



Fastrack  
Australia

# An Implementation Plan for High Speed Rail in the Sydney-Melbourne Corridor

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## HIGH SPEED RAIL IS ESSENTIAL FOR AUSTRALIA'S FUTURE

High speed rail will transform Australia if it is implemented ...

- As a key enabler of regional economic growth  
Not just an alternative to air and road transport
- An upgrade to the existing conventional rail network  
Not a sperate, standalone rail system



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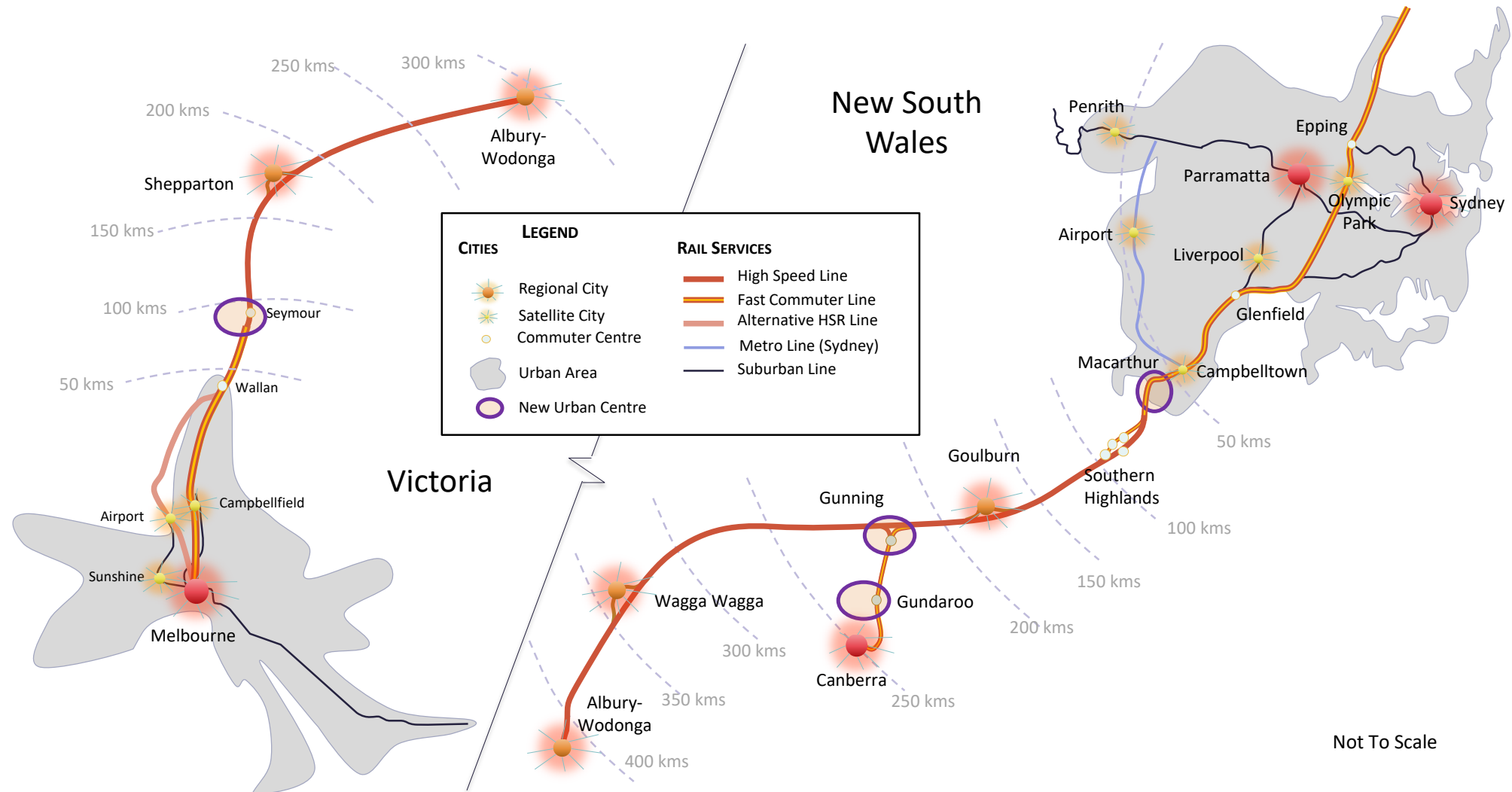
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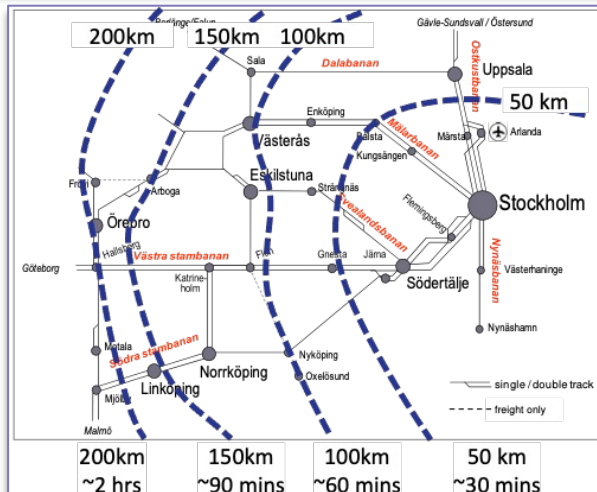
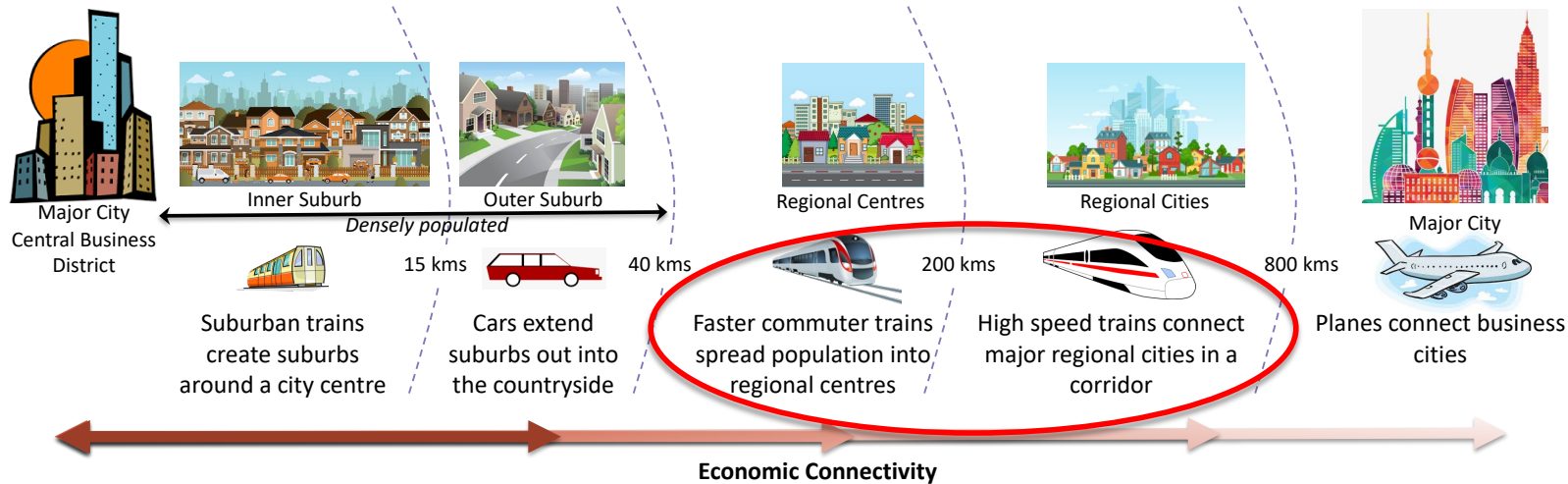
Use Canberra as the founding stone

