing problem of vast amounts of electronic waste causing environmental harm and going into landfill.[52]

This example illustrates that Australia can be a world-leader when it comes to innovation in recycling. The application of new technologies like these to the problems of waste can form the basis of a viable recycling industry in Western Sydney.

5.6 Rebuilding technical training

Author Jennifer Rayner provides a good overview of the last decade's failures in technical education in Australia:

> Through a series of well intentioned and deeply misguided policies delivered from 2008 on, federal and state governments have wrecked VET in a way that may take a generation to recover from. The losers from this are the young men who need a trade and the older men who urgently need retraining to remain in work.
>
> ... as part of changes introduced between 2009 and 2012, the Commonwealth agreed to make VET FEE-HELP loans available for all courses—from plumbing to Pilates instructing—as long as the states and territories opened their VET systems to competition from private providers.

52. https://newsroom.unsw.edu.au/news/science-tech/world-first-e-waste-microfactory-launched-unsw

> As private providers flooded into the market, the quality of training and student completion rates plummeted. There were reports of hairdressing courses that left graduates unable to do basic cuts or colouring, while in 2014, the 10 largest private providers received $900 million in loans but had an average completion rate of less than 5 per cent.[53]

Technical education in Australia is in crisis

Technical education in Australia is now in crisis. The TAFE sector lost one-sixth of its financing in 2016 and operating revenues fell by nearly 17%. Government funding for the sector has fallen 23% since 2012, and in the period since 2005 the fall—in real terms—has been been nearly 32%. The Australia Education Union has reacted to the crisis with a call for renewal:

> A root and branch review of the system is long overdue, and it is critically important that this include funding sources and levels, curriculum, pedagogy, assessment and quality assurance.
>
> Currently, the TAFE and vocational education sectors are without any leadership nationally. Underfunding and the lack of coherent leadership have compounded the loss of trust, and enrolments in the sector are collapsing.[54]

The flow of Commonwealth loans to private colleges has resulted in unscrupulous profiteering, fraud, and corruption

Once the Commonwealth coffers were opened to private providers, the writing was on the wall for quality public vocational education in Australia. The ABC found that the flow of Commonwealth loans to private colleges has resulted in unscrupulous profiteering, fraud, and corruption in the sector. Some $6 billion of public funds flowed into the private market. In the assessment of Leesa Wheelahan, a Canada-based international vocational training expert, the TAFE system in Australia in on the brink of collapse. She noted that:

> Private providers have mushroomed, have grown exponentially, have made monstrous profits, and have colonised areas that can be taught very cheaply …So they've cherry-picked the areas where it's cheapest to teach, leaving TAFE to teach the most expensive areas.[55]

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53. Jennifer Rayner (2018), *Blue Collar Frayed: Working Men in Tomorrow's Economy*, Schwartz City: Redback Black Inc.

54. From AEU, 'Rebuilding Australia's TAFE system', press release, 23 February 2018.

55. Natasha Robinson and Meredith Griffiths (2017), 'Calls to save TAFE as vocational training sector reaches "tipping point"', in: *ABC News* (22 October).

The collapse in apprenticeship numbers has been dramatic

One highly significant consequence of this crisis has been a dramatic fall in apprenticeship numbers. In the last 5 years, the number of apprentices and trainees has fallen by 15%, with falls of almost 20% in some fields. When it comes to apprentices, the collapse in numbers has been even more severe: a 35% reduction from 413,000 apprentices in training to just 268,000 by 2017.[56]

The loss of public funding, and the competition from shonky private providers, has left TAFE in tatters.

The loss of public funding, and the competition from shonky private providers, has left the older state-based public TAFE training system in tatters. Courses have been cut, campuses have closed down and enrolments of students has fallen by 25% in the past five years.[57]

The number of vocational education students in Western Sydney studying in technical fields has fallen by nearly 20% in the last 10 years

What has this meant for Sydney, and particularly for Western Sydney? The scale of the destruction can be gauged from a ten-year comparison for student numbers and teacher numbers in the key technical areas of engineering, information technology, architecture and building. Table 17 shows the numbers for students and Table 18 shows the numbers for teachers.

Looking first at students (Table 17) Western Sydney overall saw a drop in student numbers of nearly 20%, or over 650 students. The largest falls, in percentage terms were in the Blue Mountains, The Hills Shire and Liverpool. In absolute terms, the largest drops were in Liverpool (109) and The Hills Shire (103). It needs to be kept in mind that these falls are in the context of a growing population of young people, and a growing workforce. Between 2006 and 2016 the Sydney workforce grew by 470,000, and in Western Sydney the growth was about 200,000. And yet the numbers of students enrolled in vocational education studying these key technical subjects fell by more than 20%.

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56. From ABS, *Education and Work*, Cat. No. 6227.0, May 2017, and NCVER data. Both cited in ACTU (2018), *Jobs You Can Count On*, Melbourne: Australian Council of Trade Unions, p. 19.

