

High-Speed Rail for Australia



Presentation to Engineers Australia, Southern Highlands

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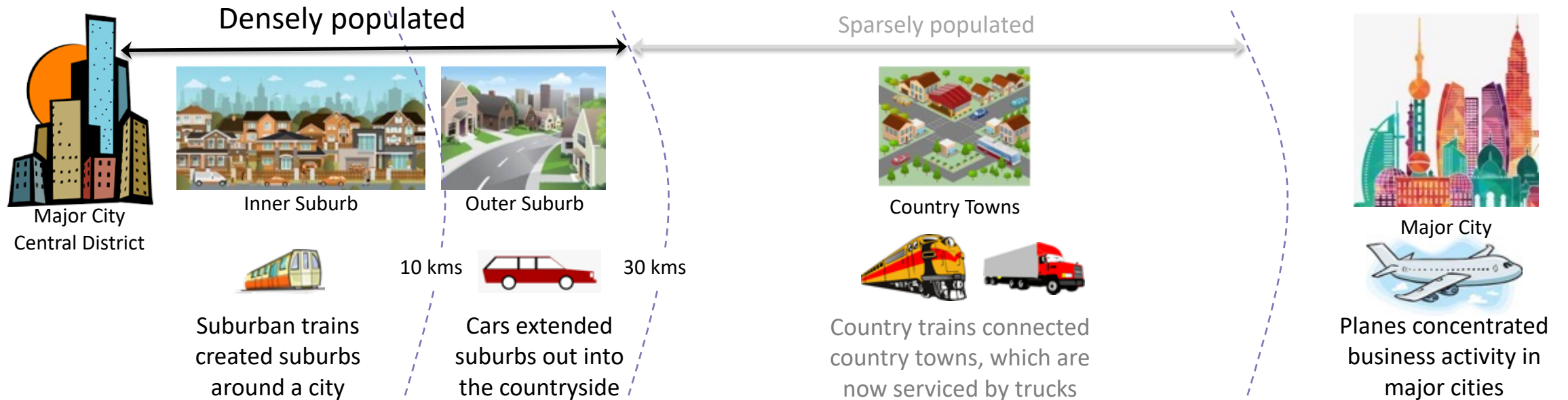


1 Why HSR? Addressing Key Challenges

Key Challenge	How could HSR Help?
Improving Housing Affordability	Encourage Decentralization
Reducing Congestion	Mode shift from Road to Rail
Decarbonising Transport	Energy Efficiency and Electrification
Reducing Inequality	Improve opportunities in regional areas
Enhancing Productivity	More efficient freight and logistics

HSR and Decentralisation

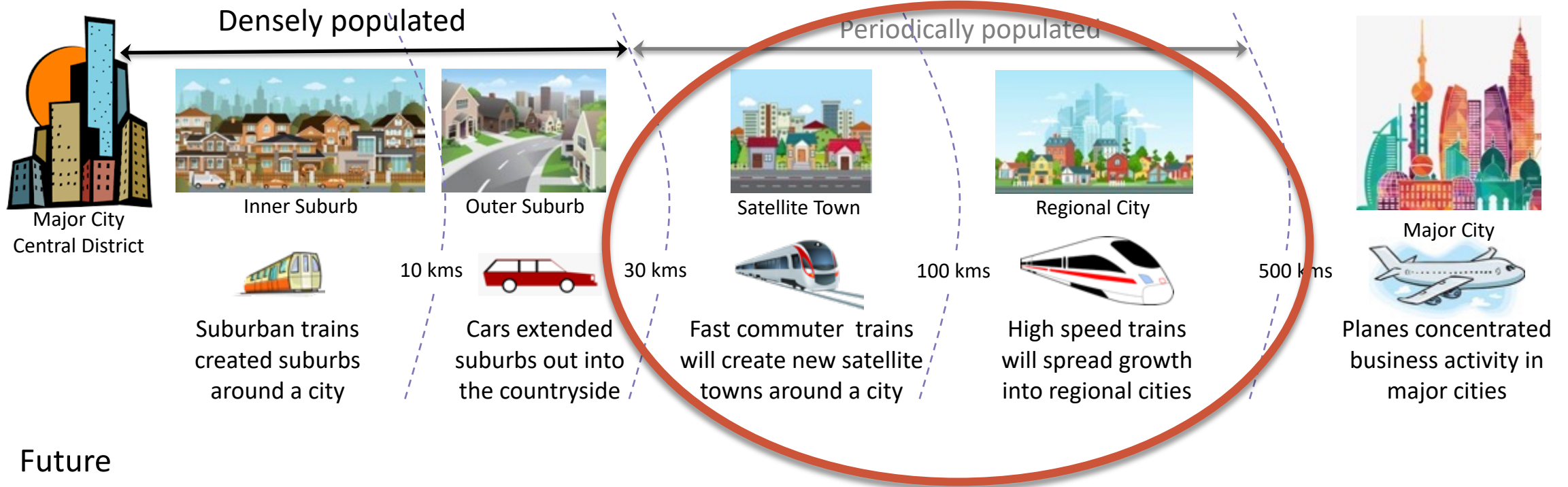
Australia is a highly-urbanised country dominated by its large cities



71% of Australians live in a few major cities, with sparse population in regional areas

- Originally towns were settled for access to natural resources, regardless of distance
- Manufacturing concentrated growth in capital cities for access to people and ports
- Suburban trains and cars extended suburban growth well out of the city
- Service industries have concentrated jobs in central city districts that are connected to other cities by planes

Decentralisation



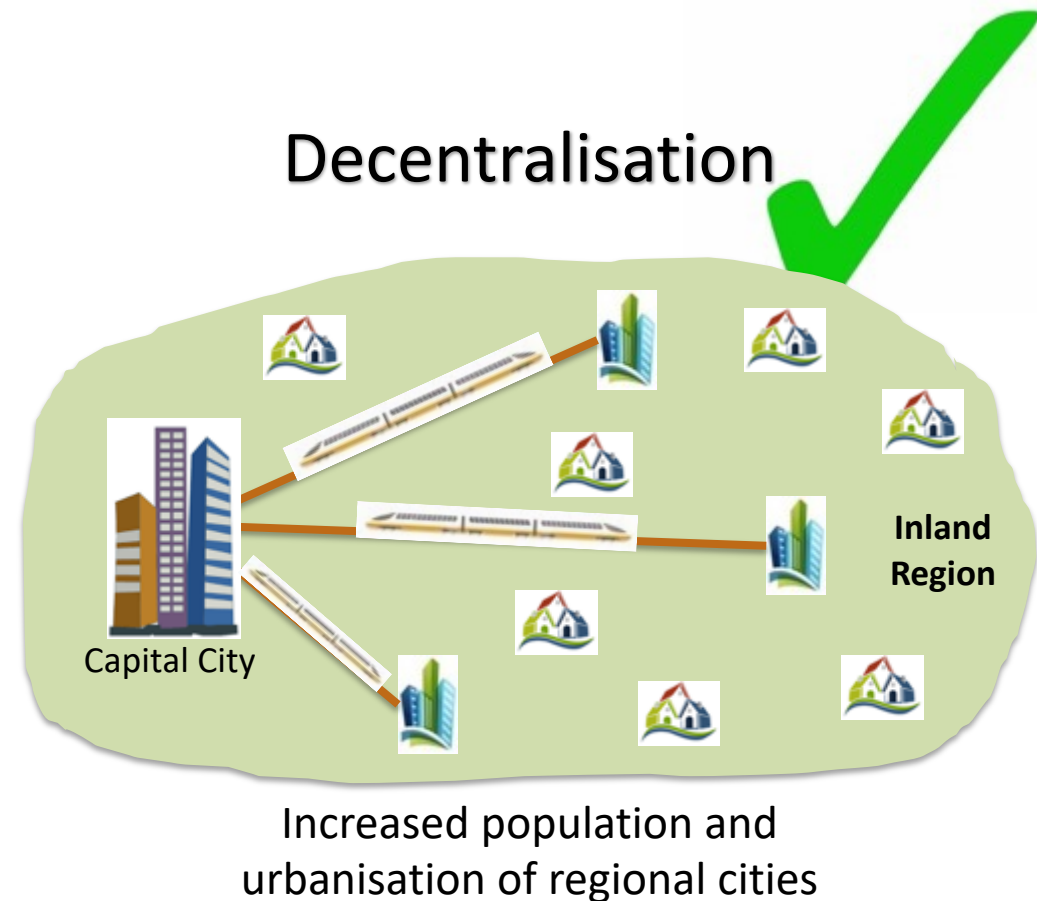
Future

- Fast regional commuter trains will allow people to move to new **satellite towns and cities** for a less-pressured lifestyle
- High speed rail will open **large regional cities** as alternative locations for businesses to operate, starting a natural cycle of growth that attracts more people and businesses into the city
- HSR does not mean longer daily commutes, but rather makes it viable for occasional trips to the capital cities for work, education, specialist services or maintaining social connections with friends and family

Stronger Regional Opportunities

Networks of cities drive greater growth and equity

- People and goods can move efficiently to where they are needed most
 - congestion creates a drag on economic growth
- Businesses can relocate to secondary cities
 - to reduce high costs associated with labour, raw materials and land
- The network creates stronger value chains
 - The network effect opens more connections and opportunities for businesses in each city
- Networks have greater resilience
 - putting the “eggs in different baskets”
- More population in regional cities will improve employment, education and health outcomes and reduce geographical inequities between the capital cities and the rest of Australia
- Shift of freight and passengers to rail will improve overall productivity of the transport sector.



Decarbonising Transport Emissions

- Freight Rail is three times more energy efficient than Road Freight. The plan allows for a major shift of interstate road freight to fast intermodal trains.
- Suburban Rail in Sydney is already using 100% green electricity, and the new rollingstock on order for regional NSW services are Bi-Mode, able to use overhead power where available.
- The first generation of high speed trains for Australia would enter service on completion of Stage 1 (The Wentworth Deviation) and be hybrid trains able to use 25 KvAC on the Stage 1 section, 1500V DC on other electrified lines, and green hydrogen for sections not yet electrified.
- The following Generation of high speed trains would enter service on completion of Stage 3. This would be electrified throughout. This generation would use 25KvAC or 1500V DC, and 100% green power.
- Future generations of freight locomotives are being developed to use combinations of battery and hydrogen power, or bi-mode which can also draw power from the overhead wires.



Hydrogen-powered fuel cells on the roof of an Alstom Coradia I-Lint train, already in service in Germany and elsewhere in Europe.



Mode Shift to Rail

In Europe rail is making a comeback, with bans on short-haul flights in France announced on 25 May 2023, major expansion underway and planned for high-speed rail, and also for new types of freight trains which can load and unload rapidly, such as the French Modalohr system (top right) or the German Cargobeamer system (bottom left).