## Creating economic connections by shrinking the distance between regional cities



# Faster rail services spread city growth beyond 50kms

## Rolling out faster train services will accelerate the growth of regional cities



## Stockholm has distributed its population growth with fast regional commuter rail

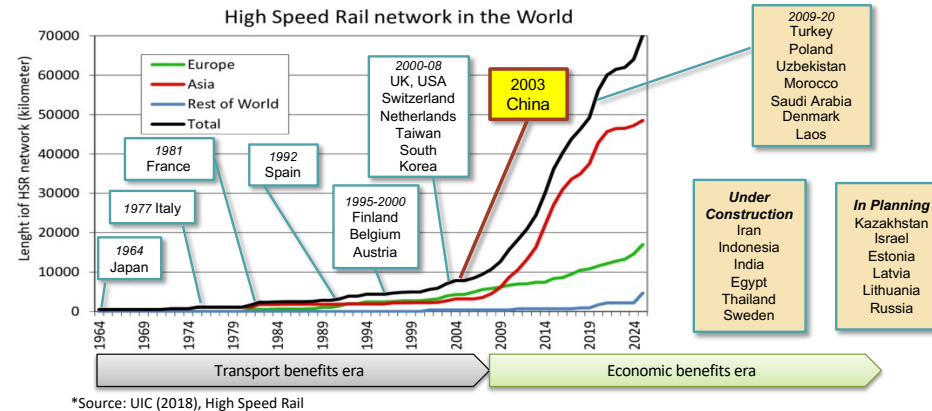
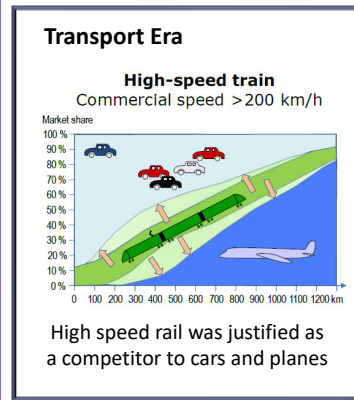
### Observed regional impacts:

- Immediate increase in passengers from regional cities
- Strong population and jobs growth in the larger cities
- Station and precinct redevelopment follows
- Central location and local public transport is critical

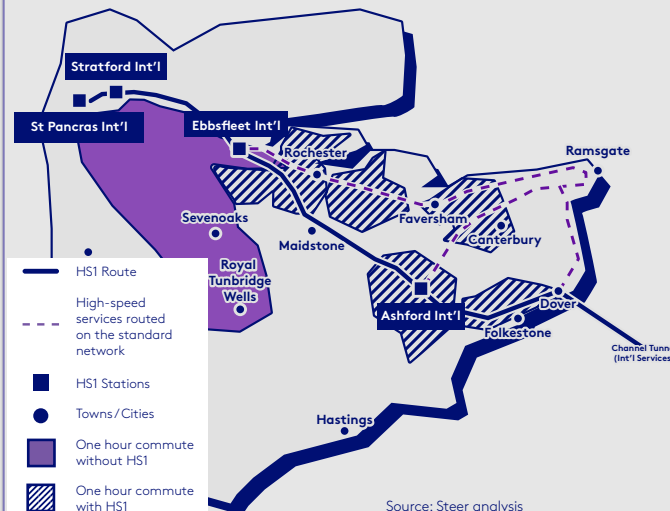
\*Source: Bayley (2012), Master Thesis - Regional development via high-speed rail

# High speed rail promotes economic growth in regional cities

Since 2010, high speed rail has been implemented to stimulate regional economic development



How HS1 expands the areas in Kent that are within a 1 hour train commute of London



The Kent economy has grown after HS1 increased access to London

Domestic high speed services divert off the HS1 to provide fast commuter services into Kent

Passenger journeys nearly doubled in 6 years

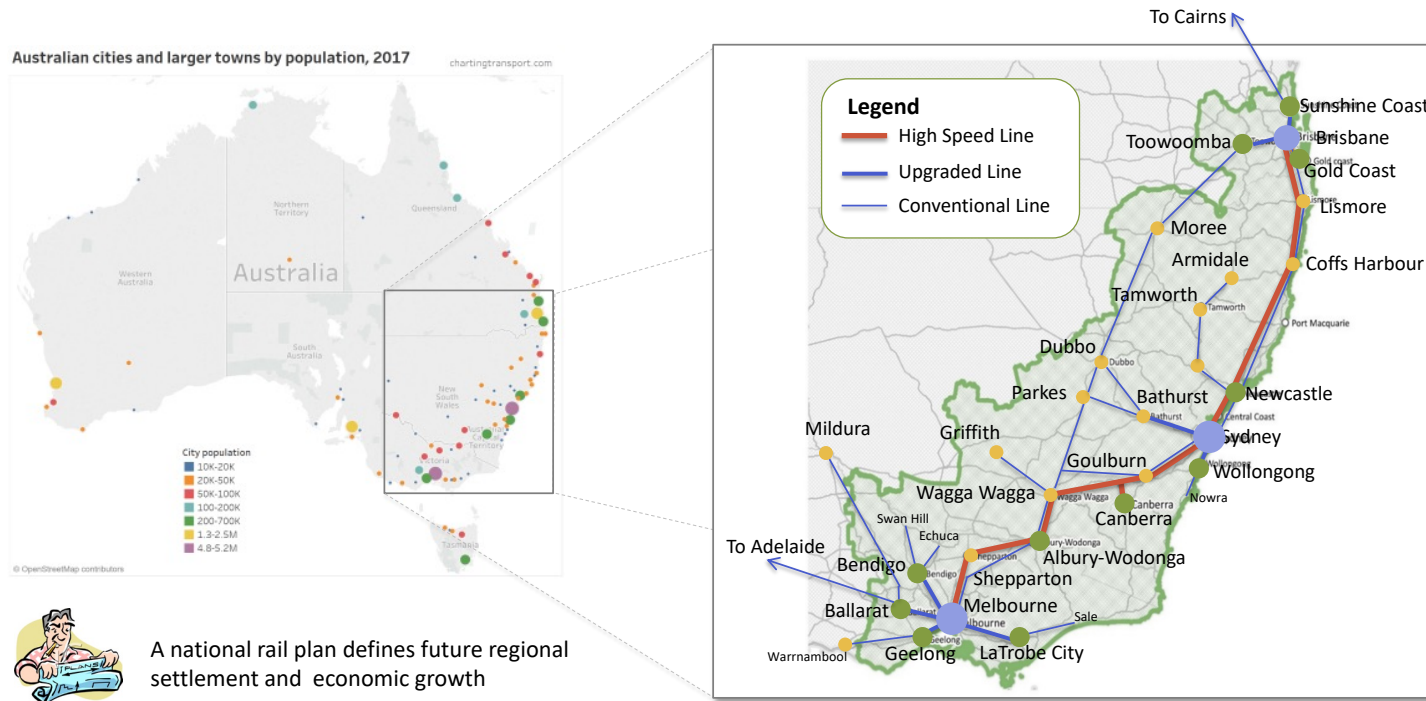
- Increased commuters due to increasing employment
- More visitors because of the high speed service
- Growing market for business trips into Kent
- Increased investment and housing has followed