57. Robinson and Griffiths 2017.

TABLE 17: TECHNICAL EDUCATION STUDENT NUMBERS IN SYDNEY, 2006 AND 2016

LGA	*2006*	*2016*	*Change*	*% change*
WESTERN SYDNEY				
Blacktown	481	403	-78	-16
Blue Mountains	163	95	-68	-42
Camden	97	127	30	31
Campbelltown	284	216	-68	-24
Canterbury-Bankstown	473	383	-90	-19
Cumberland	253	254	1	0
Fairfield	283	239	-44	-16
Hawkesbury	142	117	-25	-18
Liverpool	367	258	-109	-30
Parramatta	241	189	-52	-22
Penrith	358	335	-23	-6
The Hills Shire	264	161	-103	-39
Wollondilly	95	67	-28	-29
Subtotal	3,501	2,844	-657	-19
REMAINDER SYDNEY				
Botany Bay	57	40	-17	-30
Burwood	40	11	-29	-72
Canada Bay	75	54	-21	-28
Georges River	143	116	-27	-19
Hornsby	180	136	-44	-24
Hunters Hill	5	8	3	60
Inner West	194	154	-40	-21
Ku-ring-gai	51	47	-4	-8
Lane Cove	37	16	-21	-57
Mosman	9	9	0	0
North Sydney	39	35	-4	-10
Northern Beaches	370	257	-113	-31
Randwick	142	119	-23	-16
Rockdale	132	113	-19	-14
Ryde	137	97	-40	-29
Strathfield	25	27	2	8
Sutherland Shire	473	332	-141	-30
Sydney	122	138	16	13
Waverley	47	44	-3	-6
Willoughby	41	24	-17	-41
Woollahra	16	15	-1	-6
Subtotal	2,335	1,792	-543	-23

Notes: Vocational education students studying at Certificate III or IV level in fields of engineering, information technology or architecture and building.
Source: Census 2006 and 2016, Place of residence

The story for TAFE teachers is even bleaker. Trained teaching professionals, many with decades of industry experience, form the cornerstone of a viable TAFE system. Once they have left their jobs in TAFE, they may never be induced back, even if funding is restored. The scale of the losses is immense. This is evident in the fact that in 2014–15 the NSW Government allocated $1.86 billion for staff redundancies in TAFE. In one year alone (2016) they spent nearly $18 million on redundancy payments for 233 staff.[58] Overall, between 2010 and 2016,

58. Answer by Minister for Education to Mr Ryan Park, NSW Parliament, 18 September 2014; and *Sydney Morning Herald*, 29 November 2016.

New South Wales lost 35% of its TAFE workforce. The national picture is just as bleak: Victoria lost 44% of their TAFE teachers, Queensland 25% and South Australia 17%.[59]

How has Western Sydney fared? Table 18 shows that the West lost 15% of its vocational education teachers with technical backgrounds between 2006 and 2016.[60] Again, it is important to reinforce the context: at a time when the workforce in Sydney grew by half a million workers, the number of technical teachers in Sydney actually fell.

Blacktown lost one quarter of their technical teachers, Penrith lost half

As Table 18 shows, areas like Blacktown lost one quarter of their technical teachers while Penrith lost half of theirs. The losses were even greater in Parramatta (57%), while Canterbury-Bankstown and Fairfield were nearly as badly affected (down 31% and 39%). The only bright spot on this bleak landscape was Cumberland, where the numbers of technical teachers increased by 62% and The Hills Shire (whose large percentage increase was from a small base).

As well as the losses in key technical skills at the macro-level, at a personal level there have been many disasters. These include students who have been denied the quality of training, or the kinds of training, which would allow them to build a secure working-life. Sometimes this has been because the costs are too high, and sometimes because the TAFE colleges in their area no longer offer the courses. Sometimes, those enrolled in private 'colleges' have not actually received any meaningful training. In the case of Western Sydney, students in the Blue Mountains and Penrith areas have seen their local colleges decimated, and face long and expensive commutes to other parts of Sydney if they wish to pursue particular careers. Regional NSW has suffered even worse outcomes, with horror stories of apprentices from Broken Hill having to travel to Bathurst for their TAFE training.[61]

Newcastle boat builder Joe de Kock recently took on Tyrone Bliim as an apprentice. Apprentice shipwrights used to be trained at the local TAFE, but the cuts have meant Tyrone now makes a five-hour round trip to Sydney for his classes: "It's $20 to get down there and back so, especially on an apprentice wages, that's a lot of money".

59. Robinson and Griffiths 2017.

60. These are professionals working in vocational education with educational qualifications in engineering, information technology and architecture and building. The comparisons take account of LGA amalgamations during the period 2006 to 2016.

61. Boxed quote for Tyrone Blimm from Robinson and Griffiths 2017.

TABLE 18: TECHNICAL EDUCATION TEACHER NUMBERS IN SYDNEY, 2006 AND 2016

LGA	*2006*	*2016*	*Change*	*% change*
WESTERN SYDNEY				
Blacktown	81	61	-20	-25
Blue Mountains	3	7	4	133
Camden	0	0	0	
Campbelltown	26	26	0	0
Canterbury-Bankstown	35	24	-11	-31
Cumberland	32	52	20	62
Fairfield	23	14	-9	-39
Hawkesbury	9	12	3	33
Liverpool	26	23	-3	-12
Parramatta	65	28	-37	-57
Penrith	27	14	-13	-48
The Hills Shire	5	22	17	340
Wollondilly	0	0	0	
Subtotal	332	283	-49	-15
REMAINDER SYDNEY				
Botany Bay	13	13	0	0
Burwood	16	28	12	75
Canada Bay	4	0	-4	-100
Georges River	9	4	-5	-56
Hornsby	27	24	-3	-11
Hunters Hill	0	0	0	
Inner West	22	15	-7	-32
Ku-ring-gai	0	3	3	
Lane Cove	0	0	0	
Mosman	0	0	0	
North Sydney	12	3	-9	-75
Northern Beaches	14	15	1	7
Randwick	16	11	-5	-31
Rockdale	27	14	-13	-48
Ryde	48	30	-18	-38
Strathfield	3	0	-3	-100
Sutherland Shire	9	20	11	122
Sydney	133	159	26	20
Waverley	0	0	0	
Willoughby	25	8	-17	-68
Woollahra	0	0	0	
Subtotal	378	347	-31	-8

Notes: Vocational education teachers with educational qualifications in engineering, information technology and architecture and building.
Source: Census 2006 and 2016, Place of work

``When I started my apprenticeship I was told that
I would have to travel to Hornsby TAFE, from Blaxland."