France bans short-haul domestic flights that could be made by train

By Lara Smit with wires

Posted Yesterday at 9:54am



<https://www.abc.net.au/news/2023-05-24/france-bans-short-distance-flights-that-could-be-made-by-train/102385054>



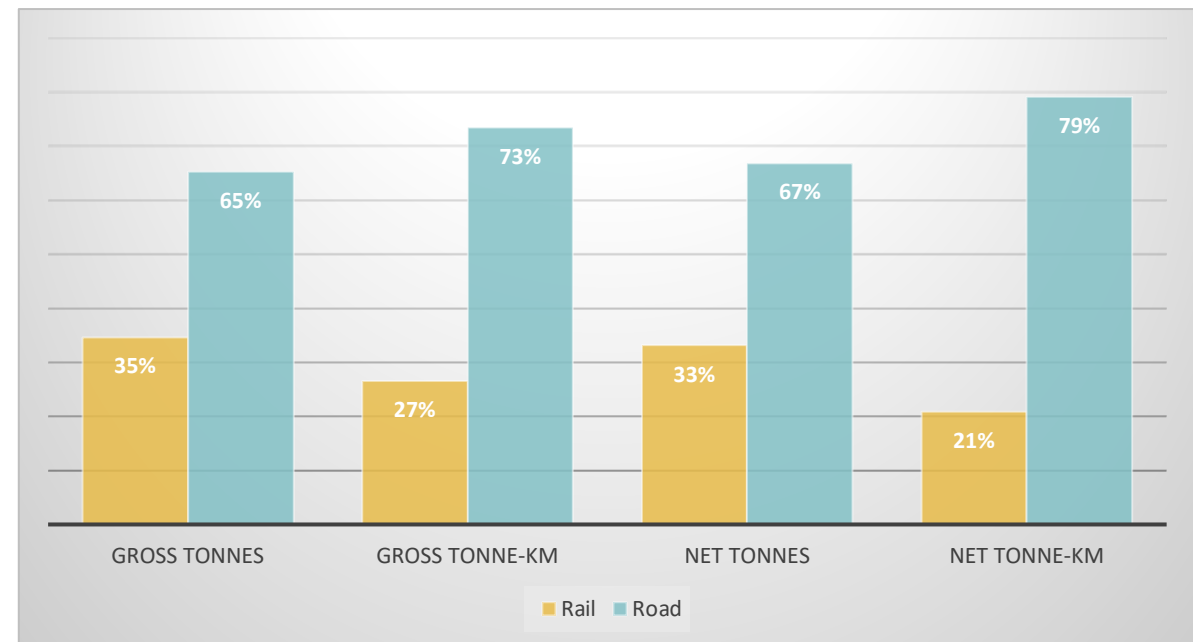
Mode Shift to Rail

In the Sydney – Melbourne corridor, rail currently handles only a tiny fraction of passenger traffic, and between 20% and 37% of total freight traffic, depending on the measure used. It handles less than 10% of the valuable “next day” freight market between the two cities as it is currently too slow to compete with trucks.

As a result an average of 6,300 trucks per day use part or all of the Hume Highway, with up to 10,000 in the entries to Sydney and Melbourne, while the Sydney – Melbourne air market is the fifth busiest in the world.

The High Speed Rail line between Sydney and Melbourne is designed to accommodate:

- up to 200 trains per day in each direction using part or all of the line.
- 50% of the intercity fast freight,
- 40% of future air traffic, and,
- most regional and commuter traffic to cities and towns on the route.



3 What? HSR for Australian Conditions

Previous Approach	Fasttrack Approach
Stand-Alone System	Integrated System
Intercity airline competition focus	Intercity, Fast Regional and Fast Commuter as well
Passengers Only	Passengers and Fast Freight
HSR Station in Sydney CBD	HSR Station at Olympic Park
400 km/hour top speed; 3 hours Sydney - Melbourne	320 km/hour top speed; 4 hours Sydney – Melbourne
Mega projects	Smaller Stages, fits within budgetary constraints.

Stand-Alone vs Integrated

Japan's Shinkansen initiated high-speed rail in 1964

- Built as a stand-alone system as the existing railway was narrow gauge

France, Germany, Italy, Spain and other countries followed

- They built on existing rail networks, adding high-speed segments.
- Provides access to city centres and to cities beyond the HSR network.

There are advantages in a stand-alone HSR system

- Fewer integration issues and less complexity

But there are problems with this approach in Australia:

- The "all or nothing" approach limits short-term benefits
- Massive expenditure is required for the first complete line
- There are no benefits for faster freight

Budget and other constraints are likely to mean HSR will never get off the ground unless developed in manageable steps. This means integration with existing rail networks

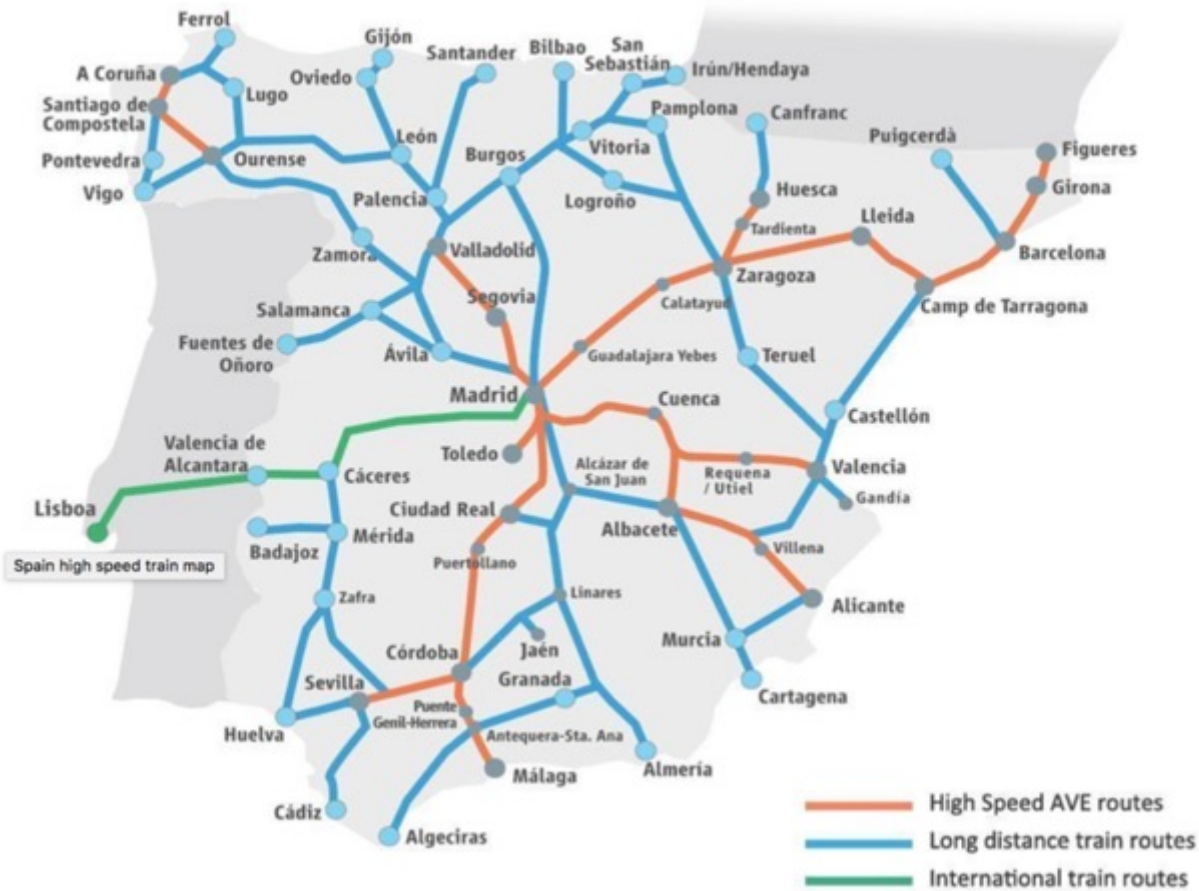


Shinkansen (Top) and Gare de Lyon station in Paris (below)



Mix of High Speed and Faster Rail adopted overseas

High Speed and Long Distance routes



Spain

Railway map of People's Republic of China Colored lines showing CRH and other high speed rail services Last update: 2022-02-04



China

Regional and Commuter Trains, not just Intercity

There are now a wide variety of high-speed trains available, such as the latest Alstom double deck train focusing on low-cost services (left); the Talgo Dual (centre) which is ideal for fast regional services, and the Stadler fast Commuter train (right).



Alstom's Avelia high-capacity Horizon Duplex has 740 seats in 200m length



Talgo 250 Dual changes gauge, tilts, and can operate on non-electrified track

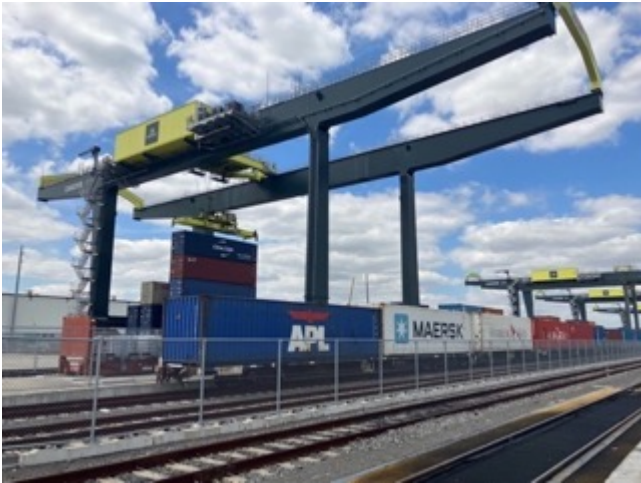


Stadler KISS regional commuter trains have high comfort, top speeds of 160 km/hr and can seat from 250 to 1000 passengers

Fast Freight as well as Passenger

Current Intermodal Freight Trains take around 13 hours Sydney – Melbourne. This is slow compared with road transport which has grabbed most of the more lucrative overnight intercity freight market. But these could be accelerated by using sections of HSR lines if:

- They were operated at night or at times when passenger train frequencies were lower during the day
- They had sufficient power and tractive effort to climb any hills at high speeds
- Their axle loads were moderate
- Signalling and other systems were made compatible.



At Moorebank, automated cranes (left) can unload and reload a whole train in 2 hours, while automated stackers (right) move the containers direct to warehouses for unloading.



New generations of Bi-Mode (diesel plus electric) freight locomotives are emerging in Europe, e.g. the Euro 9000 (above), which generate extremely high power (9000 MW) when running on electrified track (as the HSR lines will be).