\*Source: Steer (2019), Delivering for Kent: The Economic impact of HS1

## Principle 2: Upgrade the existing conventional rail lines

Faster rail connections should be implemented to supplement and enhance the existing rail network

Build on the existing settlement pattern by enhancing the existing rail network



# New technologies allow more flexible operation of services



Diesel\* trailers allow electric passenger and freight trains to use non-electrified tracks

\* Battery or Hydrogen Fuel Cells in future



Cologne station caters for both high speed and conventional services



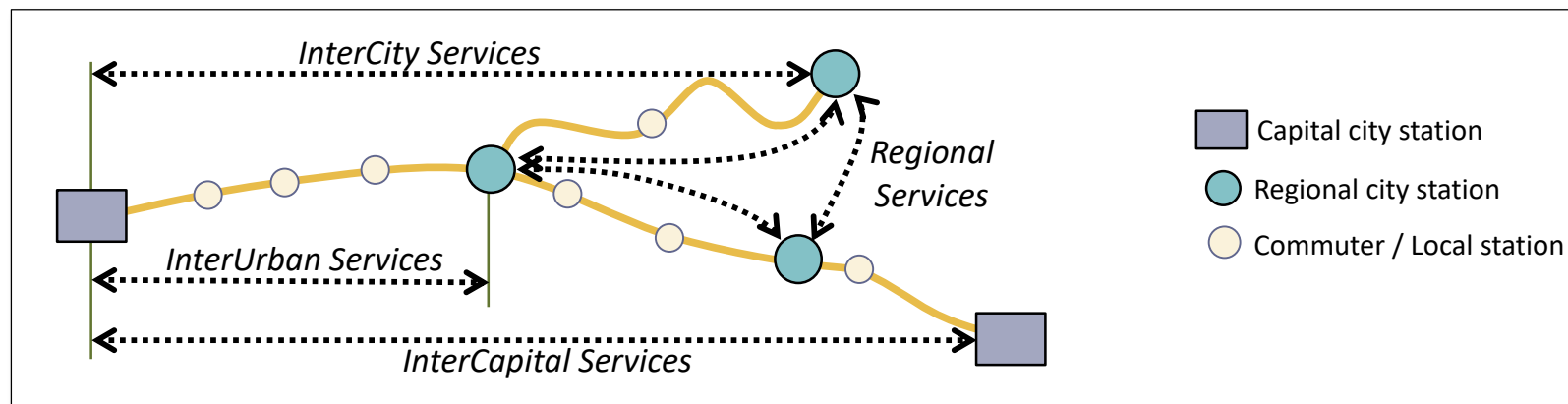
Mini-Shinkansen operate on high speed and conventional lines








Specialised wagons carry truck trailers for intermodal freight

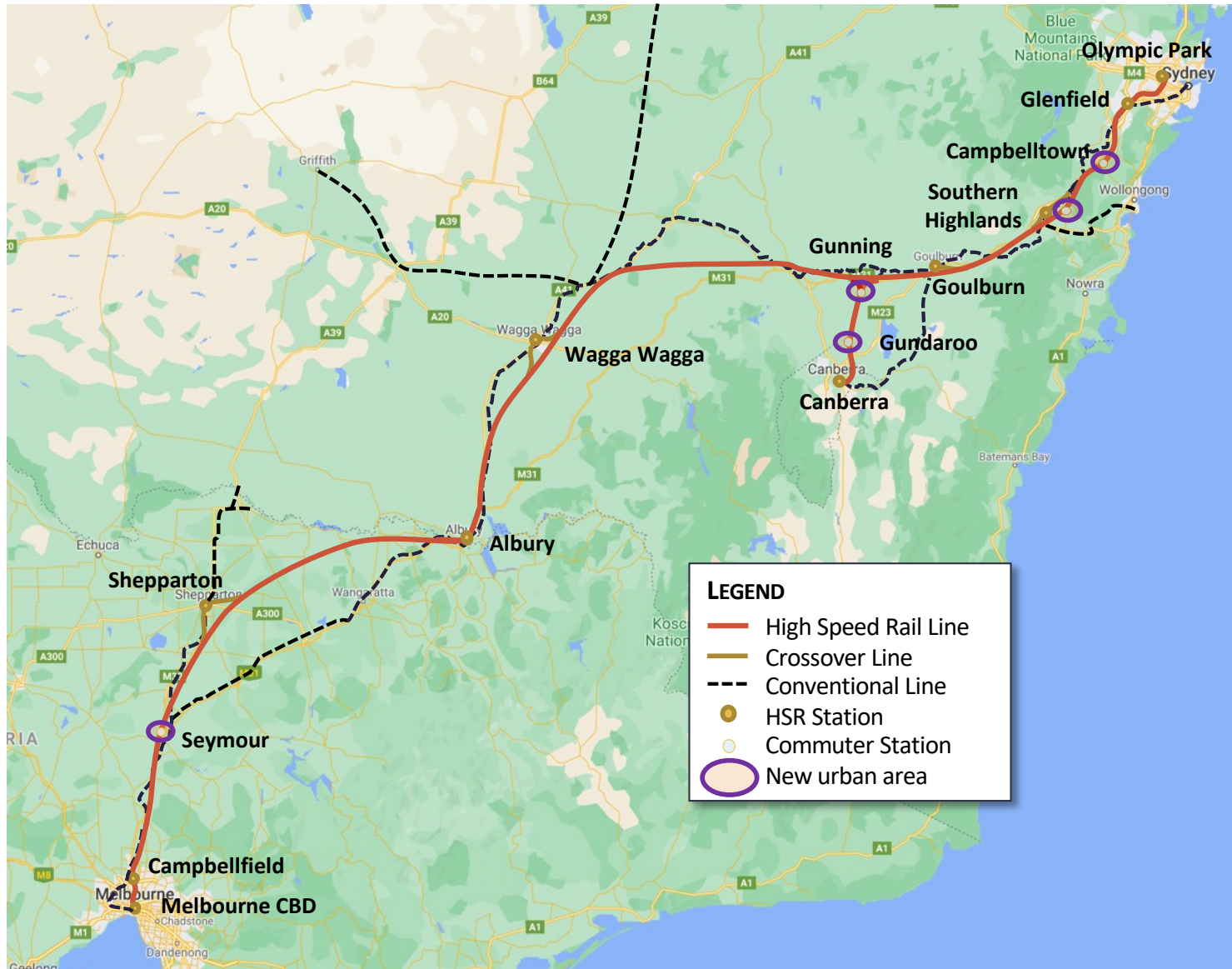
# New rolling stock allows a broader range of passenger services

## Growing demand for new types of passenger service



ROLLING STOCK	CURRENT TRAIN	FAST COMMUTER TRAIN	HIGH SPEED TILT	HIGH SPEED EMU	VERY FAST TRAIN
Example	 VLocity - Australia	 Alstom iLint - Germany	 Talgo Dual 250 - Spain	 Hitachi 802 EMU - UK	 Alstom Pendolino - Italy
Speed	Standard (160km/h)	Fast (up to 200km/h)	Fast (up to 250km/h)	Fast (up to 250km/h)	Very Fast (>300km/h)
Power	Diesel	Electric, Hydrogen, Battery or Hybrid	Electric, Hydrogen, Battery or Hybrid	Electric, Hydrogen, Battery or Hybrid	Electric
Services	Regional	Commuter	Long Distance	Long Distance	Long Distance
Stops	Regional towns on route	Intermediate centres on route	Regional cities and centres on route	Regional cities and centres on route	Express or major regional cities on route