A Blue Mountains local, Brian, signed up for his apprenticeship but then found that his closest TAFE, at Penrith, had stopped offering training in his field. He was forced to travel to Hornsby.

The jobs strategy makes training an integral part of the employment projects

Rebuilding Australia's technical education capacities is long overdue, and the jobs strategy outlined in this report makes this task an integral part of the project. It is clear that both the construction of the high-speed rail network, and the manufacture of the rolling stock in Australia, will require a reliable supply of technically skilled workers. The long-term time-frame for this project is ideal for rebuilding the TAFE system in Western Sydney. There is a natural symbiosis between this project and technical training: each needs the other. The short-term solution to skills shortages–such as importing foreign workers on 457 visas–must be replaced by rebuilding TAFE across Western Sydney and designing new training courses tailored to the high-speed rail project. The proposal for major environmental repair across Western Sydney also requires an expansion in horticultural skills in the region. The TAFE campuses–with their physical infrastructure–are still intact across many parts of Western Sydney. It is staff numbers and appropriate funding which is missing.

The starting point for rebuilding technical education in Western Sydney is to recognise the great strengths of the old TAFE system:

- the high levels of expertise available to students in being taught by properly qualified trades persons with many years of industry experience;
- the capacity of the system to provide high quality teacher-training to their existing trades workforce, thus enhancing the learning experience for students;
- regular in-service training for staff to keep them abreast of new developments in industry;
- first-class facilities in the classrooms and workshops of the dedicated TAFE campuses;
- a model of teaching based on 4-days at the job and 1-day off-site for face-to-face training at the TAFE campus. Such a model allowed the best interaction between theory and practice.

At the same time, TAFE did have its weaknesses, and these need to be avoided in rebuilding the sector. These included:

- a disconnect between industry developments and TAFE content in particular fields;
- a tendency towards bureaucratisation and the growth of too many layers of middle management;
- endless restructures which wasted resources and sapped the morale of staff;
- a lack of guaranteed long-term funding.

It is important to acknowledge that technical training, particularly for apprentices, is part of working life. As such, all training should take place during working time. Not only should a rebuilt TAFE system operate without student fees, it should also be part of a system in which apprentices are paid for their training days. Apprenticeship wages are so low that any additional financial burden only leads to a further disincentive to undertake training, training which is vital to the future of Australia's economy.

The main advantages in the public provision of technical education, compared with competitive-tendering approaches, are the higher quality of the training, the ability to retain good quality teachers, and the closer fit between labour market demand for skills and the graduates who emerge from the system. The demand for apprenticeships, for example, should reflect industry requirements, not government budget ploys. At present Governments can manipulate demand for courses by setting the price of the training courses and their location.

The disconnect between the realities of the labour market and the outcomes provided by a privatised vocational education system has become extreme. In Victoria, for example, this disconnect was highlighted in these comments by an insider:

> Because it was open slather under the entitlement to the Certificate III, it was based on, particularly for the younger people, what was trendy. So there's a glut at the moment, in Victoria, every second person is a fitness instructor … There's no cooks, there's no mechanics, but some very fit unemployed.

In the case of NSW, the dismantling of the TAFE system has seen a mushrooming of non-technical subject offerings, with 42% of enrolments in 'management courses' and another 14% in 'society and culture'.[62] The engineering, building and IT fields have all been

62. TAFE NSW 2013 Enrolment Data, from The Boston Consulting Group (2015), *The NSW Vocational Education and Training market and TAFE NSW's competitive position within it*, p. 17

marginalised in NSW TAFE, leading to the kinds of outcomes noted earlier: the decimation of some of the core technical skills needed by a future workforce.

Another insider, with close links to employers, noted the irony of the last two decades:

> The government has deconstructed the TAFE … basically gutted it, and that was a great training institution. Why make it competitive. Why not just fund the TAFE properly … this is the industry perspective. They believe TAFE are the best positioned to provide trade training. But now that they've gone into this competitive mode, they've got these people doing business development jobs and trying to gather business for TAFE on $130,000 a year … The poor old bloke that's got to deliver the training, he's got to carry the weight of 6 other salaries on his back. From the business development manager to the enterprise risk manager, to this manager and that manager …
>
> TAFE can't really compete on the open market, because they've got these overheads that no-one else has. Whereas they've got the skills, knowledge and equipment that'll deliver the training better than anyone else. That would be the key thing I get from the engineering industry, time and time again, there should only be TAFE to provide this training, the TAFE should be responsive to industry, as in, answer to the industry. And all the other training providers can go away. It's amazing how things go full circle, twenty years ago they were whinging that there should be an alternative to TAFE.

5.7 Summing up

This report has explored a range of employment proposals for Western Sydney and has done so with varying degrees of detail. Some proposals—such as innovative recycling plants and environmental repair—have only been roughly sketched. Other proposals—such as the competing proposals for a second Sydney airport versus high-speed rail—have been analysed in considerable depth. While this survey of possibilities has been varied, the consistency in the approach taken has been very precise. There is a coherent philosophy behind these proposals, one which carefully integrates:

- the employment needs of Western Sydney, namely local jobs for those currently unemployed and underemployed, and local jobs for those commuting long distances to work;
- the kinds of jobs needed, based on a spectrum of skills from low-skilled to high-skilled;

- the importance of job quality, particularly the need to avoid entrenching underemployment;
- the need to rebalance the industry structure of Western Sydney to produce jobs which encompass blue-collar employment, advanced clerical and commercial employment, and scientific/technical employment;
- the critical support structures needed for employment creation, namely:
    - adequate sources of funding, drawing on both Federal government finance and commercial credit from community-based banks;
    - the rebuilding of TAFE so that an extensive pool of skilled workers are available for these projects (while also meeting the skills needs of other employers in Western Sydney).