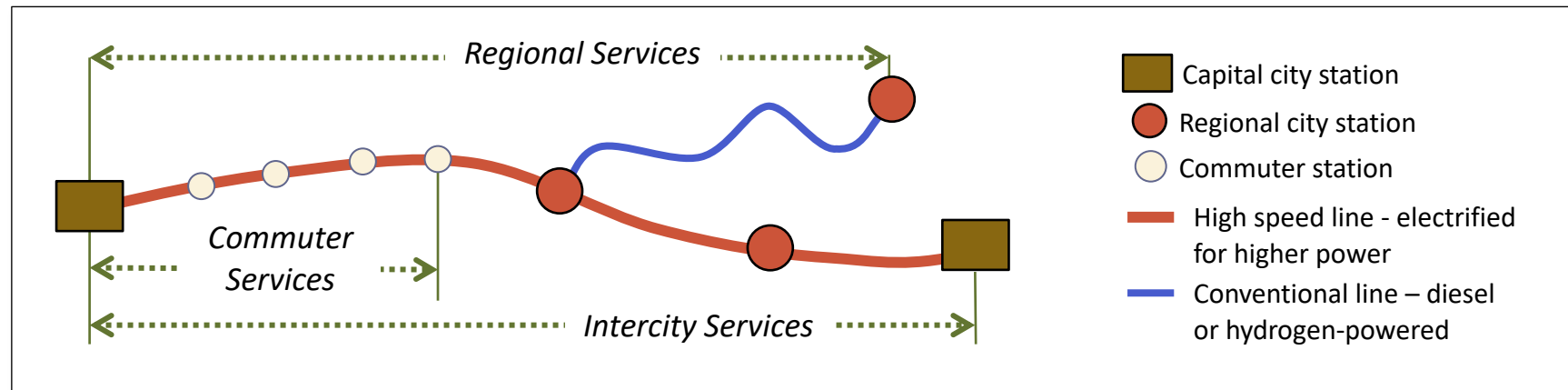
The opening of the automated Moorebank Intermodal Terminal (left) provides an opportunity to rethink intermodal rail freight as it will reduce load/unload times and improve supply chain efficiencies.

Retain the Existing Rail Corridor

The new HSR corridor will handle growing numbers of high-speed inter-capital, fast commuter, fast regional and fast freight trains.

But the existing corridor will still be needed for:

- slower freight trains, including steel, minerals, waste, cement and other industrial trains as well as seasonal grain trains
- local passenger services serving smaller centres
- fast regional passenger trains which can use both the high speed and the low-speed lines
- Maintaining services in the event of major disruptions or maintenance requirements on the high-speed lines



Different HSR Design Parameters

Parameter	Previous Approach	Fastrack Approach
Sydney – Melbourne Fastest Time – Passenger	3 hours	4 hours
Sydney – Melbourne Fastest Time - Freight	13 hours	8 hours
Maximum Passenger Train Speed	350 km/hr	320 km/hr
Maximum Freight Train Speed	115 km/hr	130 – 160 km/hr
Trains on high-speed line:		
High Speed Passenger	Yes	Yes
Fast Regional Trains		Yes
Fast Commuter Trains		Yes
Fast Freight Trains		Yes

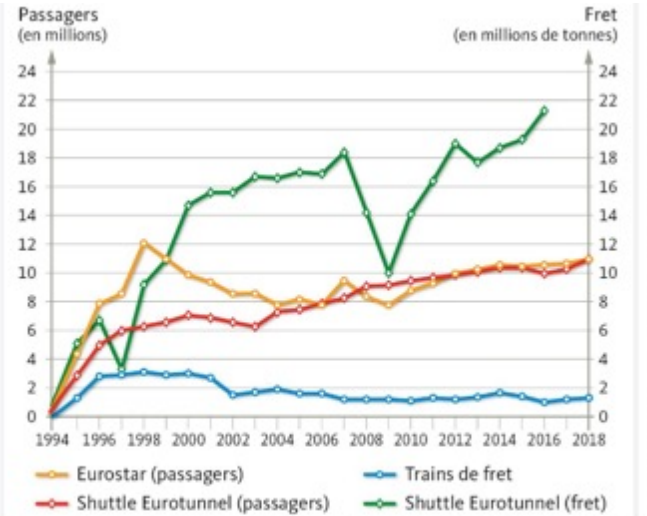
Sharing Passenger and Freight



Eurostar emerging from the Chunnel. These high-speed trains carry around 50% of passengers through the tunnel.



The remaining 50% of passengers travel by car in fast double-deck shuttle trains



The Chunnel also carried around 22 m tonnes of freight and 20 m passengers in 2018



Freight moving through the Chunnel in 2022 by fast freight shuttle trains.

Passenger and Fast Freight Trains share tracks in many places in Europe.



Freight and High-Speed Trains in Germany



However low speed trains, like this limestone train in NSW, would be kept on the existing line. Currently they limit the speed of passenger trains like the XPT.

3 Where? South-East Australia

South-East Australia (between Sunshine Coast and Geelong) is the logical place for High-Speed Rail:

- It is the densest part of Australia now and in the future
- It has the highest levels of overall rail traffic (outside of mining areas).
- Its current rail alignment is 150 years old and very windy and slow, and in urgent need of a major upgrade.
- Rail investment in the corridor has fallen well behind highway investment, driving most freight and passenger movement to road, reducing the overall efficiency of our transport.
- Without major rail investment there will need to be comparable or greater investment in more roads and airports. These cannot deliver the same economic, social and environmental benefits as a well-designed HSR system.



Without rail upgrades, more highways, huge trucks and second airports for Melbourne and Brisbane will be needed.

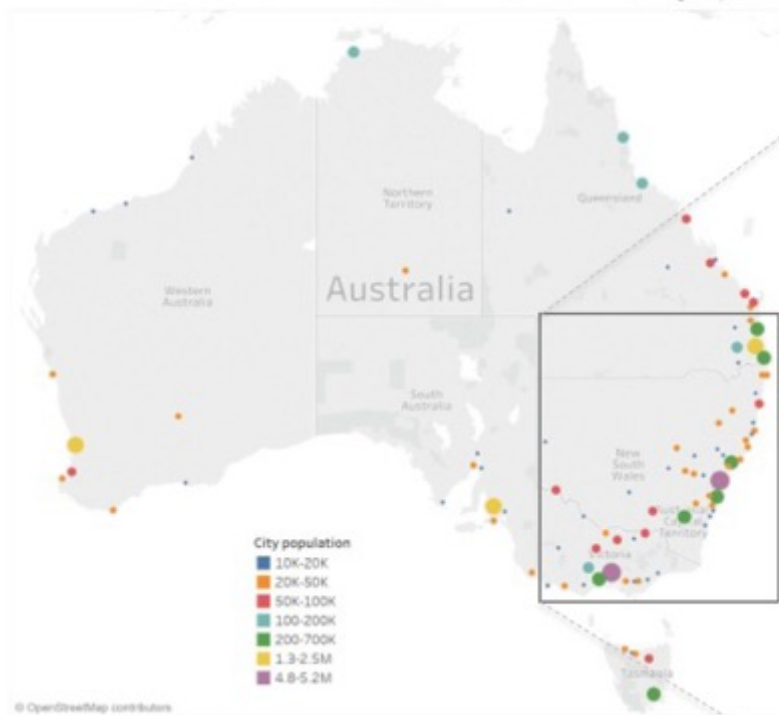


South-East Australia

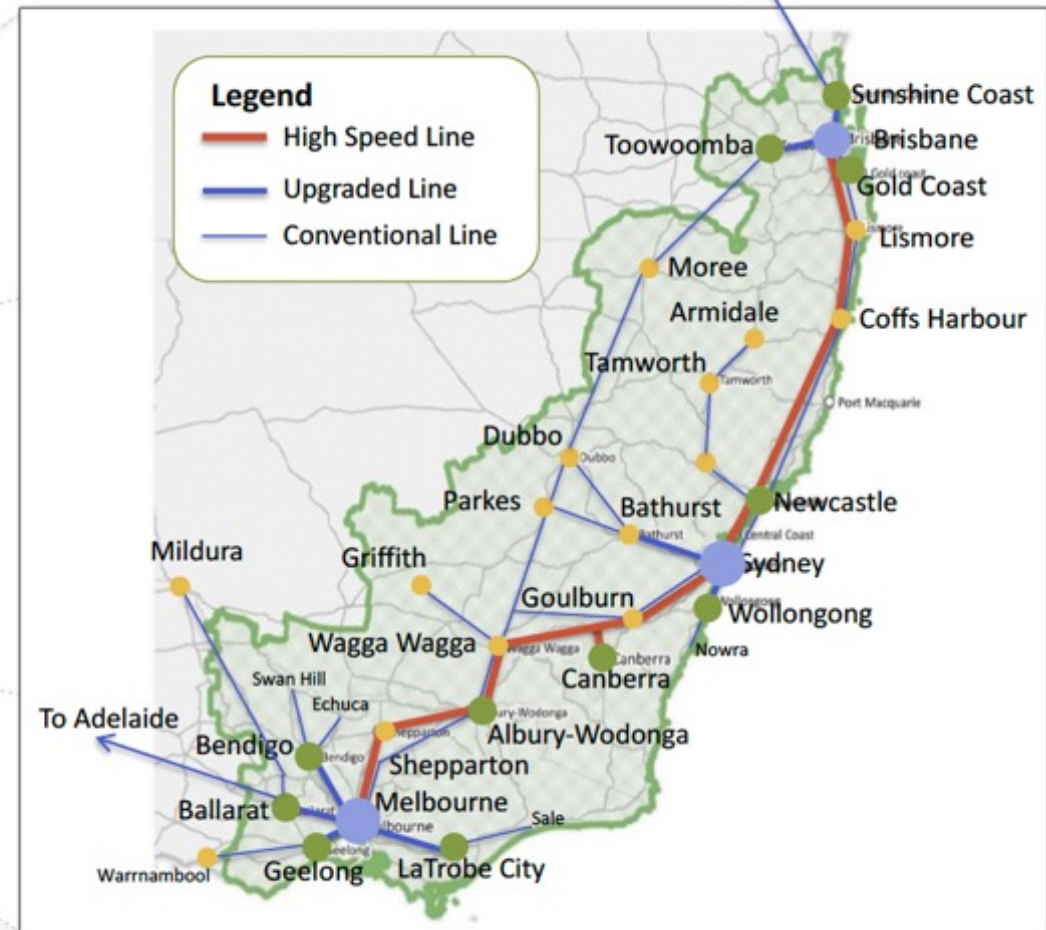
75% of Australia's Population. Potential for 12 million more people by 2065. Without HSR, most of this likely to be in Sydney, Melbourne and Brisbane.