# Focus on the Sydney-Melbourne Corridor



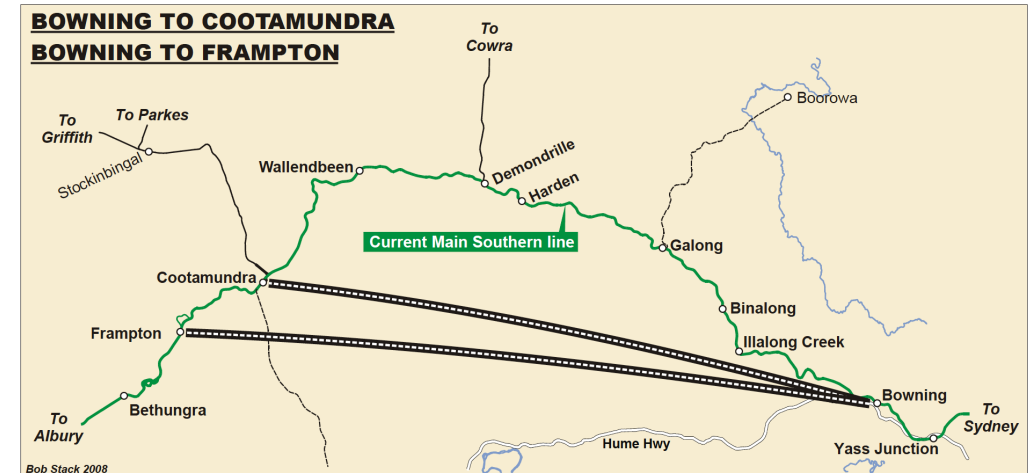
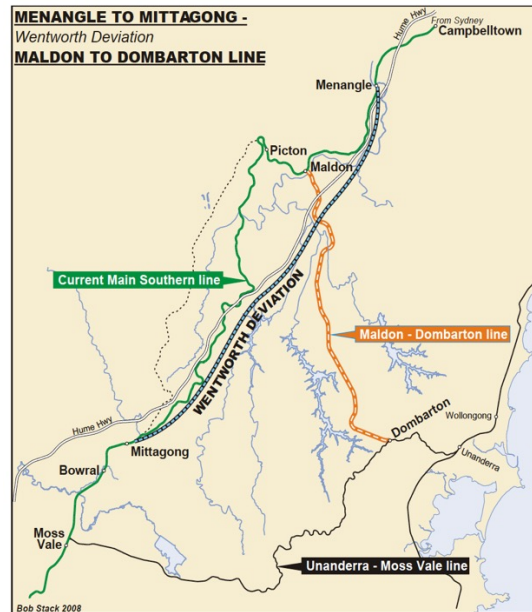
The Existing Sydney – Melbourne Rail corridor includes sections of very slow alignments dating from the early 20<sup>th</sup> century, making rail uncompetitive.

The proposed high-speed route would create a new fast alignment for high speed passenger and fast freight trains, and includes a branch to Canberra. It closely follows the route identified in the 2013 High Speed Rail Study.

The new line would integrate with the existing line at various places, providing

- **more capacity**, for conventional trains as well as new high speed services
- **better connections** to regional cities

# Many slow, winding sections to reduce gradients

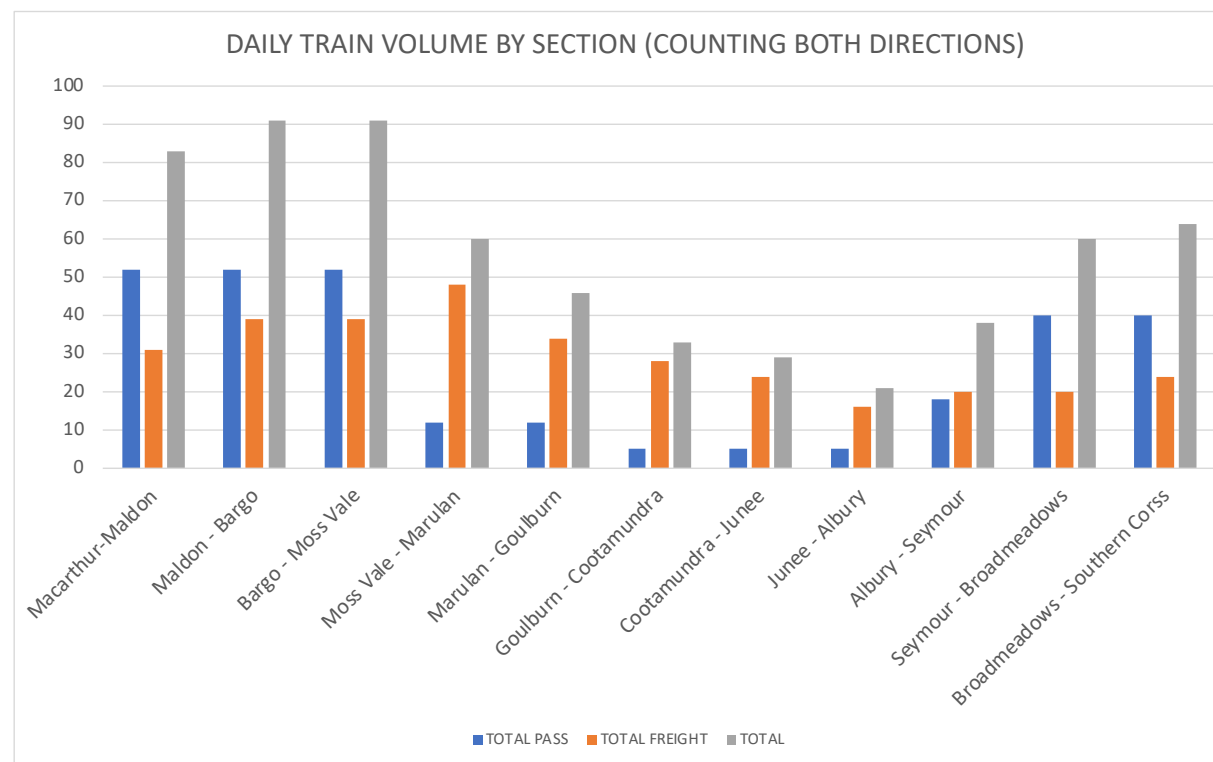


Modifications in the early 20th century reduced gradients so steam engines could haul heavier loads

This involved making the line wind around a large number of tight radius curves, notably:

- In climbing from Sydney to Mittagong
- Crossing the main Dividing Range between Goulburn and Yass
- Overcoming the hills between Cootamundra and Junee (including the Bethungra Spiral)