In thinking seriously about employment in Western Sydney, all of these elements need to be carefully integrated. Many proposals floated by various interest groups only consider one or two elements. They praise the potential number of jobs to be created—often based on the kind of dubious modelling discussed earlier in this report—but are usually vague when it comes to details. Sometimes they are only a smokescreen for another purpose, usually further residential expansion. Without the property developers in the picture, such proposals usually fall over because they lack the coherence which genuine employment creation requires. By contrast, this report outlines a strategy for employment in Western Sydney which stands on its own merits. Western Sydney deserves to be more than a poor cousin. With strategic planning replacing rent-seeking, Western Sydney could dispense with its role as a dormitory region and in the process become more self-sustaining, somewhere people choose to live for its amenity, not just its housing affordability. The West could become an exemplar of good planning at work, rather the after thought it so often seems to be.

6 Conclusion

Western Sydney is at the cross-roads. The story of the last 50 years can be repeated: sprawling new suburbs, poor transport and limited employment opportunities. The addition of a second Sydney airport, at Badgerys' Creek, will not slow this pattern of development. The number of jobs created will be insubstantial, and the vast increase in population growth projected for the area will swallow up much of the remaining open space. On both environmental and economic grounds, this kind of future is not in the interests of Western Sydney residents.

The other avenue which could open—the one proposed in this report—sees a revitalisation of manufacturing in the region. Accompanying this could be a rebuilt TAFE system and an expansion in community-based banking. With an effective orbital rail system in place, residents could begin to break-away from the hub-and-spoke commuting treadmill which has been their fate for decades. The creation of large numbers of quality jobs in Western Sydney—both skilled and unskilled—is the only answer to meeting the employment needs of the region. These needs encompass jobs for those currently unemployed and underemployed, particularly young people, and jobs for those residents commuting long distances to the city.

An airport at Badgerys' Creek, whether or not it entails an aerotropolis, will not meet these employment needs. By contrast, a high-speed rail system linking Sydney and Melbourne (and later Brisbane) will offer far more jobs—and better quality jobs—and will help revitalise manufacturing and also foster regional development along the rail corridor. When integrated with orbital rail, and by helping to spur manufacturing and a rebuilt TAFE system, the high-speed rail option is undoubtedly in the best interests of the residents of Western Sydney. For the nation more broadly, high-speed rail promises to be an infrastructure project of immense benefit. As other countries around the globe embrace high-speed rail, Australians increasingly ask: why not us?

The case for HSR in Australia is indeed compelling, and the need for jobs in Western Sydney goes without question. Nevertheless, the task of *implementing* the proposals contained in this report is a complex and difficult one. While implementation issues do indeed need to be confronted, the purpose of this report has been to lay the *groundwork* for working through these issues. This report is a strategic one, outlining an integrated vision of how the many elements fit together.

When it comes to the specifics of those elements, a number of important questions will need to be addressed and this report concludes by listing some of these.

- How should these projects be staged? The counter-cyclical strategy has been outlined, but how does this translate into a more precise time-frame?
- How would the three levels of government—local, state and Federal—work together around these proposals? In some cases, such as the HSR system, a national authority (referred to in this report as the High Speed Rail Corporation) would be responsible for the roll out, but the integration of HSR into state rail systems would require state government coordination. While rebuilding TAFE is predominantly a state issue, Federal funding (and policy initiatives) also clearly come into play.
- When it comes to transport, where exactly would the orbital rail networks be located, what would be their 'nodes' and how would they link into the HSR system? A forthcoming report from the *Jobs for Western Sydney Working Group* will specifically focus on many of these issues.
- How would the funding model work in practice? While the principles of combining Federal government funds and finance provided by community-bases banks has been discussed at length in Chapter 5, where would the exact division of responsibilities lie? The report argues that community-based banking can finance small and medium enterprises, while Federal governments can directly fund major construction activities. But this broad outline still leaves unanswered questions about how the community-based banks are to be capitalised and how state government departments or agencies are to be funded.
- The concept of an employment arc has been outlined, but where exactly would it be located? How would existing residential developments fit into this? Where would the economic development hubs be located?
- How would the recruitment and training of the workforce for these proposals be undertaken to ensure that unemployed and underemployed residents of Western Sydney—particularly young people—do indeed benefit? Chapter 2 outlined the sequence to be followed for meeting the employment needs of Western Sydney, as well as the broad principles of ensuring that locals get access to the jobs, but these ideas need fleshing out. Fortunately, history offers many examples of how governments have approached employment creation in the past. These have included (in the US) the New Deal in the 1930s, and (in Australia) the RED scheme of the 1970s, the CEP programme in the 1980s, and the Working Nation initiative of the early 1990s. While all

these programmes were responses to periods of recession, there is no reason that the present generation of administrators should not learn from them about how best to integrate job creation, recruitment and training.