Australian cities and larger towns by population, 2017

chartingtransport.com

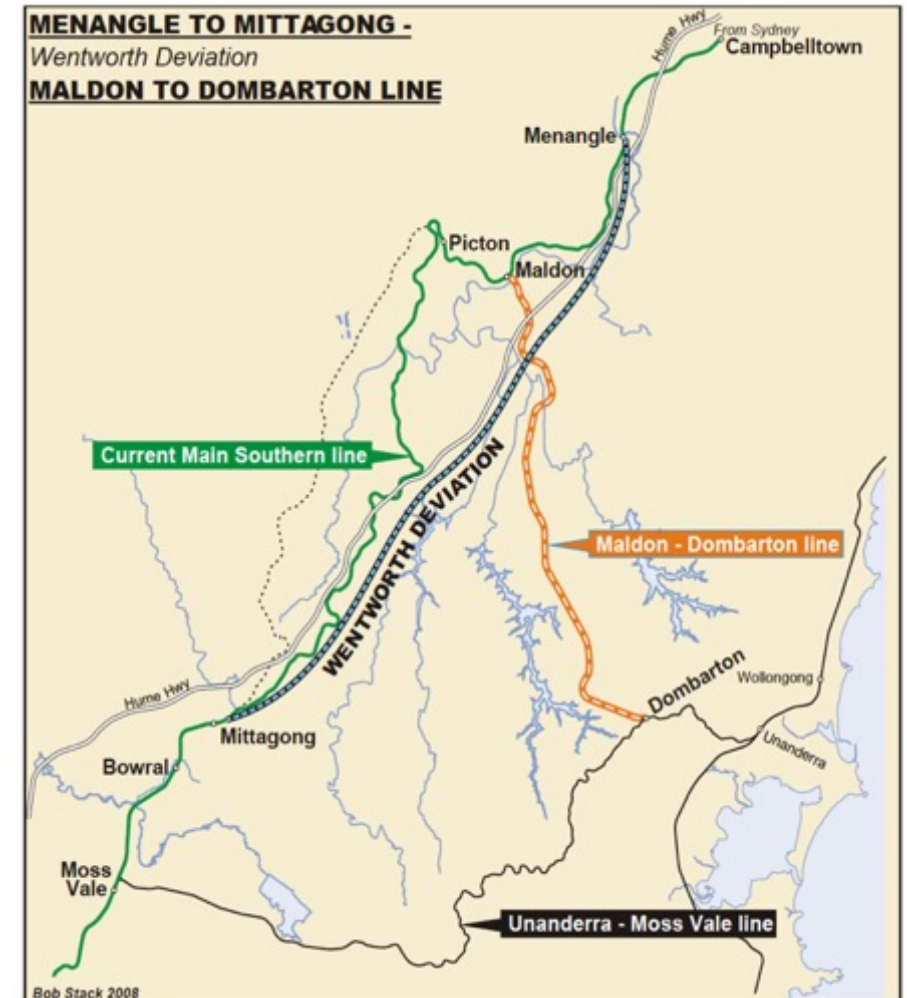


A national rail plan defines future regional settlement and economic growth



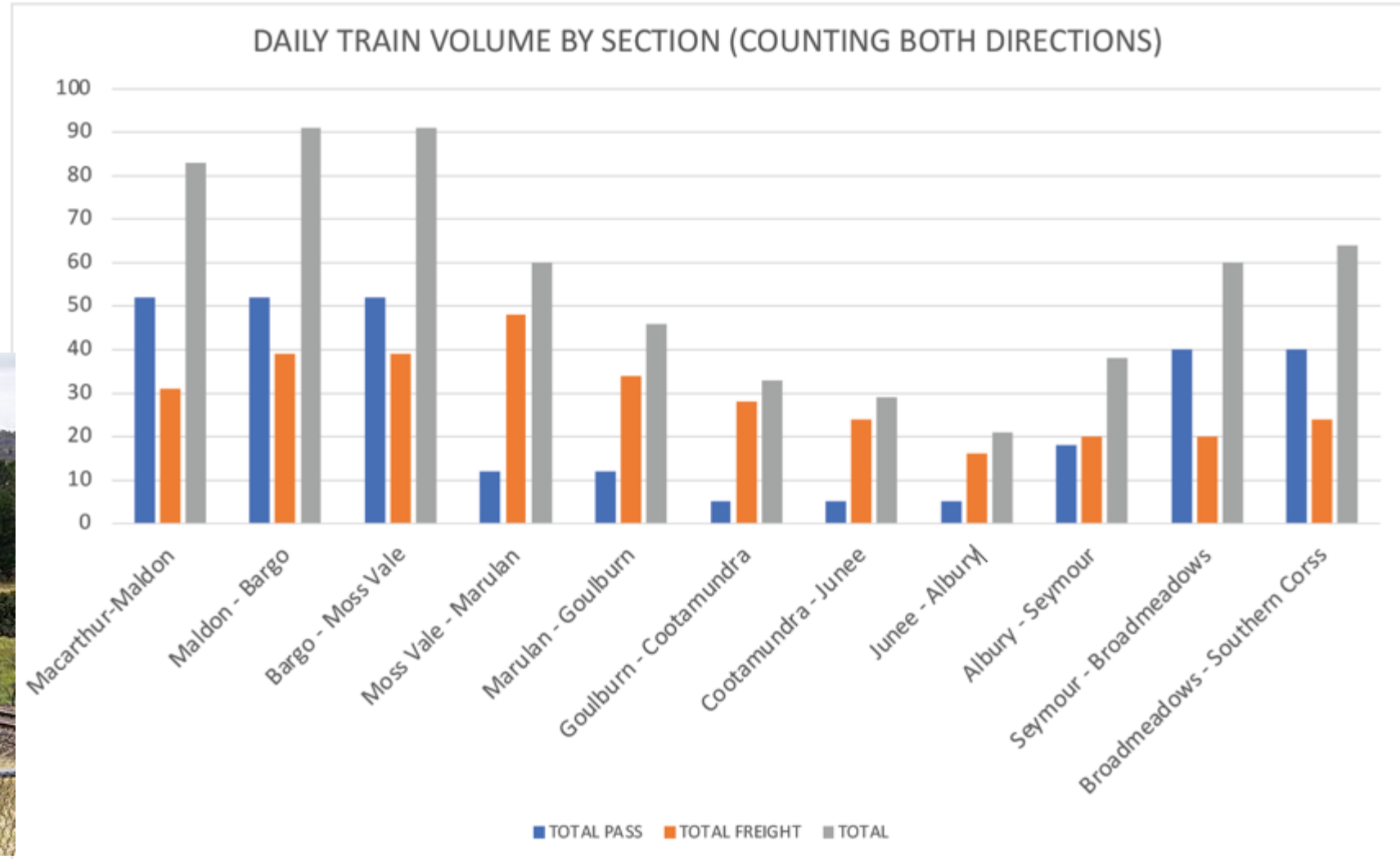
Sydney – Melbourne the highest priority

- Links Australia's two largest cities, the National Capital, and smaller – medium sized cities
- Current rail infrastructure based on 19th and early 20th century alignments, needs upgrading
- Carries substantial freight as well as passenger traffic
- Significant opportunities for decentralisation



Current Rail Traffic in the Corridor

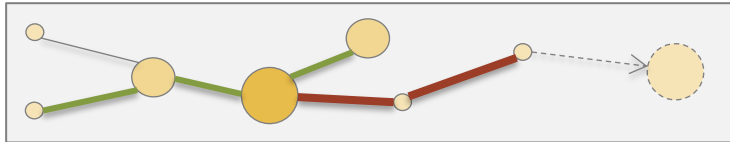
- Relatively few longer distance passenger trains in the Corridor
- However, significant freight and local passenger services in parts of the corridor
- Ninety trains a day between Maldon and Moss Vale.



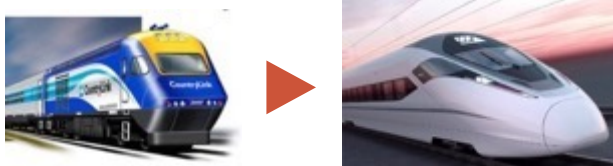
4 How? A Staged Approach

Building the network in stages focuses attention on the economic benefits from connecting each regional city

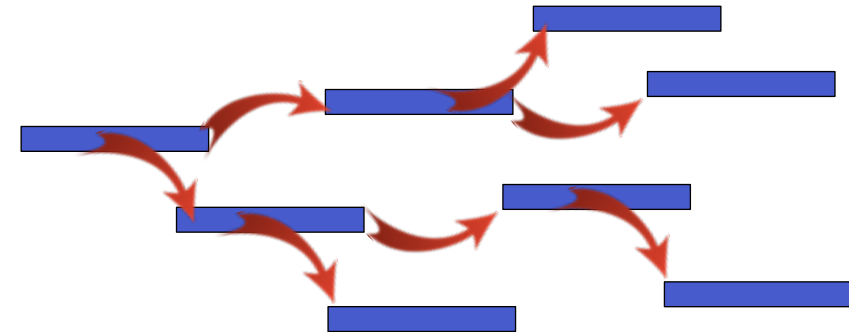
Progressively connect regional cities



With better, faster rail services



In a manageable, affordable way



Breaking a mega-project into a flexible sequence of smaller self-contained projects increases manageability, reduces risks, and delivers more predictable outcomes

- Smaller projects are more manageable
- Each stage opens a new regional city
- Each stage benefits cities along the corridor
- Benefits from each project help to pay for the network
- Staged approach allows travel times to be progressively decreased, and service frequencies to be progressively increased

Proposed Sydney – Canberra – Melbourne HSR

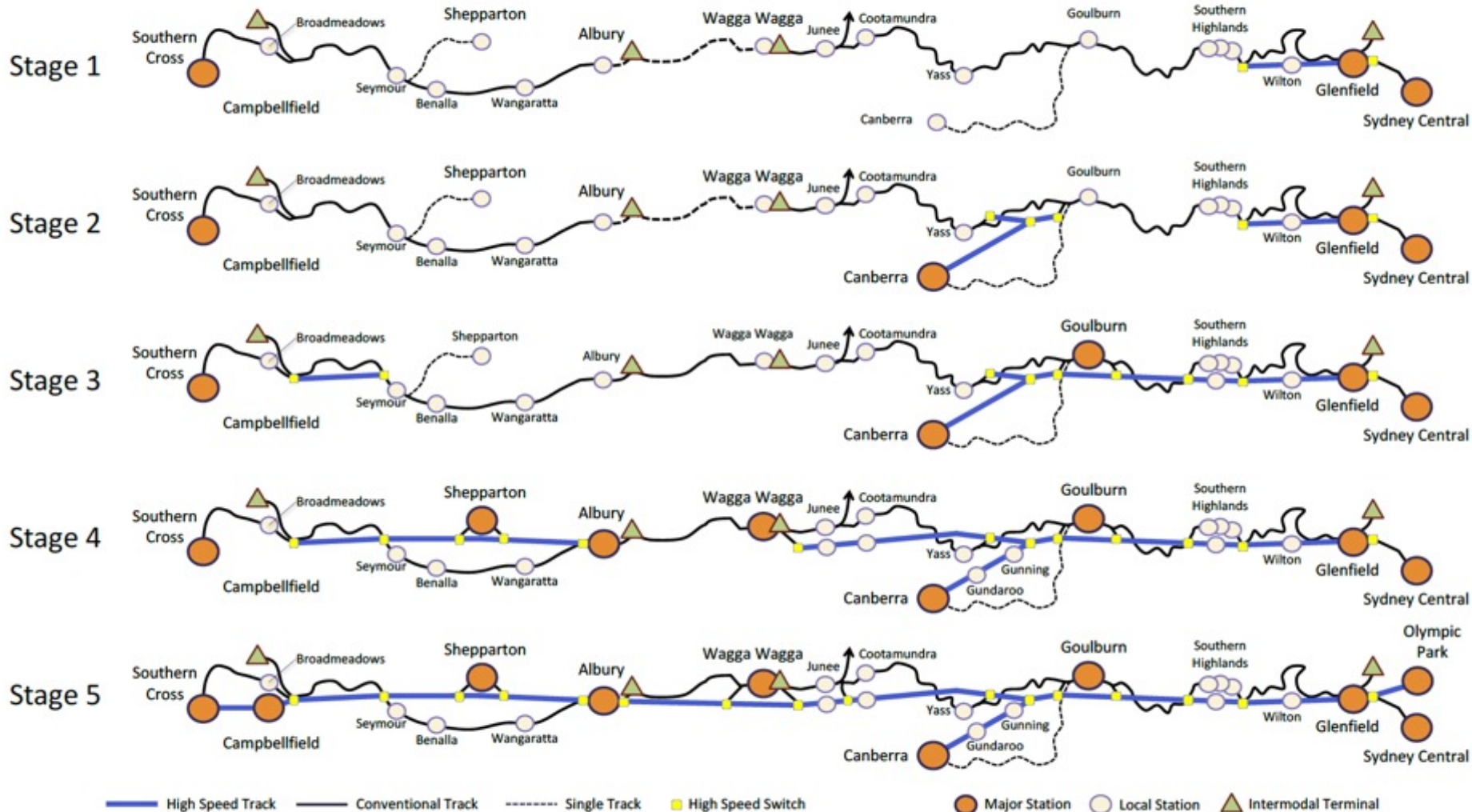


Similar to 2013 HSR alignment, but:

- New routes through Sydney and Canberra
- More connections with existing rail corridor
- Slightly lower max speed (320 km/hr) and more realistic travel times
- Able to accommodate fast intermodal freights to provide real alternative to trucks
- Existing rail line retained for industrial and heavy freight, and local and connecting HSR services.
- Built in 5 stages.