# Potential for growth from a relatively low traffic volume in most sections



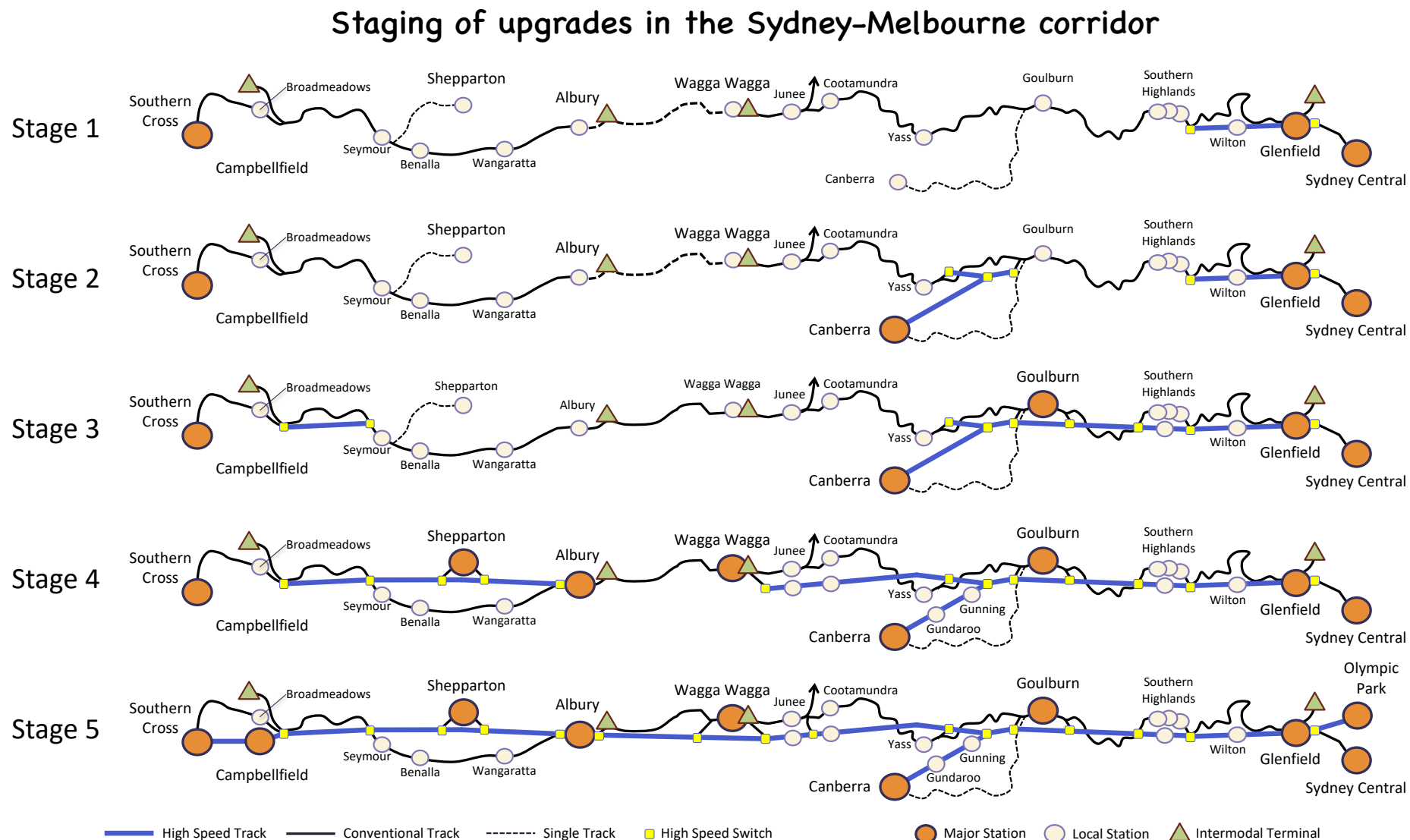
Upgrading the line and removing windy sections will make rail competitive with road travel

- Reduced travel times will generate demand for Sydney-Canberra and Sydney-Melbourne passenger services
- Sydney Moorebank Intermodal Terminal, Ettamogah Rail Terminal, and Inland Rail will increase the volume of rail freight

Progressively implement high speed rail by:

- Build new sections of high speed line between regional cities on the existing line
- Introduce new faster passenger and fast freight trains using both the new and existing lines
- Expand and accelerate passenger and freight services as new sections are commissioned
- Introduce very fast trains only when the first full corridor is completed and electrified
- Continue to operate local passenger and slower industrial freight trains on the existing line

# Proposed stages for the Sydney – Canberra - Melbourne Corridor

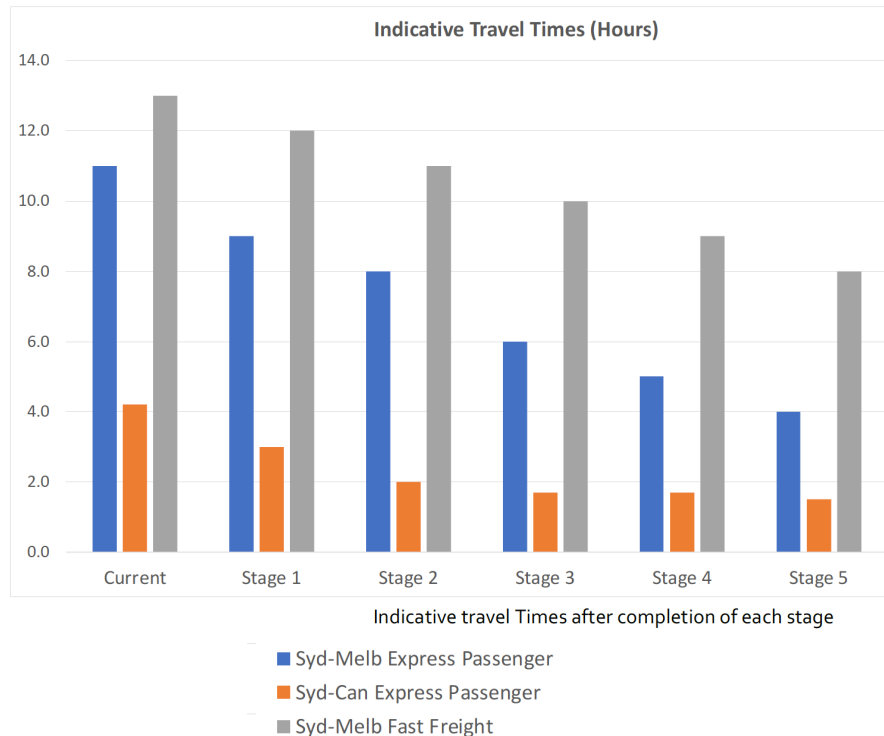


# New and increased services with each stage

Building a high speed line from Sydney to Canberra and Melbourne needs to be staged as it will take decades to complete.

As each stage is completed, services will be speeded up, increasing demand, and new services will be added.

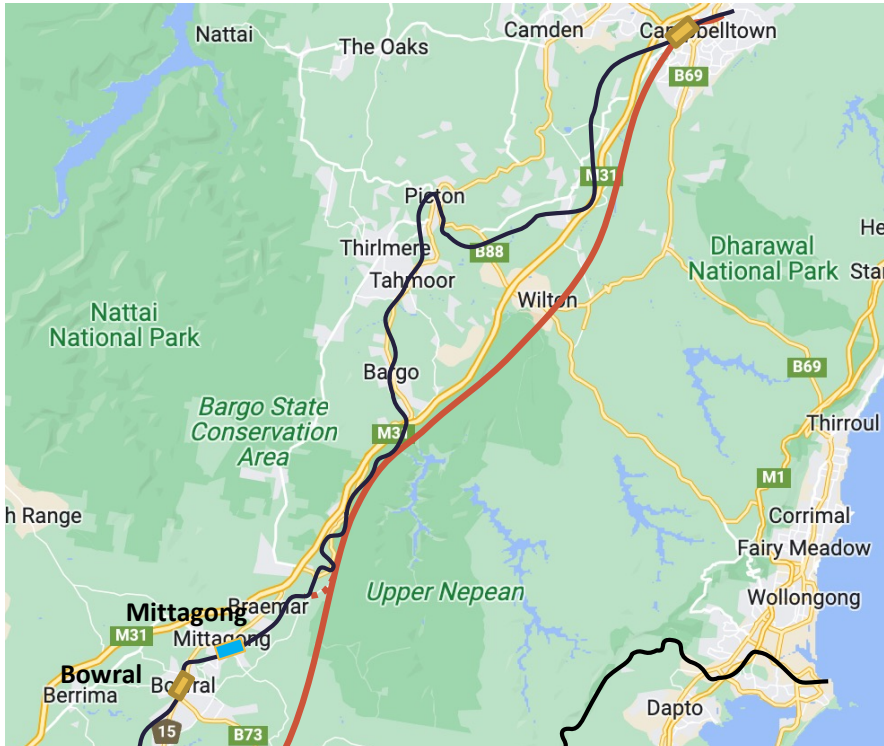
The plan will eventually allow 4 hours travel time Sydney – Melbourne, 1.5 hours Sydney to Canberra on the fastest services, with freight trains able to travel between Sydney in Melbourne in 8 hours.



