The Canberra to Eden Railway

"Unless Nature itself is rolled back, Eden will become a great city.
It does not follow that because this fine port has from one cause or another been neglected,
that it will continue to be neglected.

When that district is opened by railway communication, to which in my judgement it is justly entitled, Eden (...)
will become one of the most important places in New South Wales."

Sir Henry Parkes
October 1st, 1891

SNOWY MONARO REGIONAL COUNCIL

stormcloud engineering

The Canberra to Eden Railway

- Project Rationale
- Route Details and Costing
- Economics and Demand

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Project Rationale

- **Connect the Port of Eden to the ARTC network**
  - One of the finest deep-water ports in Australia
  - East-West connector to the Inland Rail
  - Bypass existing ports and freight bottlenecks
- **Improve passenger services to Canberra and surrounding regions**
  - Access to affordable housing, potential for value capture development
  - Fast commuter service to surrounding region
  - Central terminus for Canberra Metro
- **Demonstrate the feasibility of dedicated medium-speed, mixed-use rail**
  - Potential future connection to Ski Tube, Victoria
  - “Rail Renaissance” throughout regional Australia

Why now?

- **This is NOT merely a revival of the Bombala line**
- Freight customers looking for alternatives to existing ports, and alternative ways to get there
  - Congested transport corridors
  - Increasing energy costs
  - Expensive port charges, limited options
- Difficult or impossible to establish entirely new ports
- Housing affordability crisis increasing viability of commuter rail
  - High population growth in ACT
- Improved construction techniques

Major Works

- **Rebuild existing line to modern standards**
  - Assume full replacement of rails, sleepers, ballast, structures
  - Increase minimum radius to allow higher speeds
  - Deviations to replace slow sections
  - Ensure full interoperability with ARTC network
- **Improve accessibility of Canberra terminus**
  - Use existing transport easements for new spur line
  - Interface with ACT Light Rail at Kingston, Airport or Russell
- **Descent of South Coast Range from ~750m to sea level**
  - Primary corridor has been identified, similar to Scrivener's 1905 route

Railway Specifications

- **Minimum Curvature**
  - 650m typical — Allows 160km/h running of tilting trains, 100km/h freight
  - 800m desirable — Allows 115km/h running of freight trains

- **Maximum Gradient**
  - 1.5% desirable (1 in 66) — ~40km/h uphill balancing speed (typical freight consist)
  - 2% typical (1 in 50) — Eventual maximum gradient on Inland Rail route
  - 2.5% extreme (1 in 40) — Existing gradient on parts of Queanbeyan-Bombala line, Victorian sections of Inland Rail