Proposed 5 stage plan for Sydney - Melbourne

Staging of upgrades in the Sydney-Melbourne corridor



- Start where the traffic is heaviest and the route is the most **circuitous**
- This maximises early benefits
- Stage 1 is therefore suggested as the Wentworth Deviation
- Subsequent stages complete Sydney – Canberra in Stage 3, and Sydney – Melbourne by Stage 5.

Progressively add New Trains and Services

Staged Infrastructure and Service Enhancements

Stage	Key Infrastructure Enhancements	Key Service Enhancements	Fastest Freight (hrs)*	Fastest Passenger Services (Hrs)		
				Sydney - Melbourne	Sydney - Melbourne	Melbourne - Canberra
Now			13	11	10.5	4.2
1	Glenfield – Mittagong (Wentworth Deviation)	New High Speed Tilt Trains New Fast Commuter Trains New Sleeper Trains Bi-mode locomotives	12	9	8.5	3.0
2	Goulburn – Yass Gunning – Canberra	First Hybrid Fast Freights Additional Tilt Trains Additional Commuter Trains	11	8	7	2.2
3	Wagga –Albury Duplication Mittagong – Goulburn Broadmeadows – Seymour	Additional Tilt Trains Additional Fast Freights	10	6	5	2.0
4	Seymour – Albury Yass – Junee	First High speed Non-Tilt Passenger Trains Additional Fast Freights	9	5	4	1.7
5	Albury – Junee Melbourne Entry Sydney Entry	Additional High speed Passenger Trains Additional Fast Freights	8	4	3	1.5

(*). Most of these would operate at night, when high speed passenger services are not operating

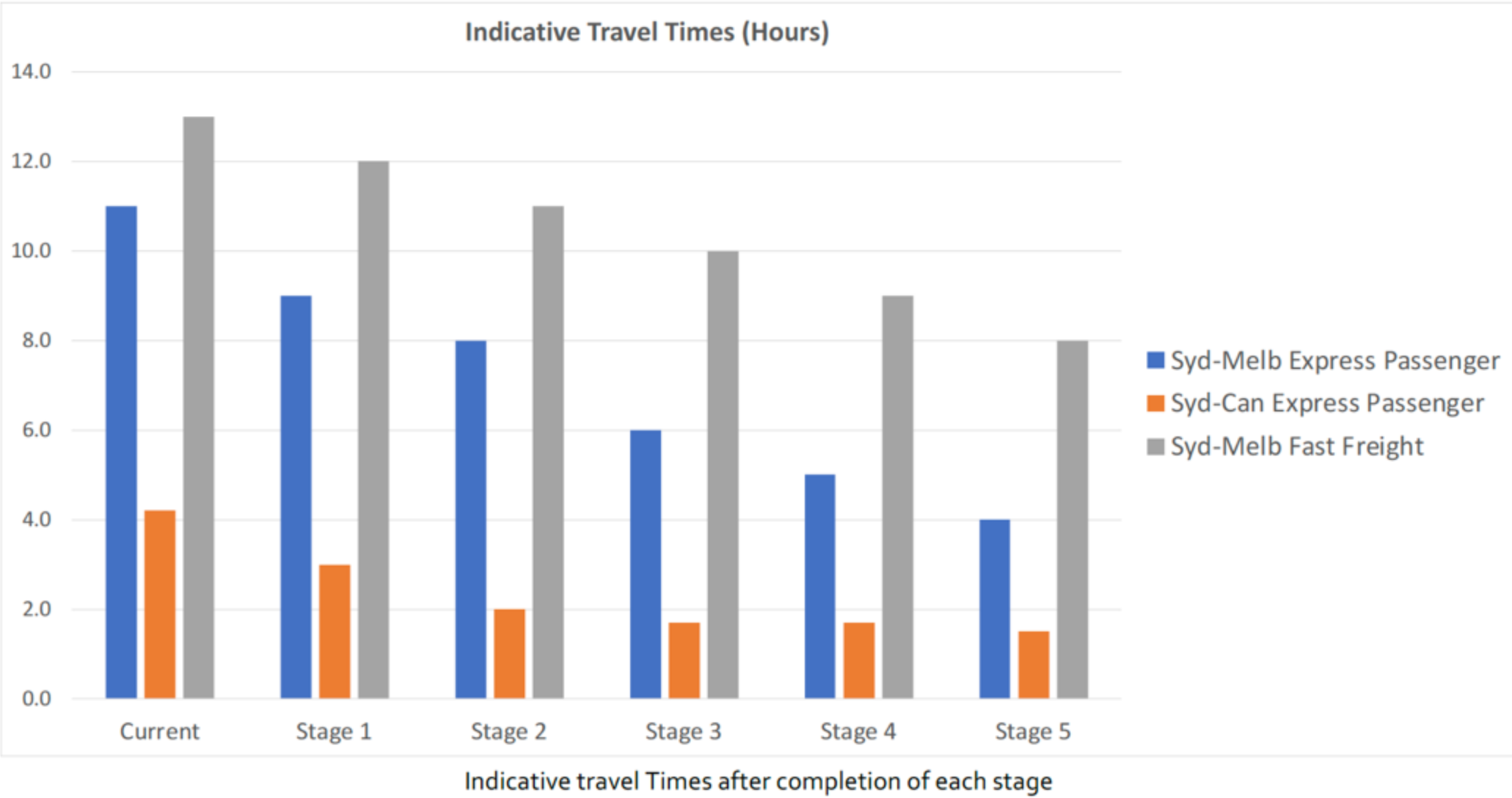
Right: Italy has two high-speed train operators running a variety of tilting and non-tilting trains, by different manufacturers, on the same tracks. Some are capable of up to 400 kph, though they are limited to 320 kph in normal service.



Above: Talgo 250 Dual has both diesel and electric power, has tilting capability and a top speed of 250 kph. . Talgo are working on a hydrogen / electric dual powered train.



Progressively Reduce Travel Times for Both Passenger and Freight



This provides the capacity, and the demand, for a massive increase in services

Daily Train Volume (counting both Directions) by Train Type at Different Stages

Daily Train Volume	Current	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5
Syd-Melb Express	0	4	8	12	18	24
Syd-Melb Regional	4	4	6	6	6	6
Syd-Can Regional	6	10	16	18	20	24
Syd-SH/Glbn Commuter	40	50	54	60	70	80
Can-Melb Regional	0	0	4	6	8	10
Can-Alb Regional	0	2	2	4	4	6
Can-Glbn/Yass Commuter	0	0	6	10	16	20
Shep-Melb Commuter	0	0	0	0	10	12
Alb-Wang-Melb Regional	8	8	10	6	8	10
Alb-Shep-Melb Regional	0	0	0	12	14	16
Shep-Melb Regional	8	10	14	18	20	24
TOTAL PASS	66	88	120	152	194	232
Fast Intermodal Freight	0	4	8	12	16	20
Other Intermodal Freight	10	12	14	16	18	20
Industrial Freight	38	40	44	48	52	52
Melb - Inland Rail Freight	0	8	12	16	20	24
TOTAL FREIGHT	48	64	78	92	106	116
TOTAL	114	152	198	244	300	348

5 *If? Maximising the Benefits*

Opportunity	Approach
Accommodating Freight	Include Fast Freight on the High-Speed Line, especially at night
Decarbonising Transport	Electric and Hybrid Locomotives and Trains
Improving Access to Regional Cities	Stations in key Cities, Fast Regional as well as Express Services
Maximising Urban Development	Transit-Oriented Design for New Station Precincts and New Towns
Improving Access within Sydney	HSR Station at Olympic Park and new North-South Route

New Developments in Rail Freight

Moorebank Intermodal Terminal is introducing new logistics solutions, stimulating recent announcements by Qube, Pacific National and Aurizon of purchases of new locomotives and rollingstock for intermodal freight trains.



The Moorebank Logistics and Intermodal Terminal being built on 240 ha with strategic access to major rail and road corridors. It has a capacity 1.5 million domestic and international containers p.a., along with automated container transfer cranes^{xv}

Qube has ordered 12 new high-power locomotives to handle interstate intermodal container trains between Sydney and Melbourne

The High-Speed Line can handle Fast Freight as well, mostly in the evenings.

Section of Indicative Daily Southbound Services by 2060 on the Sydney-Canberra – Melbourne Corridor, departing from Sydney or Canberra from 7:15 pm to 11:00 pm.