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
<b>TOTAL PASS</b>	<b>66</b>	<b>88</b>	<b>120</b>	<b>152</b>	<b>194</b>	<b>232</b>
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
<b>TOTAL FREIGHT</b>	<b>48</b>	<b>64</b>	<b>78</b>	<b>92</b>	<b>106</b>	<b>116</b>
<b>TOTAL</b>	<b>114</b>	<b>152</b>	<b>198</b>	<b>244</b>	<b>300</b>	<b>348</b>

# Stage 1 – Wentworth Deviation

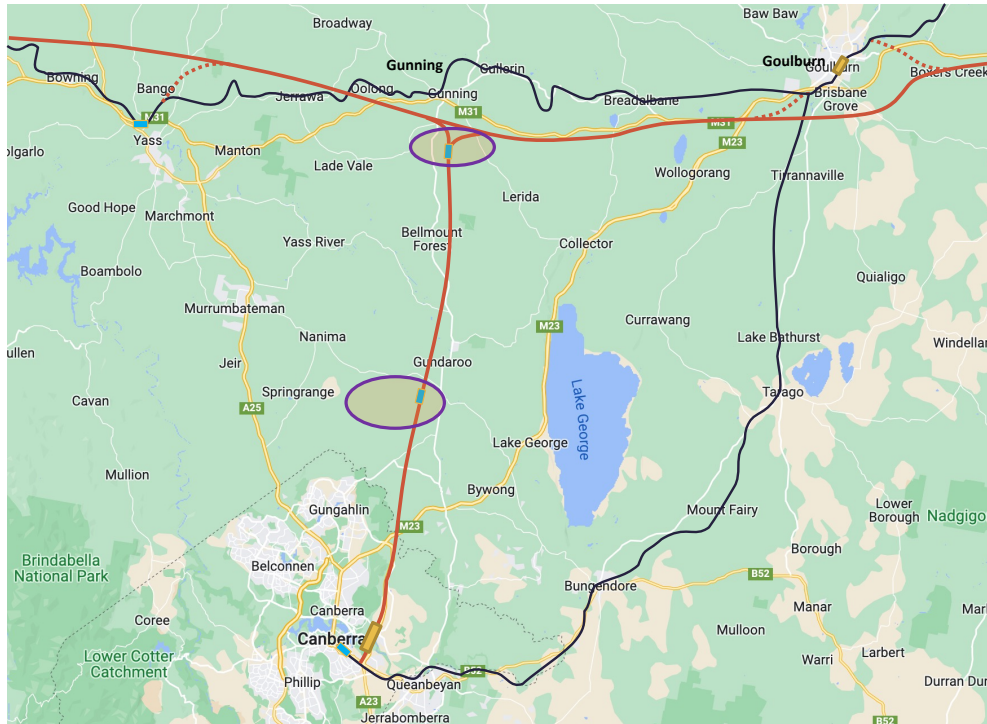
## Stage 1 – Campbelltown to Mittagong



- Follows the ARTC recommendation to reduce circuitous track thorough Picton to improve travel time for through-freight services
- Opens Wilton and Southern Highlands for increased urban growth with fast commuter services into Sydney
- Reduces travel times for passenger along the line, both Sydney-Canberra and Sydney – Melbourne.
- Existing line remains to serve local passenger and industrial freight services, including those serving local towns and on-line industries.

# Stage 2 – Canberra commuter belt

## Stage 2 – Canberra to Goulburn and Yass



- New high-speed line between Goulburn and Yass will accelerate interstate passenger and freight services.
- A new high-speed line south to Canberra will greatly accelerate Sydney – Canberra and Sydney – Melbourne travel, and open opportunities for future new towns north of Canberra and south of Gunning
- New proposed High Speed Station in Canberra between the Airport and Duntroon links to proposed light rail network and reduces cost by avoiding tunnelling and underground station in Civic.

# Stage 3 – Sydney-Canberra HSR

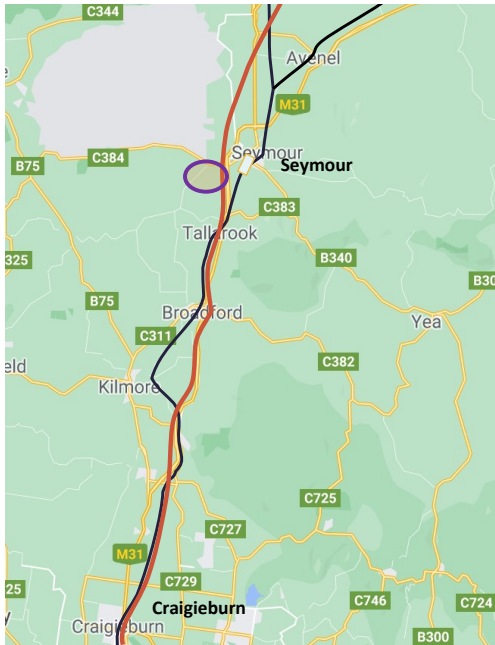
## Stage 3 – Mittagong to Goulburn



- Completes the high speed line between Campbelltown and Canberra
- Allows very fast services to operate between Sydney and Canberra
- Dramatic reduction in rail travel times will compete with Sydney-Canberra air services
- Makes centres along the line more attractive for urban development with fast connections to Sydney and Canberra
- Reduces travel times for passenger services to centres further along the line

# Stage 3 – Main Line Improvements

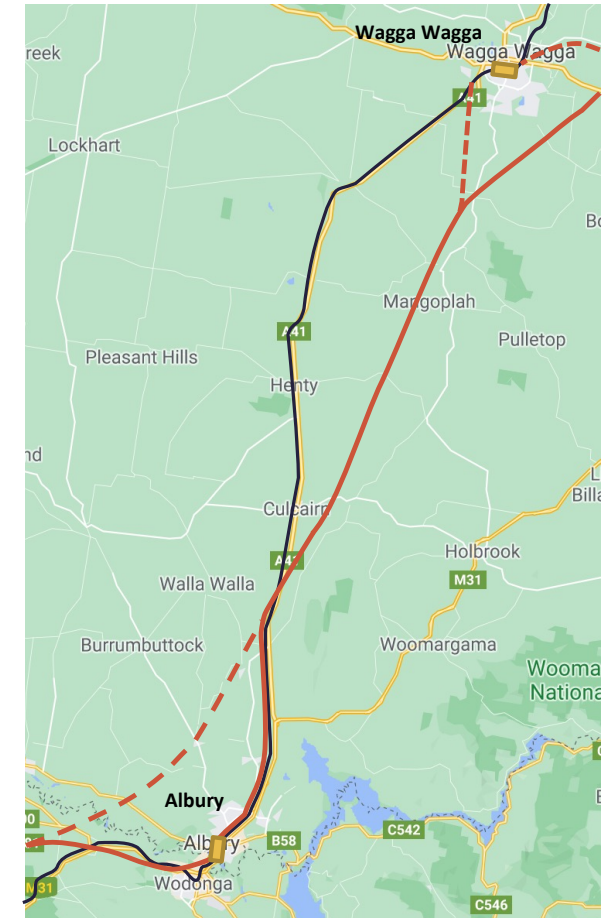
## Stage 3 – Wallan to Seymour



- Allows fast commuter services between Melbourne and Seymour
- Allows faster regional services to Shepparton, Albury and Sydney