Appendices

Appendix 1: Additional tables

TABLE A1: MAIN OCCUPATIONS IN WHICH **PENRITH** RESIDENTS WORK IN THEIR LOCAL LGA

	Work in own LGA		*Commute to inner Sydney*	
Occupation	*No.*	*%*	*No.*	*%*
Sales Assistants (General)	2,846	60	128	3
General Clerks	1,041	40	207	8
Child Carers	924	59	30	2
Registered Nurses	913	55	18	1
Truck Drivers	913	33	23	1
Receptionists	760	49	83	5
Retail Managers	704	47	38	3
Primary School Teachers	676	49	9	1
Office Managers	613	50	57	5
Checkout Operators and Office Cashiers	609	68	11	1
Kitchenhands	577	68	16	2
Storepersons	552	23	20	1
Bar Attendants and Baristas	468	63	30	4
Secondary School Teachers	465	43	9	1
Commercial Cleaners	453	50	30	3

Source: 2016 Census data

TABLE A2: MAIN OCCUPATIONS IN WHICH **PENRITH** RESIDENTS COMMUTE TO CENTRAL SYDNEY OR NORTH SYDNEY

	Commute to inner Sydney		*Work in own LGA*	
Occupation	*No.*	*%*	*No.*	*%*
General Clerks	207	8	1,041	40
Accountants	171	21	260	31
Software and Applications Programmers	163	48	55	16
Insurance, Money Market and Statistical Clerks	158	39	25	6
Contract, Program and Project Administrators	147	19	187	25
Personal Assistants	136	28	142	29
Sales Assistants (General)	128	3	2,846	60
Accounting Clerks	126	9	432	32
Advertising, Public Relations and Sales Managers	120	16	189	25
ICT Support Technicians	118	28	73	18
Secretaries	100	16	335	55
ICT Managers	98	30	33	10
Management and Organisation Analysts	91	26	88	26
Bank Workers	90	17	121	23
Advertising and Marketing Professionals	88	28	63	20

Source: 2016 Census data

TABLE A3: MAIN OCCUPATIONS IN WHICH **CAMPBELLTOWN** RESIDENTS WORK IN THEIR LOCAL LGA

	Work in own LGA		*Commute to inner Sydney*	
Occupation	*No.*	*%*	*No.*	*%*
Sales Assistants (General)	2,034	56	227	6
Child Carers	711	55	65	5
Registered Nurses	549	39	53	4
Storepersons	548	28	51	3
General Clerks	517	32	295	18
Retail Managers	448	43	56	5
Primary School Teachers	429	52	5	1
Truck Drivers	425	26	35	2
Checkout Operators and Office Cashiers	424	63	26	4
Commercial Cleaners	406	42	81	8
Kitchenhands	395	59	37	5
Receptionists	392	40	115	12
Forklift Drivers	365	31	7	1
Secondary School Teachers	327	46	10	1
Packers	322	50	9	1

Source: 2016 Census data

TABLE A4: MAIN OCCUPATIONS IN WHICH **CAMPBELLTOWN** RESIDENTS COMMUTE TO CENTRAL SYDNEY OR NORTH SYDNEY

	Commute to inner Sydney		*Work in own LGA*	
Occupation	*No.*	*%*	*No.*	*%*
General Clerks	295	18	517	32
Accountants	260	34	160	21
Sales Assistants (General)	227	6	2,034	56
Software and Applications Programmers	212	55	46	12
Accounting Clerks	205	22	253	27
ICT Support Technicians	159	39	54	13
ICT Managers	151	51	28	10
Contract, Program and Project Administrators	147	30	86	18
Insurance, Money Market and Statistical Clerks	140	50	15	5
Information Officers	136	24	110	19
Personal Assistants	123	41	53	18
Bank Workers	119	29	69	17
Receptionists	115	12	392	40
Secretaries	105	32	126	39
Management and Organisation Analysts	104	45	35	15

Source: 2016 Census data

TABLE A5: MAIN OCCUPATIONS IN WHICH **LIVERPOOL** RESIDENTS WORK IN THEIR LOCAL LGA

	Work in own LGA		*Commute to inner Sydney*	
Occupation	*No.*	*%*	*No.*	*%*
Sales Assistants (General)	1,933	47	266	6
Child Carers	927	61	49	3
Registered Nurses	725	45	36	2
General Clerks	651	34	265	14
Truck Drivers	564	30	30	2
Storepersons	557	26	48	2
Receptionists	467	40	111	10
Primary School Teachers	461	41	10	1
Retail Managers	433	32	79	6
Checkout Operators and Office Cashiers	415	57	29	4
Secondary School Teachers	382	34	6	1
Commercial Cleaners	348	34	79	8
Defence Force Members - Other Ranks	338	89	8	2
Kitchenhands	308	42	54	7
Office Managers	304	39	75	10

Source: 2016 Census data

TABLE A6: MAIN OCCUPATIONS IN WHICH **LIVERPOOL** RESIDENTS COMMUTE TO CENTRAL SYDNEY OR NORTH SYDNEY

	Commute to inner Sydney		*Work in own LGA*	
Occupation	*No.*	*%*	*No.*	*%*
Accountants	367	32	212	18
Sales Assistants (General)	266	6	1,933	47
General Clerks	265	14	651	34
Software and Applications Programmers	227	55	51	12
Accounting Clerks	205	17	304	25
Contract, Program and Project Administrators	173	26	100	15
ICT Managers	163	43	37	10
Insurance, Money Market and Statistical Clerks	158	47	21	6
ICT Support Technicians	155	32	77	16
Bank Workers	139	24	67	12
Management and Organisation Analysts	135	39	47	14
Personal Assistants	129	35	79	21
Security Officers and Guards	120	18	95	14
Advertising, Public Relations and Sales Managers	116	19	113	18
Sales Representatives	113	13	171	20

Source: 2016 Census data

TABLE A7: MAIN INDUSTRIES IN WHICH **PENRITH** RESIDENTS WORK IN THEIR LOCAL LGA

	Work in own LGA		*Commute to inner Sydney*	
Industry	*No.*	*%*	*No.*	*%*
Hospitals (except Psychiatric Hospitals)	1,684	53	64	2
Takeaway Food Services	1,592	75	19	1
Supermarket and Grocery Stores	1,252	48	26	1
Primary Education	986	51	3	0
Cafes and Restaurants	941	67	57	4
Road Freight Transport	826	32	4	0
Child Care Services	712	55	25	2
Secondary Education	678	46	16	1
Other Social Assistance Services	584	35	42	3
Central Government Administration	573	51	124	11
Local Government Administration	550	47	42	4
Aged Care Residential Services	526	37	35	2
Clubs (Hospitality)	511	60	7	1
Department Stores	463	55	23	3
Real Estate Services	443	54	78	9