Note mix of fast freight (mostly at night), High-Speed Intercity, Fast Regional and Commuter Services

DEP SYDNEY	NO	SM5	SS6	CM4	SC6	SM6	FF1	SS7	SC7	SR2	SM7	FF2	FF3	SS8	SC8	SS9	FF3	FF4	FF5	FF6	FF7	SM8	FF8	SM9	FF9
		Syd-Mel HSE	Syd-SH F Comm	Canb-Mel HSE	Syd-Can HSE	Syd-Mel HSE	Syd-Mel F Freight	Syd-SH F Comm	Syd-Can HSE	Syd-Glb F Reg	Syd-Mel HSE	Syd-Mel F Freight	Syd-Mel F Freight	Syd-SH F Comm	Syd-Can HSE	Syd-SH F Comm	Syd-Mel F Freight	Syd-Mel F Freight	Syd-Mel F Freight	Syd-Mel F Freight	Syd-Mel F Freight	S	Syd-Mel F Freight	S	Syd-Mel F Freight
Time		4 hr	1 hr 40m	3 hr 20m	1 hr 40 m	4 hr	10 hr 15m	1 hr 40m	1 hr 40 m	1hr 50m	4 hr	9 hr 45m	8 hr 20m	1 hr 40m	1 hr 40 m	1 hr 40m	9 hr	9 hr	8 hr	8 hr	8 hr	Sleeper 8 hr 30 m	8 hr	Sleeper 8 hr 30 m	8 hr
Kms		850	150	710	290	850	790	150	290	210	850	790	790	150	290	150	790	790	790	790	790	850	790	850	790
Av Speed	KM	213	90	213	183	213	77	90	183	115	213	81	95	90	183	90	88	88	99	99	99	100	99	100	99
OLYMPIC PARK	0	18:15	18:30		18:45	19:00		19:15	19:30	19:45	20:00			20:30	21:00	21:15						22:00		22:30	
MOOREBANK	30						17:05					18:15	20:10				19:45	20:00	21:25	21:40	21:55		22:20		22:50
GLENFIELD	32	19:30	18:45		19:00	19:15	17:15	19:30	19:45	20:00	20:15	18:25	20:20	20:30	21:15	21:30	19:55	20:10	21:35	21:50	22:05	22:20	22:35	22:50	23:00
MACARTHUR	45						via old					via old					via old	via old							
MITTAGONG JCN	100	18:55	19:10		19:25	19:40		19:55	20:10	20:25	20:40		20:40	20:55	21:40	21:55	22:00	22:15	22:15	22:30	22:45	23:00	23:15	23:30	23:40
STH HIGHLANDS	120		via MV		19:33			via MV	20:18	via MV				via MV	21:48	via MV						23:20	23:35	23:50	midn
EXETER JCN HSL)	140	19:05	19:35		19:40	19:50	20:00	20:20	20:25	20:42	20:50	21:10	21:25	21:20	21:55	22:20	22:30	22:45	23:00	23:15	23:30	23:45	midn	0:15	0:25
BUNDANOON	150		19:48					20:33		20:55				21:33		22:33									
GOULBURN	210								21:45																
STH GUNNING	215	19:25		19:40	20:00	20:10	21:25		20:45		21:10	22:05	22:35		22:15		23:15	23:30	23:45	midn	0:15	0:30	0:15	1:00	1:10
GUNDAROO	265			19:20	20:15				21:00						22:30										
CANBERRA	290			19:10	20:25				21:10					22:40											
YASS HSS	265	19:40		19:55		20:25	21:50				21:25	22:30	23:00				23:45	midn	0:15	0:30	0:45	1:00	0:45	1:30	1:40
WAGGA W JCN	450	20:20		20:35		21:05	0:10				22:05	0:50	1:20				1:05	1:20	1:35	1:50	2:05	2:20	2:05	2:50	3:00
WAGGA WAGGA	460																								
ALBURY	550	20:50		21:05		21:35	0:40				22:35	1:20	1:50				2:35	2:50	3:05	3:20	3:35	3:50	4:05	4:20	4:30
SHEPPARTON	670																								
WANGARATTA	600																								
SHEPPARTON JCN	680	21:20		21:35		22:05	1:45				23:05	2:25	2:55				3:40	3:55	4:10	4:25	4:40	4:55	5:10	5:25	5:35
SEYMOUR JCN	770	21:45		22:00		22:30	2:50				23:30	3:30	4:00				4:45	5:00	5:15	5:30	5:45	6:00	6:15	6:30	6:40
OMR JCN/BIFT	820						3:20					4:00	4:30				5:15	5:30	5:45	6:00	6:15		6:45		7:20
CAMBELLFIELD	834	22:05		22:20		22:50					23:50											6:20	6:05	6:50	
SOUTHERN CROSS	850	22:15		22:30		23:00					midn											6:30		7:00	

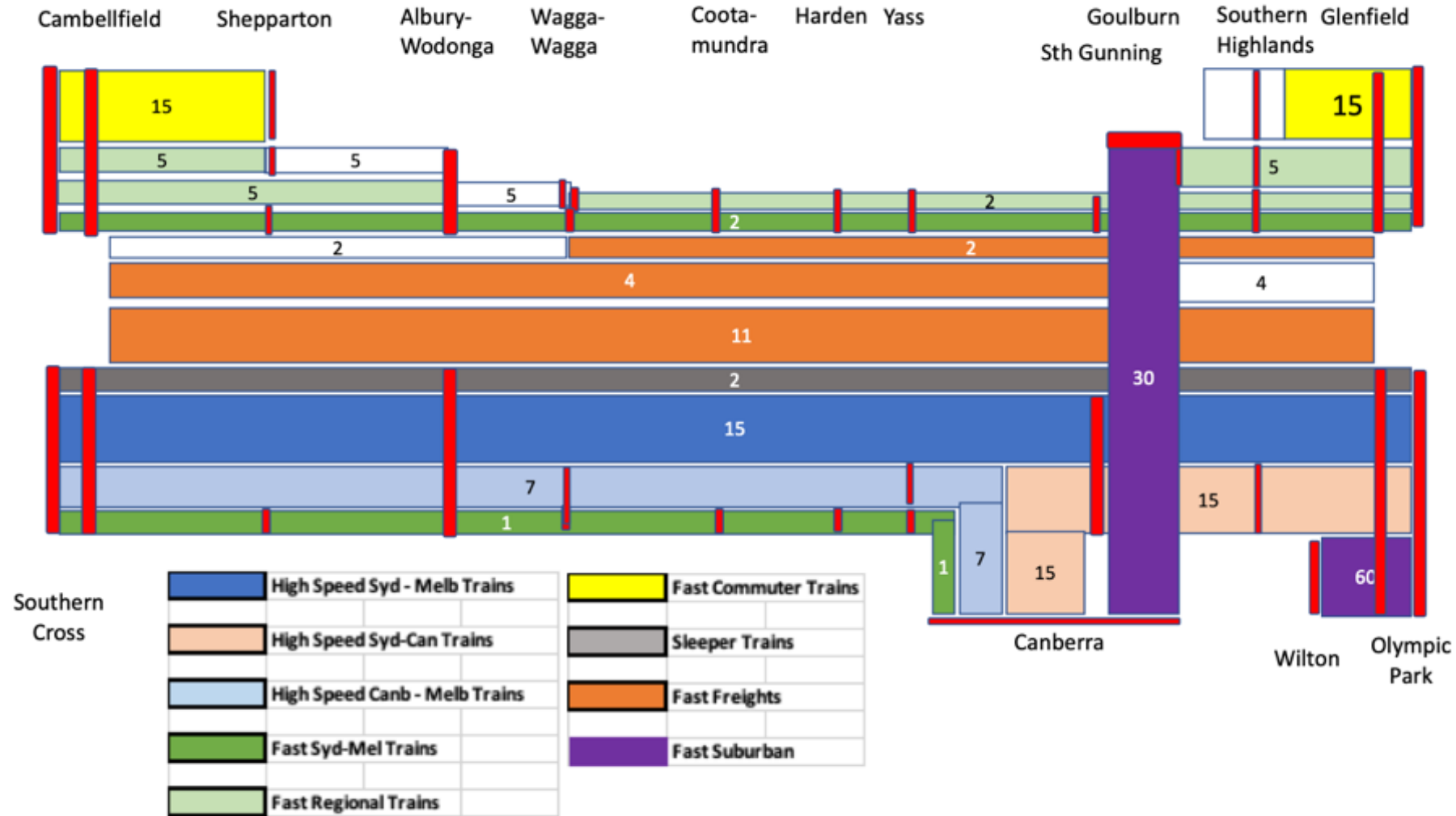
Decarbonizing Transport

Euro 9000 Hybrid Locomotives have the power of three diesels in electrified territory, but can also run on diesel when on non-electrified track. They could haul overnight sleeper trains as well as fast freight trains



Improving Access to Regional Cities

- Albury, Wagga Wagga and Shepparton will have high-speed stations in the city and will be served by intercity high-speed trains.
- Smaller cities will be served by Fast Regional Services, which will run partly on high-speed lines and partly on existing, slower speed lines



Maximising the Benefits

New stations offer opportunities for development as a destination, a transport hub, and a catalyst for the growth of business precincts

A Focal Point for the City



Open and inclusive community space



Shopping and business destination



Transport interchange

Hub for urban mobility



Catalyst for precinct development



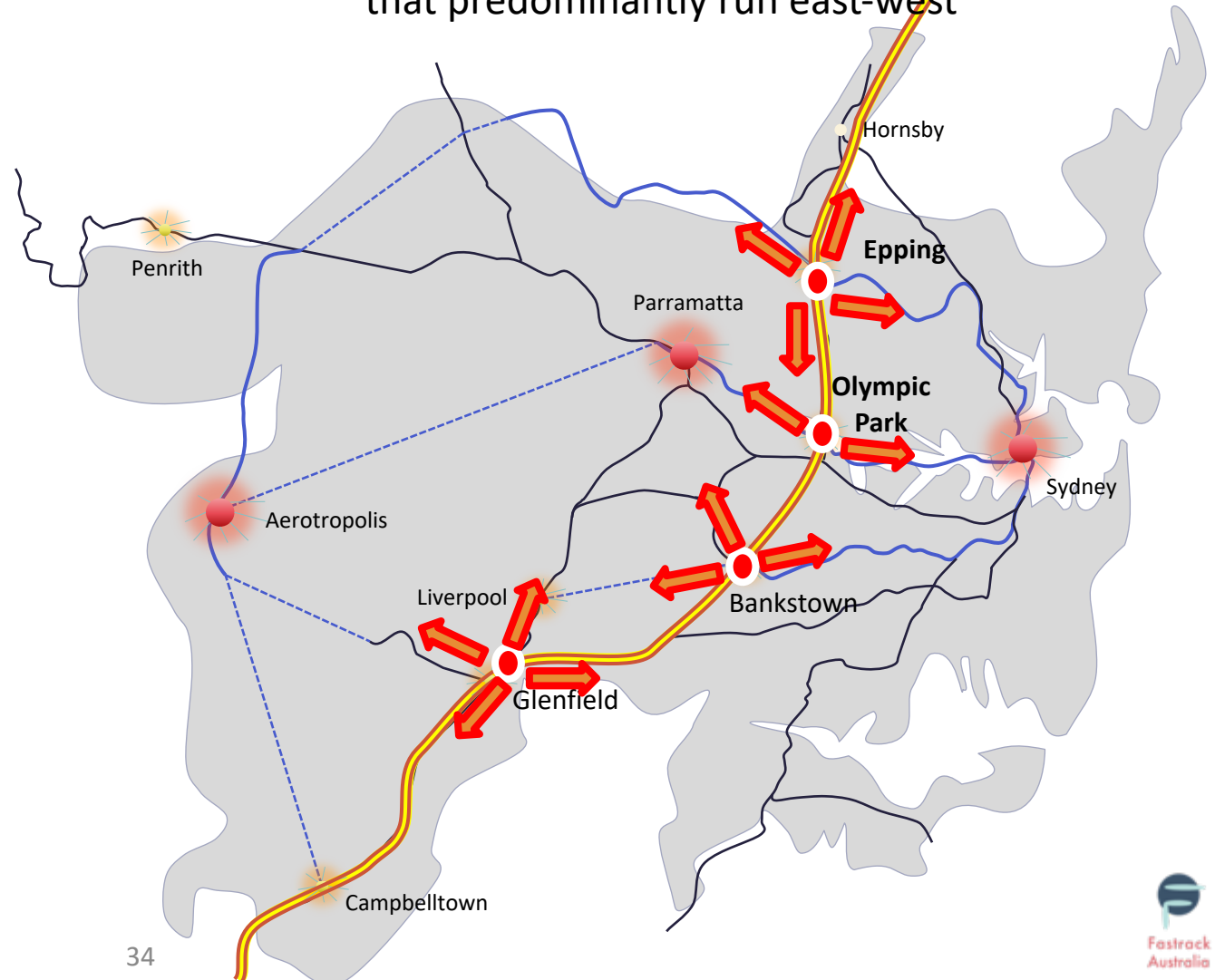
New Route and Connections in Sydney

The previously proposed alignment through Sydney involved a terminus at Central accessed by long tunnels