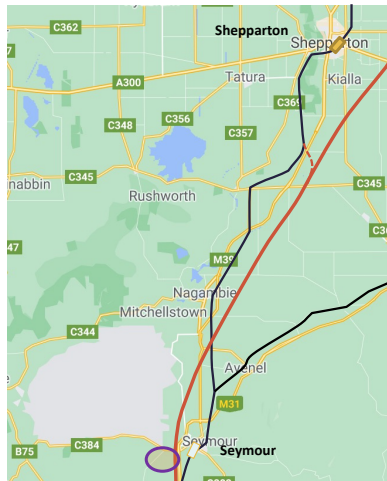
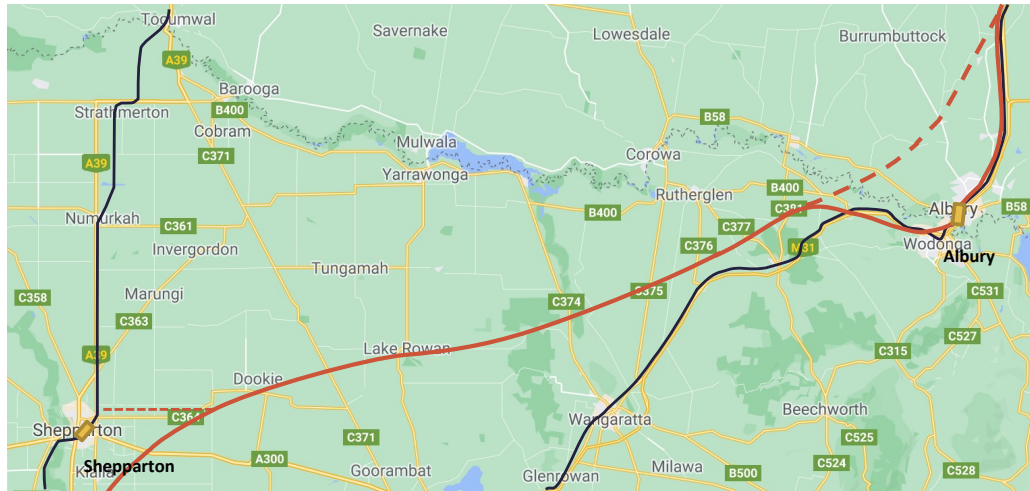
## Stage 3 – Wagga Wagga–Albury conventional rail duplication

- This provides at least a double track line all the way between Sydney and Melbourne for the first time
- Allows more freight capacity needed due to completion of the Inland Rail, and new rail terminals at Moorebank and Ettamogah



# Stage 4 – First Very High Speed Services

## Stage 4 – Seymour-Shepparton-Albury



- This will greatly speed up travel to both of these cities, as well as longer trips to Canberra and Sydney
- It will be accompanied by additional services including fast commuter services from Melbourne to Shepparton, and fast Regional Services to Albury and beyond
- This will also provide more freight capacity on the existing interstate route between Melbourne and Albury

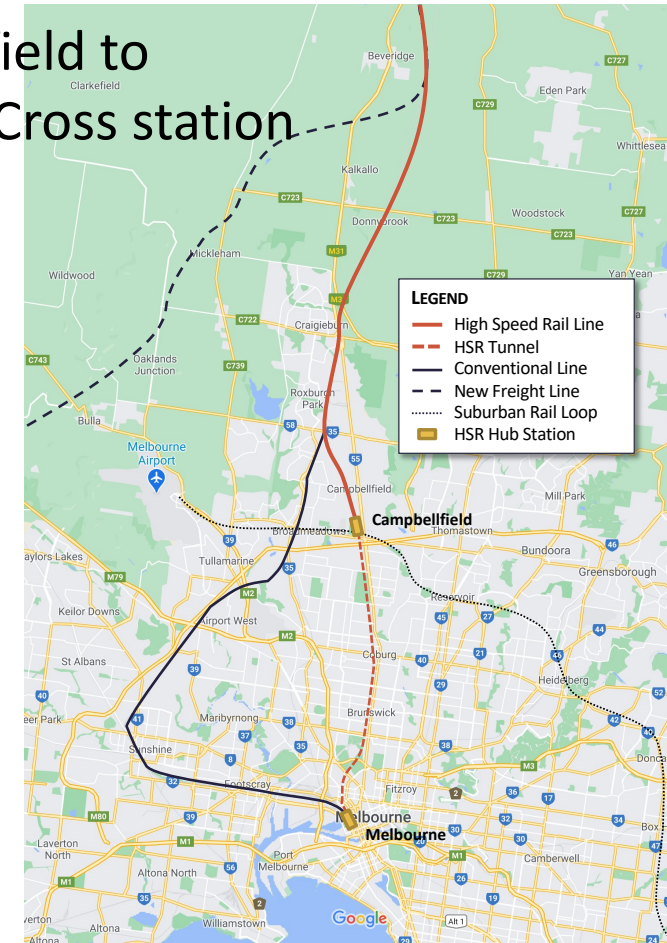
# Stage 5 – Very Fast Services between Melbourne, Sydney and Canberra