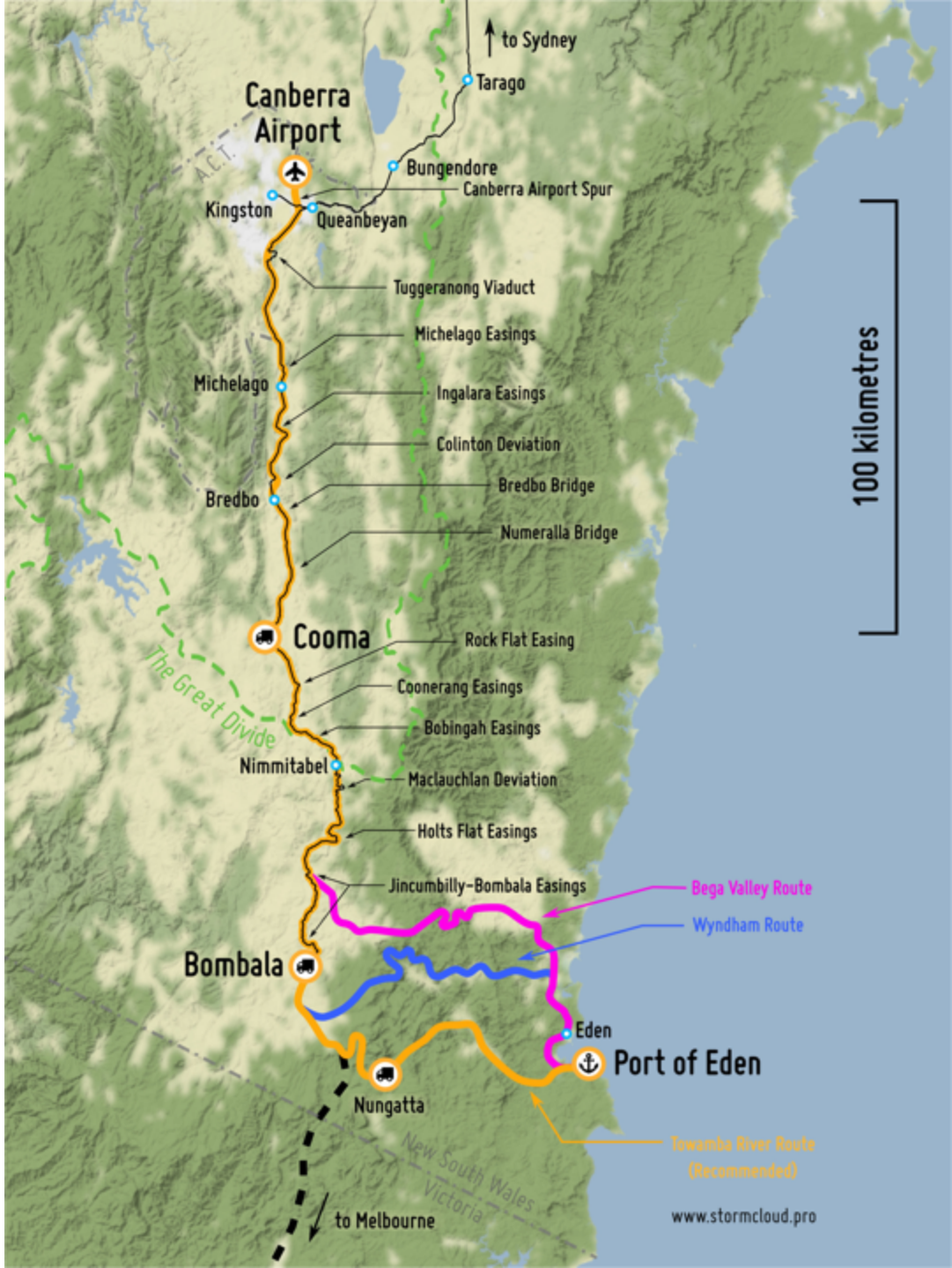
Dalgety to Eden Railway

Charles Scrivener

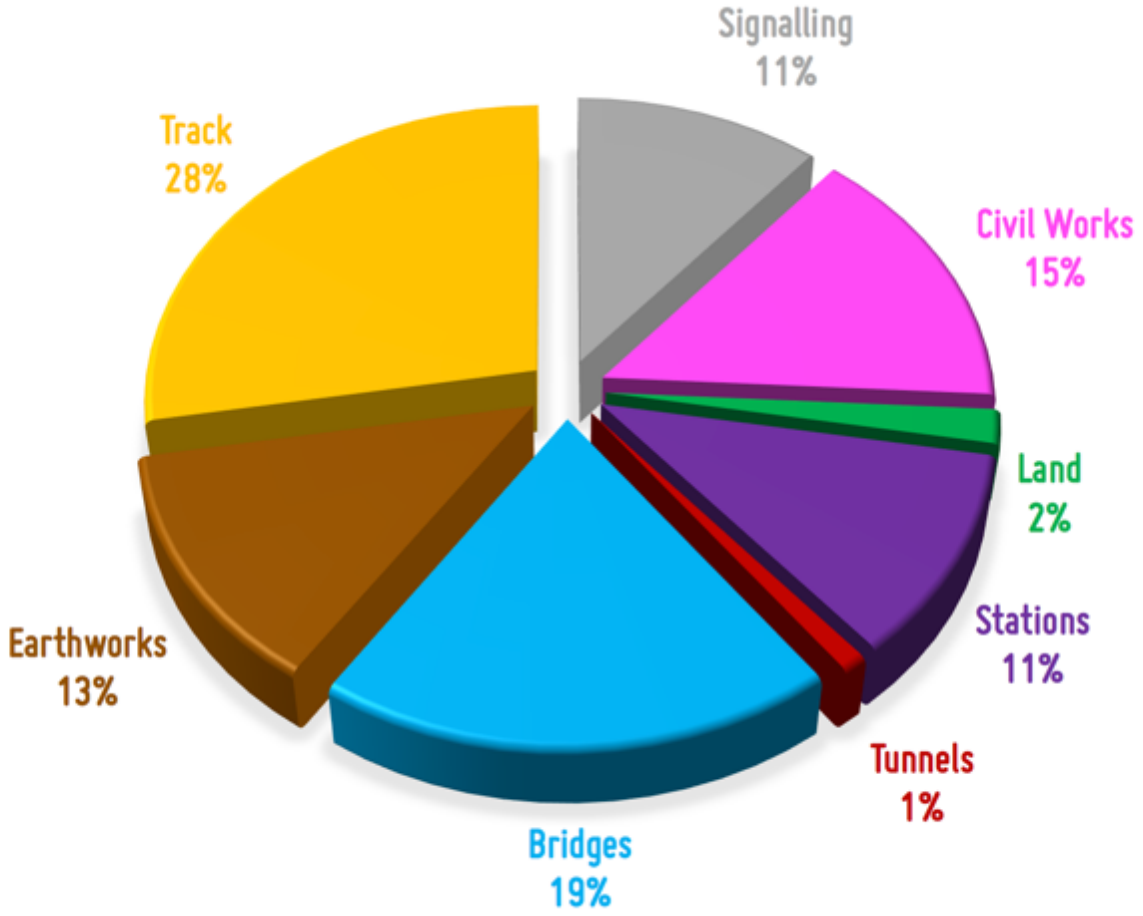
1905

Route Overview

- **Canberra to Cooma – 114km**
  - Rebuild existing line with minor deviations
  - Interface with Goulburn-Canberra line at Queanbeyan
  - 5km spur-line to Canberra airport
- **Cooma to Bombala – 93km**
  - Rebuild existing line with extensive deviations
- **Bombala to Eden – 106km**
  - New single-track alignment via Nungatta and Towamba
  - Extensive earthworks, viaducts, several tunnels
  - Construction difficulty comparable to Queensland legs of Inland Rail