Source: 2016 Census data

TABLE A8: MAIN INDUSTRIES IN WHICH **PENRITH** RESIDENTS COMMUTE TO CENTRAL SYDNEY OR NORTH SYDNEY

	Commute to inner Sydney		*Work in own LGA*	
Industry	*No.*	*%*	*No.*	*%*
Banking	493	30	204	13
General Insurance	296	43	35	5
Legal Services	284	41	208	30
Computer System Design and Related Services	274	33	196	23
Other Auxiliary Finance and Investment Services	196	41	131	27
State Government Administration	193	15	294	24
Accounting Services	139	20	331	47
Central Government Administration	124	11	573	51
Accommodation	119	31	97	25
Higher Education	119	15	377	48
Rail Passenger Transport	110	38	55	19
Non-Residential Building Construction	105	14	158	22
Finance, nfd	94	27	62	18
Management Advice and Related Consulting Services	88	28	100	32
Police Services	83	9	201	22

Source: 2016 Census data

TABLE A9: MAIN INDUSTRIES IN WHICH **CAMPBELLTOWN** RESIDENTS WORK IN THEIR LOCAL LGA

	Work in own LGA		*Commute to inner Sydney*	
Industry	*No.*	*%*	*No.*	*%*
Takeaway Food Services	1,157	76	27	2
Supermarket and Grocery Stores	924	45	59	3
Hospitals (except Psychiatric Hospitals)	838	35	148	6
Primary Education	730	59	3	0
Cafes and Restaurants	620	58	89	8
Child Care Services	558	53	61	6
Other Social Assistance Services	539	41	65	5
Aged Care Residential Services	536	32	42	3
Secondary Education	533	51	26	2
Local Government Administration	379	45	53	6
Department Stores	376	56	60	9
Road Freight Transport	367	24	11	1
Building and Other Industrial Cleaning Services	358	39	97	11
Clothing Retailing	290	46	90	14
Clubs (Hospitality)	265	51	9	2

Source: 2016 Census data

TABLE A10: MAIN INDUSTRIES IN WHICH **CAMPBELLTOWN** RESIDENTS COMMUTE TO CENTRAL SYDNEY OR NORTH SYDNEY

	Commute to inner Sydney		*Work in own LGA*	
Industry	*No.*	*%*	*No.*	*%*
Banking	493	44	103	9
Computer System Design and Related Services	379	48	155	20
Legal Services	323	56	109	19
General Insurance	273	58	29	6
Other Auxiliary Finance and Investment Services	269	61	67	15
Accommodation	243	54	87	19
State Government Administration	205	22	144	15
Central Government Administration	190	32	102	17
Accounting Services	177	32	181	33
Higher Education	149	27	139	26
Hospitals (except Psychiatric Hospitals)	148	6	838	35
Rail Passenger Transport	122	39	92	29
Finance, nfd	118	34	94	27
Building and Other Industrial Cleaning Services	97	11	358	39
Wired Telecommunications Network Operation	96	53	27	15

Source: 2016 Census data

TABLE A11: MAIN INDUSTRIES IN WHICH **LIVERPOOL** RESIDENTS WORK IN THEIR LOCAL LGA

	Work in own LGA		*Commute to inner Sydney*	
Industry	*No.*	*%*	*No.*	*%*
Hospitals (except Psychiatric Hospitals)	1,360	46	172	6
Takeaway Food Services	1,117	62	49	3
Defence	973	83	50	4
Supermarket and Grocery Stores	918	46	43	2
Child Care Services	870	62	53	4
Primary Education	688	44	11	1
Road Freight Transport	567	31	19	1
Secondary Education	541	38	22	2
Aged Care Residential Services	457	28	24	1
Cafes and Restaurants	445	36	122	10
Building and Other Industrial Cleaning Services	403	37	79	7
Department Stores	325	47	54	8
Combined Primary and Secondary Education	309	44	24	3
Clothing Retailing	303	36	118	14
General Practice Medical Services	271	43	32	5

Source: 2016 Census data

TABLE A12: MAIN INDUSTRIES IN WHICH **LIVERPOOL** RESIDENTS COMMUTE TO CENTRAL SYDNEY OR NORTH SYDNEY

	Commute to inner Sydney		*Work in own LGA*	
Industry	*No.*	*%*	*No.*	*%*
Banking	636	37	117	7
Computer System Design and Related Services	403	41	179	18
Legal Services	326	51	127	20
General Insurance	305	54	42	7
Other Auxiliary Finance and Investment Services	271	53	104	20
Accounting Services	254	33	224	29
State Government Administration	204	20	211	20
Hospitals (except Psychiatric Hospitals)	172	6	1,360	46
Higher Education	165	38	21	5
Accommodation	159	45	52	15
Non-Residential Building Construction	149	23	99	15
Central Government Administration	146	21	212	30
Wired Telecommunications Network Operation	139	50	29	10
Cafes and Restaurants	122	10	445	36
Clothing Retailing	118	14	303	36

Source: 2016 Census data

Appendix 2:
Australia's abortive high-speed rail attempts

Australia's attempts to introduce high-speed rail (HSR) has a long history, with many studies completed, but ultimately all projects abandoned. M. and D. James, the authors of a Parliamentary Briefing Paper on the issue, accurately remarked that a 'general lack of governments' willingness to commit to rail resources has not assisted plans'.[1]

The first time HSR was proposed for Australia was in 1981 with the idea of linking the south-eastern Australian capitals. It suggested new, faster trains running on existing tracks, with upgrades and some new sections and bypasses. While this would have led to improved speeds had it eventuated, the outcomes would not have compared with the speeds achieved overseas by genuine HSR trains. Trains such as Japan's bullet train require dedicated, high standard tracks and are more expensive to build. In the case of the 1981 proposal the expected journey time from Sydney to Melbourne was 9 hours, an outcome which did not rate as 'high speed' by overseas standards at the time. Such a time is more than three times what would be expected of genuine HSR trains today.