## Stage 5 – Entry tunnels to Sydney and Melbourne

Campbellfield to  
Southern Cross station

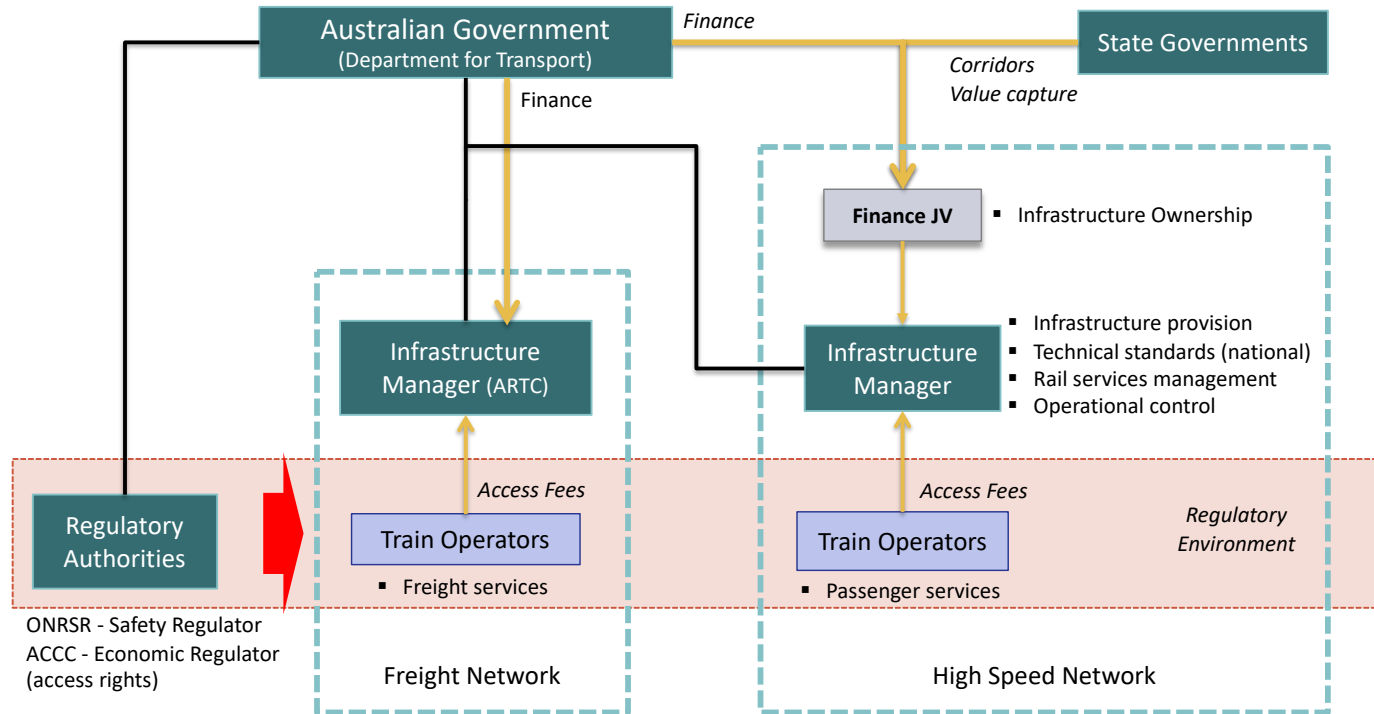
Glenfield to Olympic Park station



- The high speed line will now be fully electrified throughout
- Allows fully electrified very fast trains to operate on the full length of the line between Sydney, Canberra and Melbourne
- Earlier hybrid trains will be reallocated to other routes to increase speed and frequencies on those services

# Maximise the benefit of high speed rail (1)

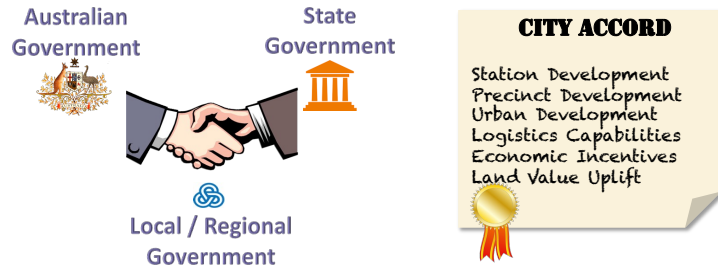
## Establish appropriate Governance arrangements



- Joint national and state government ownership and funding of infrastructure assets
- Single, national manager of the track and its operations
- Clear interfaces with the operators of trains
- Within a national framework for open access and safety

# Maximise the benefits of high speed rail (2)

## Coordinate with regional development



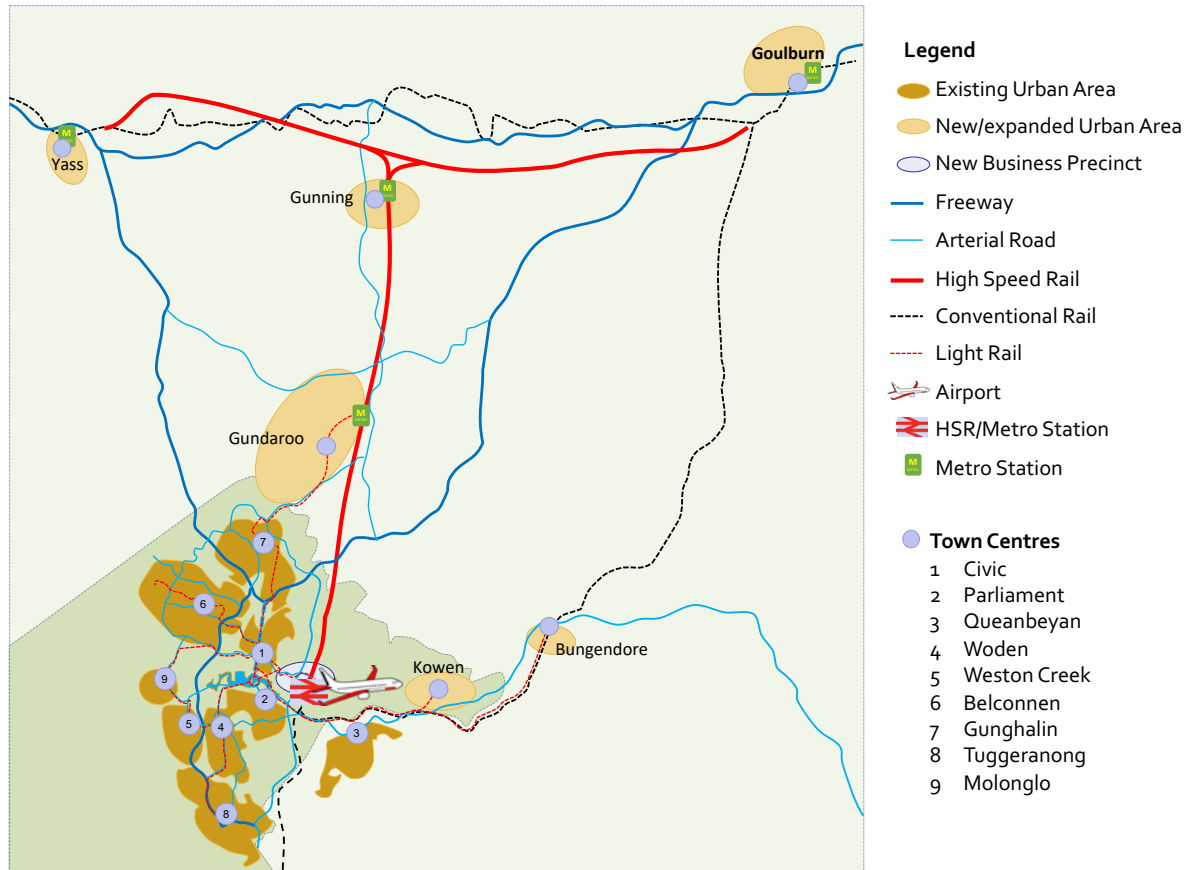
### A City Accord

*Outlines actions and responsibilities for each level of government*

## Opportunities for regional growth

- A business and transport hub
- Central city revitalisation
- New urban development
- Enhanced logistics capabilities
- Industry growth incentives
- Land value uplift value capture

# Use Canberra as the founding stone



- Self-contained project
- Proof of concept
  - High speed rail as an enabler of regionalisation
  - High speed rail as multi-service infrastructure
- Establishes governance arrangements
- Establishes national rail infrastructure manager
- Establishes national standards for high speed rail
- Establishes a national passenger rail operator
- Incorporates urban development at stations in Canberra, Goulburn and Yass
- Ingrates with (light rail) feeder networks

## Recommended Actions



Aim to complete the Sydney–Melbourne corridor by 2050

- Start the processes to protect rail reservations
- Develop an economic assessment and framework for a high speed rail network in the south east of Australia
- Start feasibility studies into upgrading three key sections of the Sydney-Melbourne corridor
  - Glenfield to Mittagong
  - Canberra to Goulburn and Yass
  - Mittagong to Goulburn