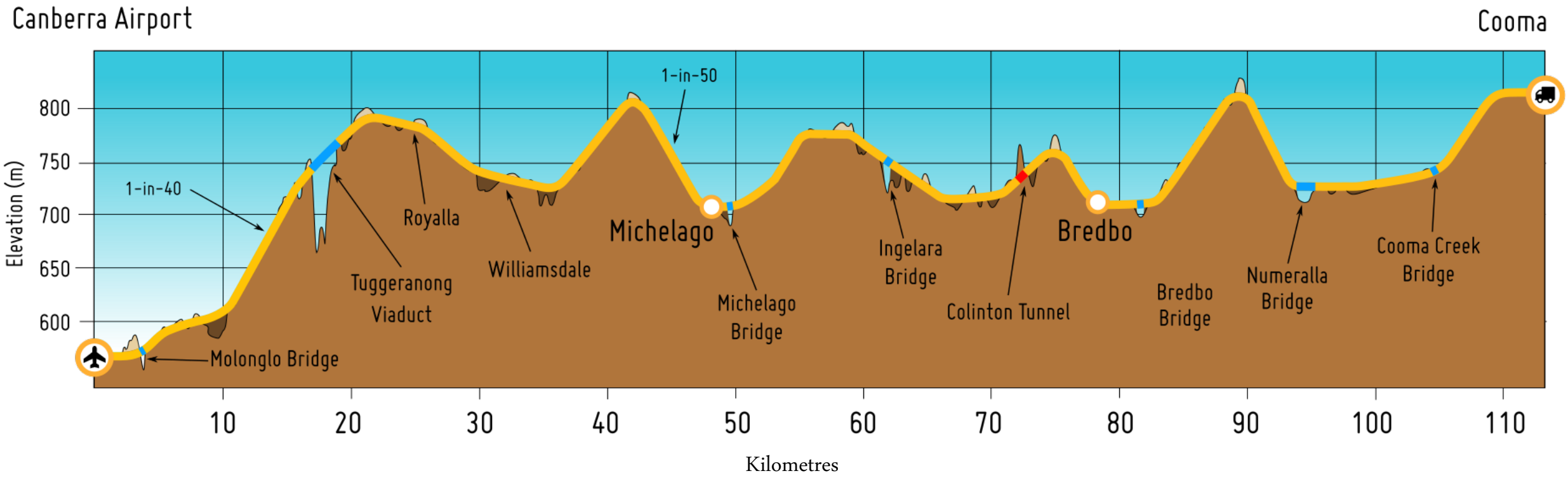


Canberra to Cooma - $386 million

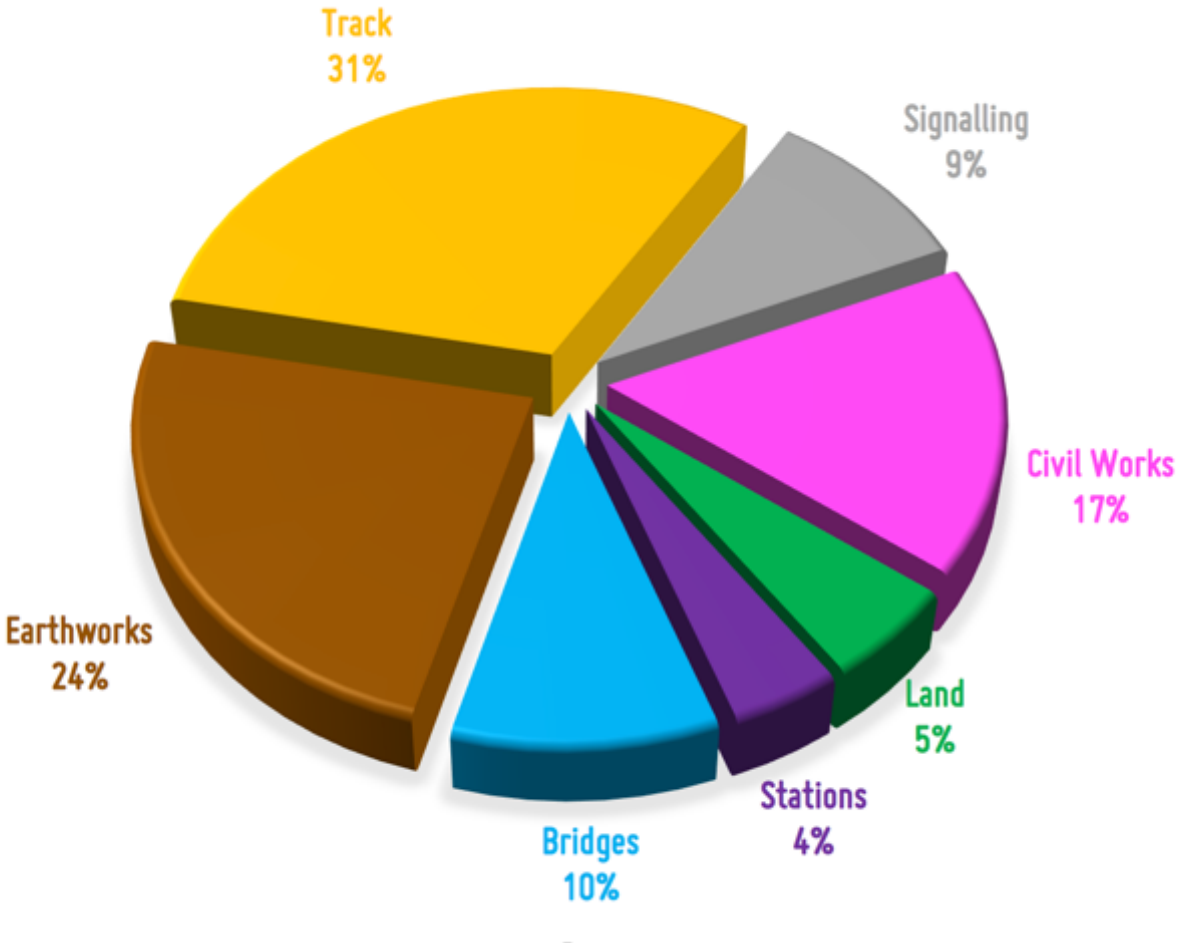


- 2.5km of new or replaced bridge structure
- 2.2 million m^3 of earthworks
- 5 grade-separated road crossings
- Floor lowering of 160m Colinton Tunnel