In 1984 the CSIRO did propose a genuine HSR line between Sydney, Canberra and Melbourne, via Cooma, Orbost and the Latrobe Valley. The train was to be based on the French TGV with an operating speed of 350 kph. The travel time for Sydney to Melbourne was 3 hours. The proposal was developed by a Very Fast Train consortium but the Federal government, concerned about the economic viability of the project, rejected it. Nevertheless, private sector interest in the project continued and Elders IXL, TNT and other business interests held discussions with the CSIRO, three banks and two construction companies regarding funding.

Two years later, in 1986 a Very Fast Train Joint Venture was established comprising Elders IXL, TNT, Kumagai Gumi (joined by BHP in 1987) to pursue a Sydney to Melbourne proposal. A pre-feasibility study was completed in 1987, a passenger market analysis completed in 1988 and a full feasibility study initiated in 1988. A concept report was also completed at the end of 1988 which proposed that trains could operate at 350 kph. It was envisaged that the system would be built and

1. This chronology draws on a number of sources, particularly P. Williams (1998), *Australian Very Fast Trains, A Chronology*, Background Paper 16, Canberra: Parliamentary Library, URL: http://www.aph.gov.au/library/pubs/bp/1997-98/98bp16.htm and M. and D. James (1997), *High Speed Trains between Canberra and Sydney*, Current Issues Brief 17, 1996–97, Canberra: Parliamentary Library. The other sources are shown at appropriate places in the text.

operated by private enterprise. The Queensland government later expressed an interest for the line to extend to Brisbane. However, for the project to proceed the cooperation of Federal, state and territory governments was required, and this was not forthcoming.[2] By 1989 the Hawke Labor government was expressing strong support and magnetic levitation (Maglev) technology was thrown into the mix. A Senate Standing Committee was established to investigate several aspects of the project.

Various state and territory government feasibility studies were conducted and the joint venture partners released a progress report. In 1990 the ACT government gave conditional support to the proposal, but the New South Wales government embarked in a different direction and approved a feasibility study for a cheaper technology—a tilt train—which would be faster than existing trains but much slower than genuine HSR.[3]

A report conducted for the ACT government strongly supported the original project, but the government's Advisory Committee called for further studies. The Victorian government also issued a report supporting the venture. The report by the NSW government was not supportive. However, by December 1990 all state and territory governments were still on board and the Prime Minister issued a statement setting out arrangements between the four governments.[4] In 1991 the Senate Standing Committee completed their review which ruled out the Maglev because of cost but called for public comments and further consideration. A Cabinet sub-committee was established to examine the proposal.

In June 1991 the Government responded to the Senate Standing Committee report indicating general support for the project with reservations, one being the proposed taxation treatment of the venture. A report prepared for the joint venture partners found the proposal was not viable without government tax concessions. Then in August the Government rejected the joint venture's proposals because of the tax arrangements proposed. After 7 years of deliberations, the project was declared dead in August 1991.[5]

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2. VFT Study Team (1987), *VFT Pre-Feasability Study Report*, A Proposal to Provide a Very Fast Train Service Linking Sydney, and Melbourne via Canberra in 3 Hours, June, Canberra: CSIRO and Elders IXL, Kumagai Gumi, TNT.
3. 'New Fast Train Proposal tilts at VFT', *Canberra Times*, 19 January 1990, p. 5. https://trove.nla.gov.au/newspaper/article/120873347.
4. Department of Prime Minister and Cabinet, Media Release, 10 December 1990, https://pmtranscripts.pmc.gov.au/sites/default/files/original/00008229.pdf.
5. Senate Standing Committee on Transport, Communications and Infrastructure (1991), *Aspects of a Proposal for a Very Fast Train*, Final Report, Canberra: Commonwealth of Australia.

In August 1993 the project re-emerged as a proposal by Speedrail Pty Ltd but in the form of a Sydney to Canberra rail line. A working group was subsequently established to examine the proposal and a feasibility study was funded by the Federal and ACT governments and Speedrail. Detailed proposals were received for an electric tilt train, a diesel-electric tilt train, a Maglev and—from the Speedrail group—a French TGV-type system (which suggested a travel time of 80 minutes).[6]

In 1994 the Victorian government initiated a HSR project between Melbourne and Sydney which was not compatible with the Speedrail proposal. As mentioned above, NSW had begun looking at cheaper options and favoured tilt train technology. While a tilt train can travel faster around bends and is cheaper because it uses existing track, it nevertheless travels much slower than genuine HSR. Ultimately, a Swedish tilt train was trialled in NSW in 1995 but proved unsatisfactory largely due to deficiencies in the existing track.[7]

In May 1995 a Sydney to Canberra to Melbourne proposal, which had been declared dead in 1991, emerged again, spurred on by the forthcoming Sydney Olympics.

In 1996 the Speedrail Sydney to Canberra proposal became an election issue, with support from the Coalition which hoped it might reduce freight on the roads. However, a government report found that the project would not be viable without a government subsidy. A cheaper tilt train option, preferred by the NSW government, was on the table but the ACT government seemed more interested in either Maglev or the Speedrail options rather than tilt trains. NSW ultimately came on board with several provisos, one being that there would be no net cost to NSW taxpayers. Victoria indicated support for the Sydney to Canberra line provided it was the first stage of a Sydney to Melbourne route.[8]

In late 1996 a joint Federal, New South Wales and ACT joint venture was established to investigate HSR between Sydney and Canberra on the understanding that the project would be commercially viable. In December 1997 four international consortia joined the final tender process for the project.