Figure 21 Preferred alignment to Central Station, Sydney



The proposed alignment provides a new north-south route through Sydney and complements the suburban and new metro networks that predominantly run east-west



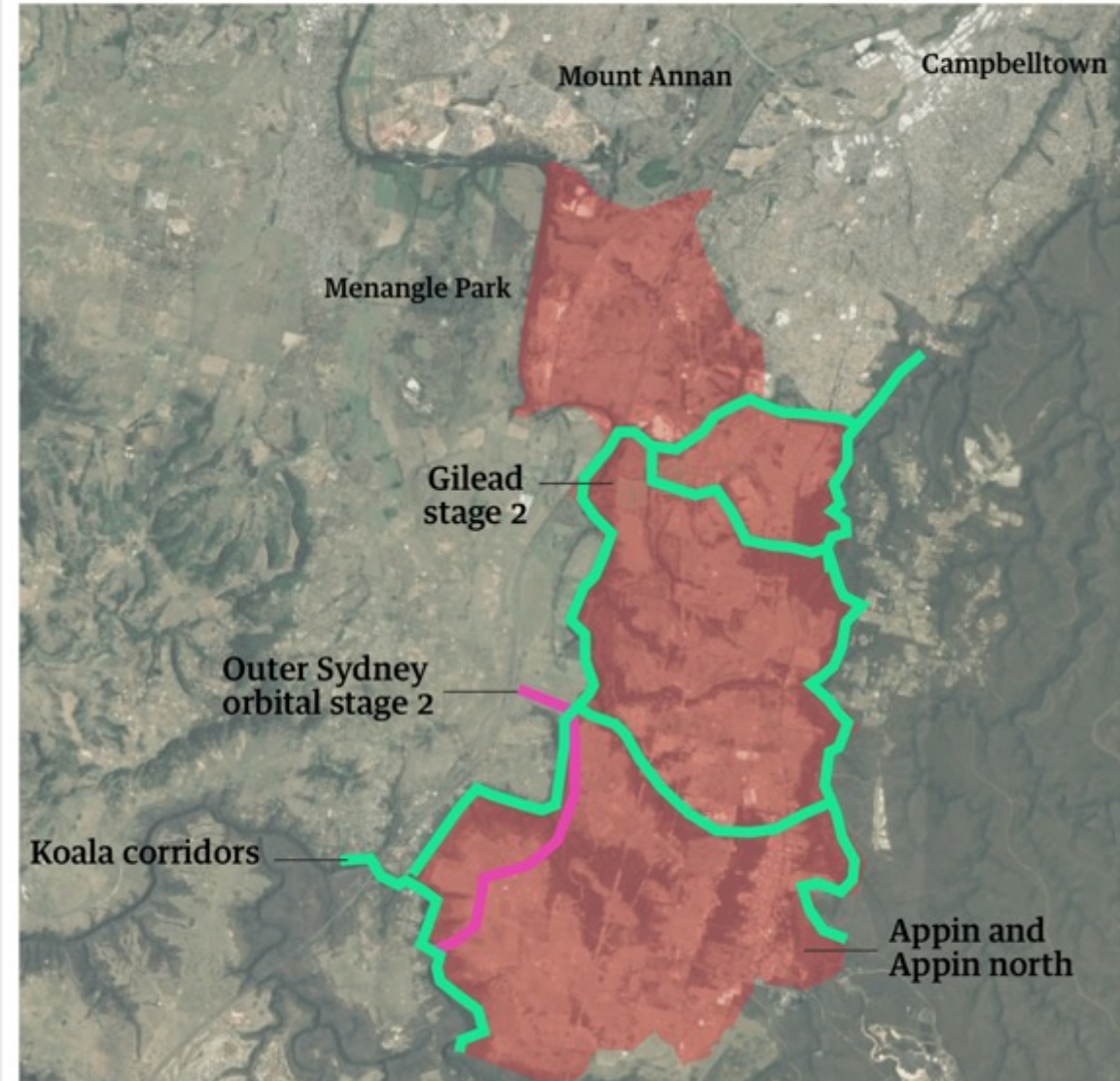
6 When? Start Sydney – Canberra Now

Aspect	Why Sydney – Canberra?
Threats to Corridor	Sydney – Canberra Corridor threatened by urban development. Needs urgent protection
Potential Demand	Sydney – Canberra corridor has highest freight traffic and highest long-term passenger demand
Infrastructure Cost	Sydney – Newcastle requires over 50 km of tunnels, likely cost \$50 billion. Sydney – Canberra easier to construct, likely cost \$20 billion
Decentralization opportunities	Sydney – Canberra includes potential for 250,000 more people in new towns
Institutional Support	NSW Govt has withdrawn support for Sydney – Newcastle. ACT Government very supportive of HSR from Sydney – Canberra
Wider benefits	Sydney – Canberra is the start of Sydney – Melbourne corridor, the most important corridor in the longer term.

Corridors and Urban Development

- The NSW Government is fast-tracking development near Appin, south-west of Sydney
- It has potential for a population of at least 25,000 people.
- The area is directly on the proposed new HSR line, with a potential station at Wilton.
- But as yet there has been no commitment to build it, or indeed to protect the rail corridor
- There is an urgent need to do the integrated planning, including preservation of rail and koala corridors, and plans for the “Wentworth Deviation” as stage 1 of the HSR line to Canberra and Melbourne.

Greater Macarthur growth area



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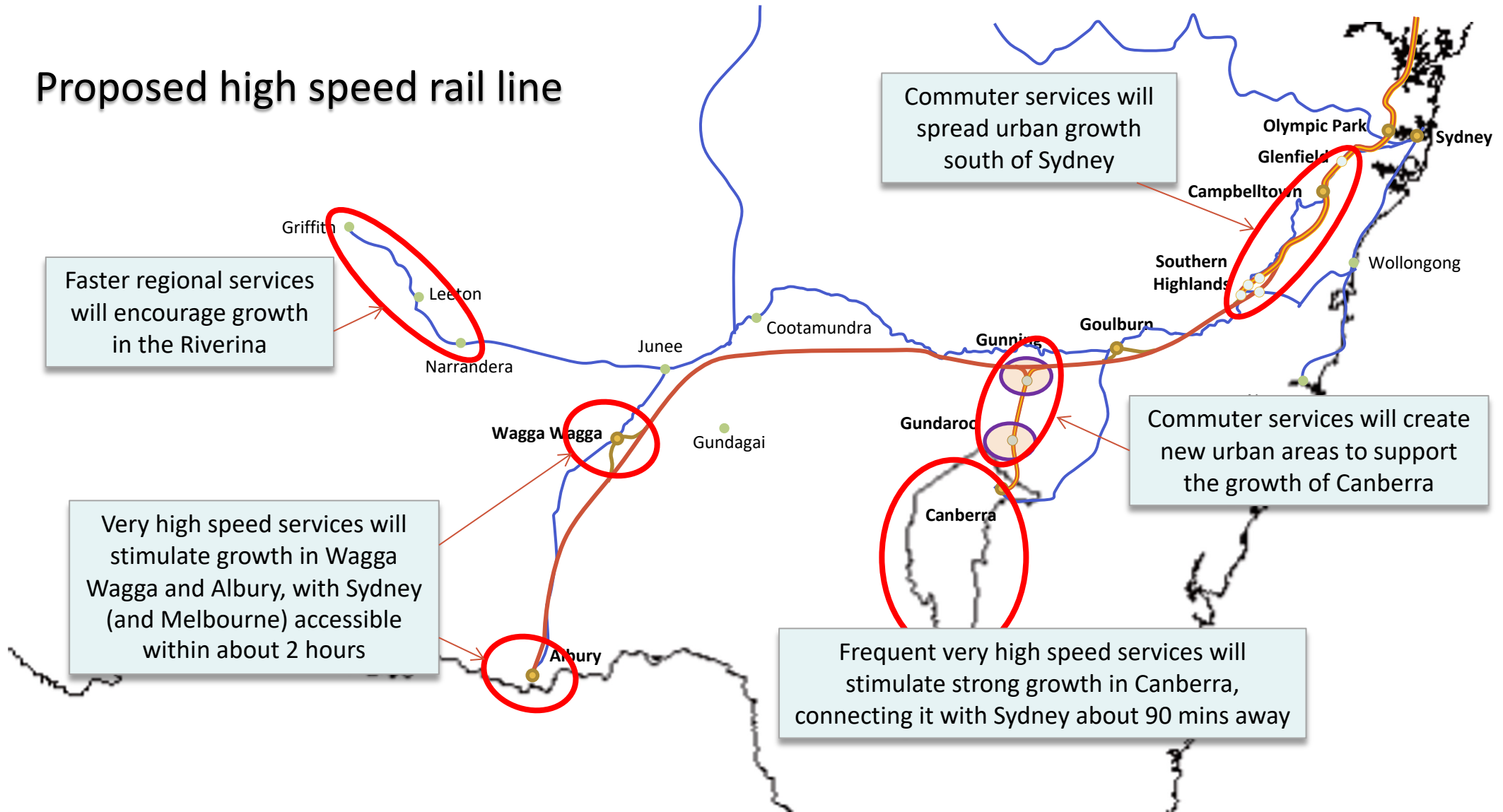
New South Wales politics

Sydney's growing pains: land rezoning a potential billion-dollar deal for developers after local council sidelined

Exclusive: Questions over why NSW government is fast-tracking for possible housing an area with no public transport, inadequate water supplies and an endangered koala habitat

Unlocking growth potential along the corridor and beyond

Proposed high speed rail line



New Connections in Canberra

In the ACT (right) the alignment into Canberra is similar to the one identified in the 2013 HSR report, but with a station between the Airport and Duntroon, directly above the proposed Light Rail between Civic and the Airport (Stage 3).