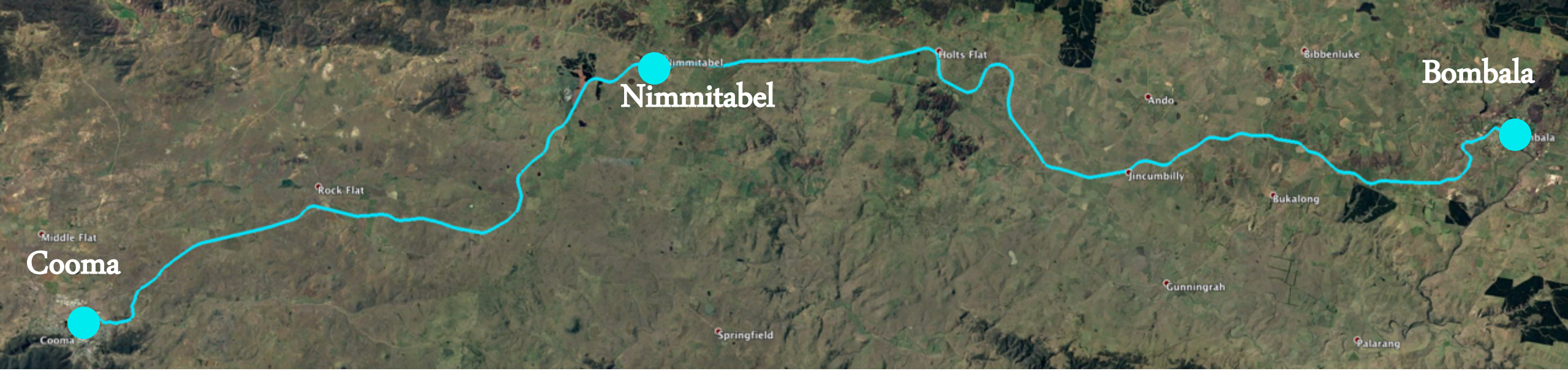

Canberra Airport
Michelago
Bredbo
Cooma
Urila
Burra
Fyshwick
Williamsdale
Michelago
Colinton
Bredbo
Chakola
Middle Flat
Bunyan
Cooma
Canberra
Griffith
Calwell
Woden Valley
Kambah
Tharwa
Weston Creek
Murrumbucca