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6. Philip Laird (2011), 'Potential reduction in energy use from a High Speed Rail network in Australia', in: *34th Australasian Transport Research Forum*, pp. 1–17, URL: http://ro.uow.edu.au/cgi/viewcontent.cgi?article=9348&context=infopapers, p. 1.
7. Curve speeds increased but time savings were not impressive. The savings in journey times between Sydney and Canberra was about 42 minutes but the overall time remained nearly 3½ hours. See D. Foldi, Project Manager, 'Tilt Train Trial, Leaning towards the future', *Countrylink's X2000 Tilt Train Trial*.
8. Philip Laird (2001), 'Where we are now: National patterns and trends in transport', in: *Back on Track: Rethinking Transport Policy in Australia and New Zealand*, ed. by Philip Laird et al., Sydney: UNSW Press, pp. 32–33.

Meanwhile, in September 1997 long time HSR campaigner, Deputy Prime Minister Tim Fischer, revived the idea of the Sydney to Melbourne HSR line. In February 1998 a feasibility study was commissioned but the project did not proceed. In Tim Fischer's view, Max Moore Wilton, head of the Department of Prime Minister and Cabinet, had opposed the rail project and inflated the cost estimates for rail.[9]

By 1997 the Speedrail Group had expanded to include the Commonwealth Bank, Qantas and other corporate enterprises and in August 1998 it won the right to proceed to a confirmation stage.[10] The Speedrail proposal was costed at $4.5 billion and finance arranged for $3.5 billion. The Sydney to Canberra journey was expected to take 80 minutes, achieving a maximum speed of 320 km/h. However, in December 2000, fearing it would have to finance the gap, the Federal Government terminated the proposal, and commissioned another study.[11]

The study which emerged—The East Coast Very High Speed Train scoping Study Phase 1—was conducted by ARUP and TMG International and was released in November 2001. This comprehensive 435 page report investigated the prospects for a HSR system linking Brisbane, Sydney, Canberra and Melbourne, providing inland and coastal route options, as well as two technology types: Maglev and wheels-on-tracks. At that time, the Maglev travelled at 350 to 500 km/h, and wheels-on-tracks travelled at 250 to 350 km/h. The study calculated journey times at different speeds and compared them to those achieved by the conventional inter-state rail system, the XPT. The existing XPT Brisbane to Sydney time of 14 hours 15 minutes could be reduced to between 3.6 and 5.5 hours.[12] The report showed that a HSR network could capture a significant part of the future East Coast travel market and provide relief to other modes.[13] It estimated 194,000 traffic movements could be removed from Sydney Airport by 2021; and by 2051 the report forecast HSR achieving 66 million trips, double the number of trips undertaken by air.[14]

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9. 'Canberra stop on high speed rail route', *Canberra Times*, 1 August 2011. https://www.canberratimes.com.au/national/act/canberra-stop-on-high-speed-rail-route-20110801-1wuuh.html.
10. John Howard, speech to Parliament, 4 August 1998, Transcript ID 10967 https://pmtranscripts.pmc.gov.au/release/transcript-10967.
11. P. Laird, 'Let's get moving with affordable, medium-speed alternatives to the old dream of high speed rail', *The Conversation*, 14 May 2018.
12. Arup-TMG (2001), *East coast very high speed train scoping study : phase 1-preliminary study*, Final Report, Canberra: Department of Infrastructure, Transport, Regional Development and Local Government, p. 4.
13. ibid., p. 10.
14. ibid., p. 9.

The Phase 1 report was enthusiastic about the benefits which the rail line could bring to Australia, but it also accurately summed up the political situation: 'To date in Australia, a common, powerful vision of the role of a VHST (very high speed train) in the East Coast of Australia has not been held by the Governments which would be involved'.[15] Fearing the need for government funding, the Coalition terminated the investigation in March 2002 and instead decided to 'pursue practical improvements to existing rail freight and government passenger service infrastructure'.[16]

Various business interests have taken the initiative in continuing to push for HSR. For example the Business Council of Canberra produced a document *High Speed Rail for Australia: an opportunity for the 21st century* in 2008, and the Sydney and NSW Business Chambers in 2012 jointly commissioned a study titled *Liveable Sydney: How would High Speed Rail Change Sydney and NSW?*.[17]

One contributing factor in the failure of governments to introduce a genuine HSR network in Australia has been the existence of tilt-train technology. Because of the cost savings in using existing tracks, tilt trains have a habit of re-entering the discussion. While tilt trains have the appeal of cheapness, they cannot achieve the same objectives and thus the technology has not been adopted (except in Queensland). During the Sydney to Canberra HSR investigations in December 1997 the waters were again muddied again by the tilt train's re-emergence when NSW suggested this technology be used for inter-urban routes, such as Sydney to Newcastle. They suggested that travel times between these two cities could be reduced by 30%.[18]

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15. Arup-TMG 2001, p. 1.

16. J. Anderson, Media Release, 'Government ends scoping study on east coast very high-speed train network', 26 March 2002, http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;query=Id%3A%22media%2Fpressrel%2FOH766%22.

17. Tipping Point Institute (2012), *Liveable Sydney: how would high-speed rail change Sydney and NSW?*, Tipping Point Institute, NSW Business Chamber, and Sydney Business Chamber, URL: https://www.nswbusinesschamber.com.au/NSWBC/media/Policy/Liveable-Sydney-How-would-High-Speed-Rail-Change-Sydney-and-NSW_1.pdf.

18. M. and James 1997.

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