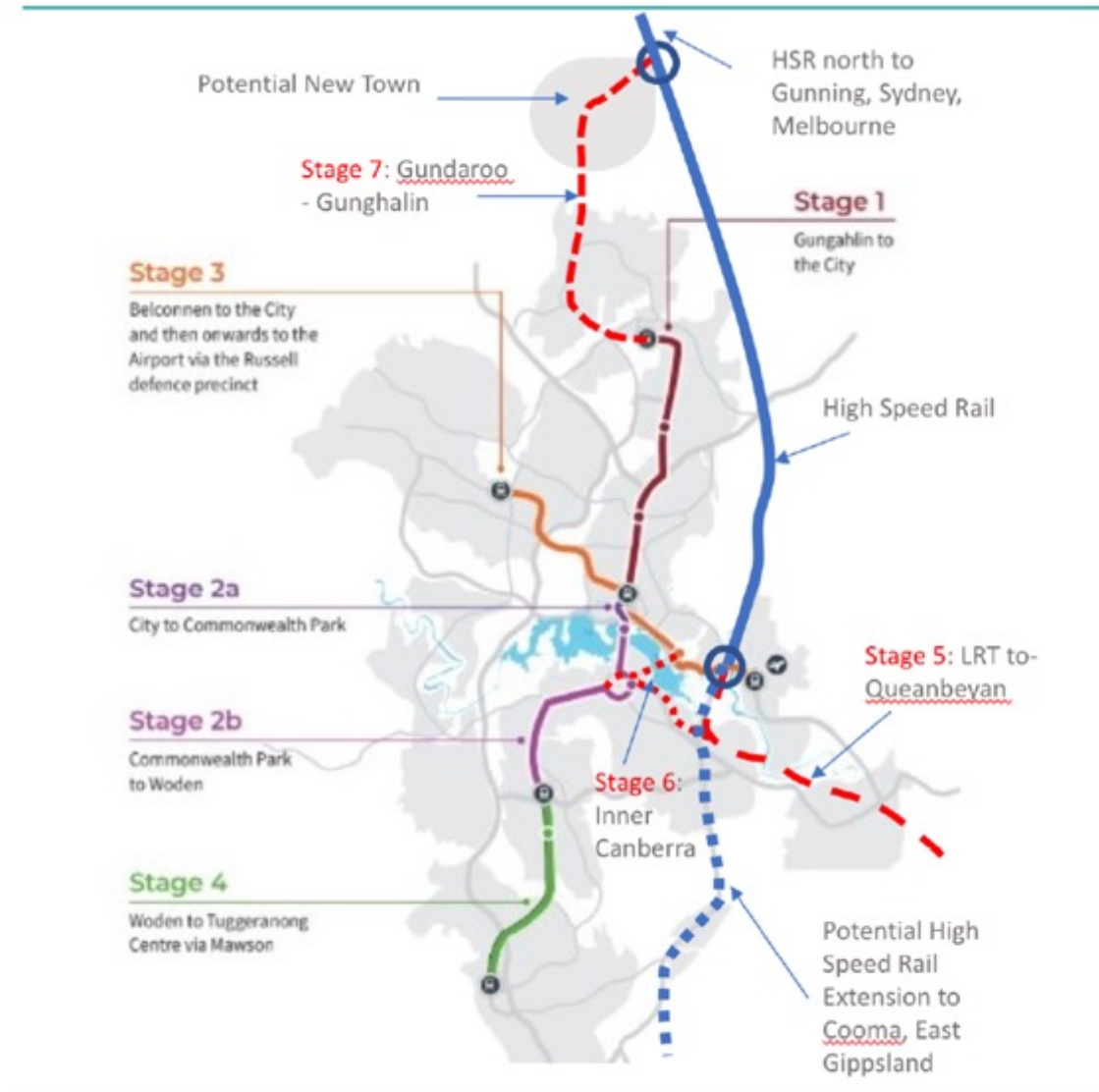
If the existing rail link via Kingston is closed, then it could be replaced by a light rail link from the Parliamentary Triangle (Stage 5 in the attached plan).

A stage 6 of the light rail could link Russell with the Parliamentary Triangle via Kings Avenue Bridge, providing a comprehensive LRT network in Central Canberra and serving all the other major town centres and employment zones.

There would also be a HSR station north of Gunghalin serving a new town, connected to an extension of the existing Light Rail Line between Civic and Gunghalin (Stage 7).

Finally, there is a long-term potential to extend the HSR line south to Cooma and beyond, eventually to Victoria via Cann River and the coast.

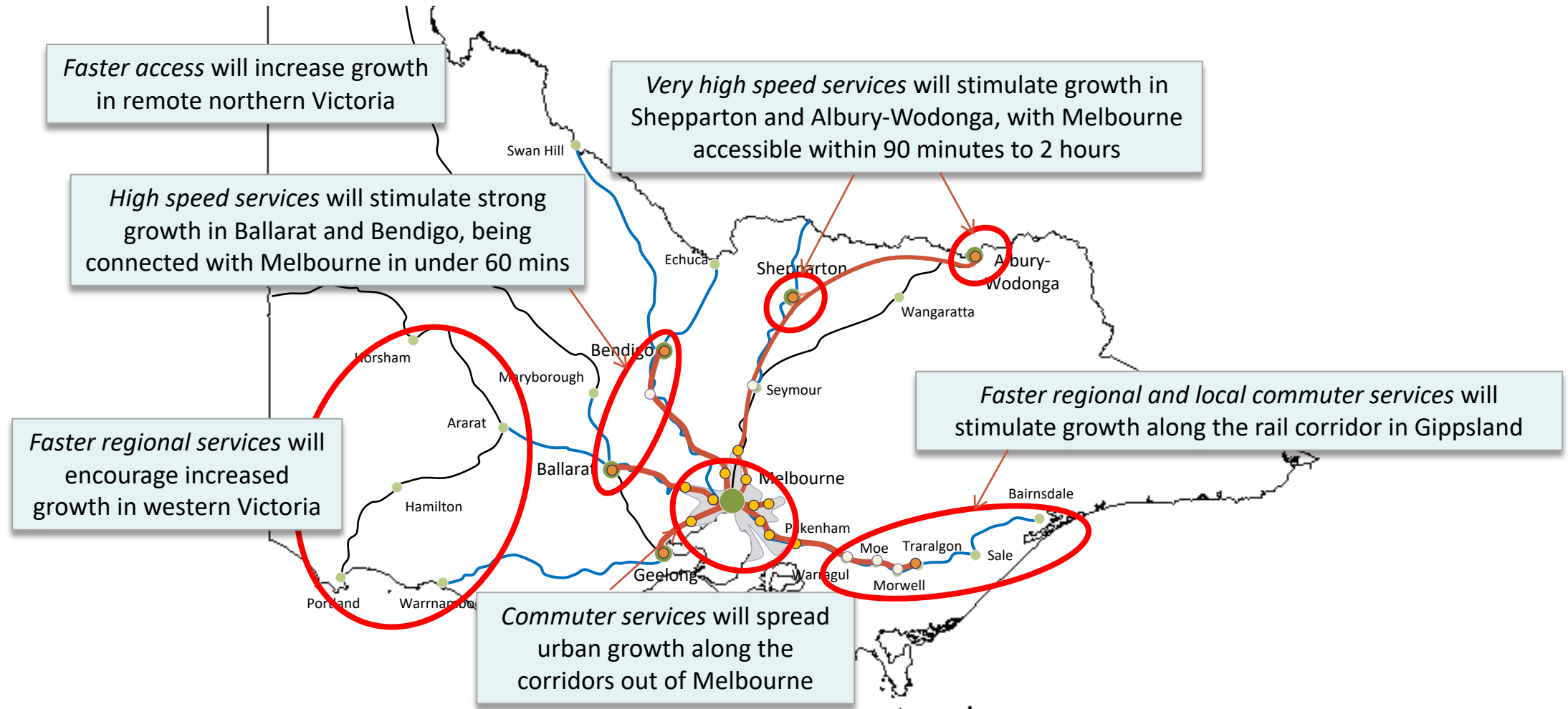
While this seems ambitious, Canberra and its surrounding region has the potential to grow to 1 million people in the long term, and a core public transport system, linked to HSR and the Airport, needs to be considered now.



High speed services will also unlock growth across Victoria

Upgrading or replacing the current broad gauge lines with higher speed standard gauge lines will allow passenger services to operate on all lines across Victoria

A NE HSR Line via Shepparton and Albury, with connecting services to Seymour, Wangaratta and other centres, will greatly increase access to a region with 200,000 people currently, and potential for significant growth



7 Conclusions

There are now over fifteen countries with high-speed rail systems in operation (i.e. train services with top speeds of 250 kph or more), including:

- Japan, Korea, Taiwan and China in Asia
- France, Germany, Spain, Italy, the UK, Netherlands, Belgium, Turkey and Russia in Europe
- Morocco, Saudi Arabia and the UAE in the Middle East and Africa

Other countries currently building HSR include the USA, India, Indonesia, Laos and Egypt, while Poland, Finland, Portugal, Thailand and the Czech Republic are planning HSR.

Critics of HSR in Australia argue we lack the population to support it. But we now have nearly 18 million living in South-East Australia, who can be linked by an 1800 km HSR linear corridor, with connections to existing rail lines. Spain, with 47 million population, has already built 3,600km of high-speed rail linked to its wider rail network and is still expanding it.

Our population meanwhile has resumed its upward trend post COVID and is expected to reach 30 million in the HSR Catchment area by 2061. Unless we embrace decentralisation, the additional 12 million people will end up overwhelmingly living in Sydney, Melbourne and Brisbane, exacerbating problems of housing affordability, congestion and inequality of services.

HSR is a necessary but not sufficient condition to change this trajectory. But we need to start with a concrete project which can target existing priorities and be the beginning of a longer term, integrated network solution.

And we need to start now. Unless we do the crucial corridors required will be built out and the opportunity will be lost.

The Federal Government has now passed legislation to establish a High Speed Rail Authority. Its time to turn planning into action.



Fastrack Australia

FastrackAustralia is a not-for profit organisation with no commercial links to high-speed rail manufacturers, land developers or any other organisations. It conducts its research on a purely voluntary basis, and receives no funding from government, the private sector or other stakeholders. See list of reports below.

These reports, together with links to other relevant reports on high-speed rail and a database on high-speed rail developments and related topics world-wide, are available and may be downloaded from www.fastrackaustralia.net.

Future reports are planned to examine such topics as appropriate routes for high-speed rail through Sydney and the Implications of High-Speed Rail for the Australian Rail Industry.

<i>High-Speed Rail and Freight</i>	<i>Dr Garry Glazebrook</i>	<i>May 2023</i>
<i>Implications of High-Speed Rail for the Canberra Region</i>	<i>Dr Ross Lowrey</i>	<i>April 2023</i>
<i>Implementation Plan for High-Speed Rail</i>	<i>Dr Garry Glazebrook & Dr Ross Lowrey</i>	<i>January 2023</i>
<i>High-Speed Rail for Regional Growth</i>	<i>Dr Ross Lowrey</i>	<i>March 2021</i>
<i>High-Speed Rail: A New Approach</i>	<i>Dr Garry Glazebrook</i>	<i>January 2021</i>
<i>Population Trends and Decentralisation Options</i>	<i>Dr Garry Glazebrook</i>	<i>December 2020</i>