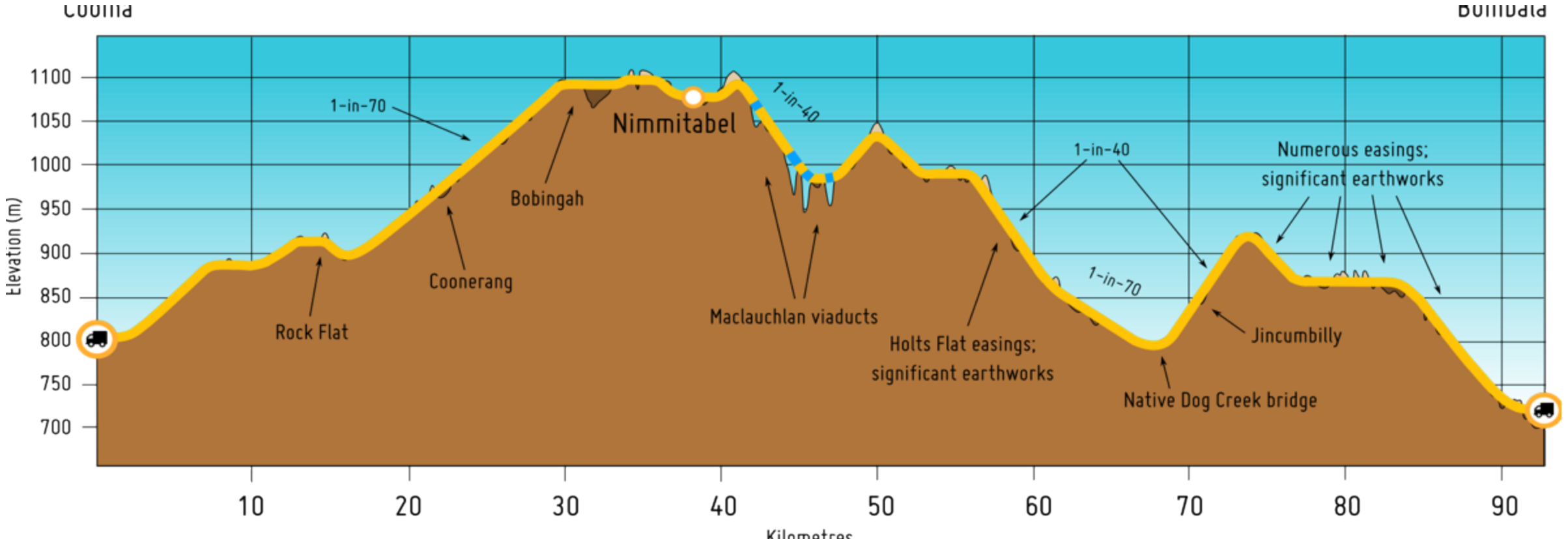

Canberra Airport
Cooma
Elevation (m)
800
750
700
650
600
1-in-40
1-in-50
Royalla
Tuggeranong Viaduct
Williamsdale
Michelago
Michelago Bridge
Ingelara Bridge
Colinton Tunnel
Bredbo
Bredbo Bridge
Numeralla Bridge
Cooma Creek Bridge
Molonglo Bridge
10
20
30
40
50
60
70
80
90
100
110
Kilometres

Cooma to Bombala - $261 million

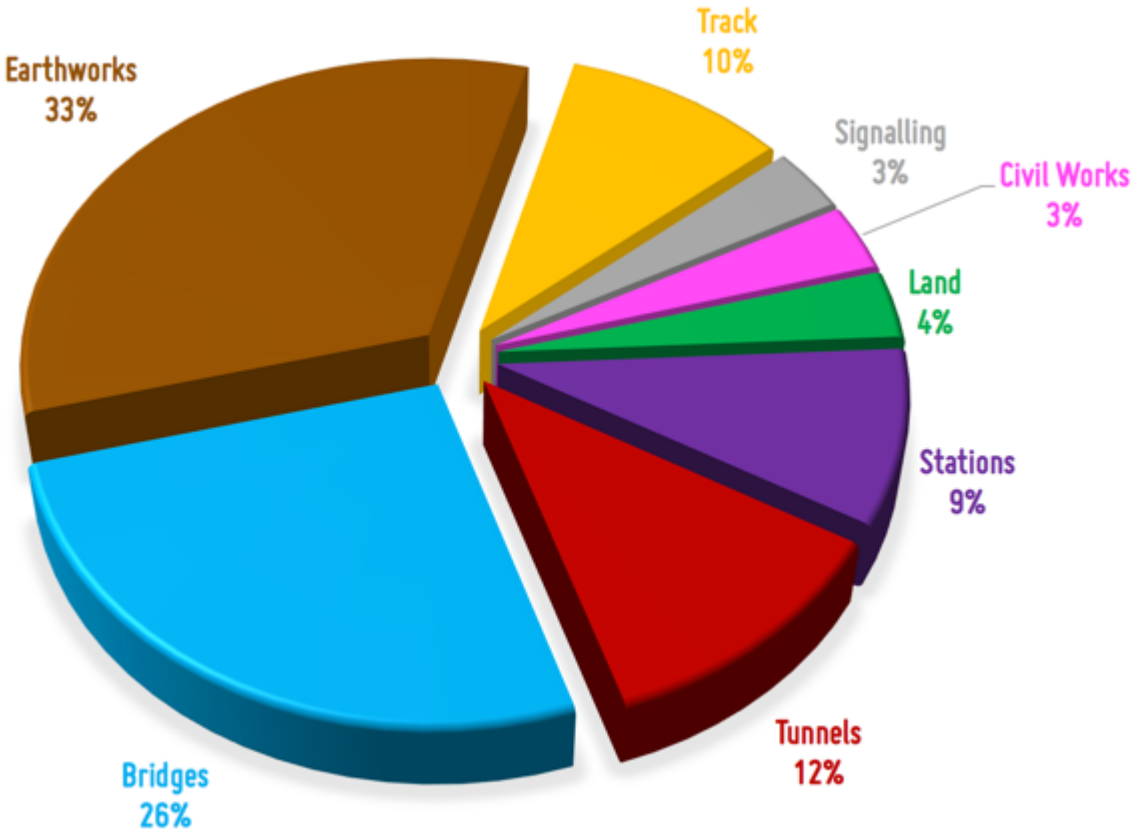


- 1.6km of new or replaced bridge structure
- 3.0 million m^3 of earthworks
- 3 grade-separated road crossings
- 44km of new or modified corridor (175ha)


Cooma
Nimmitabel
Bombala
Middle Flat
Rock Flat
Springfield
Holts Flat
Ando
Bibbenluke
Jincumbilly
Bukalong
Gunningrah
Palarang

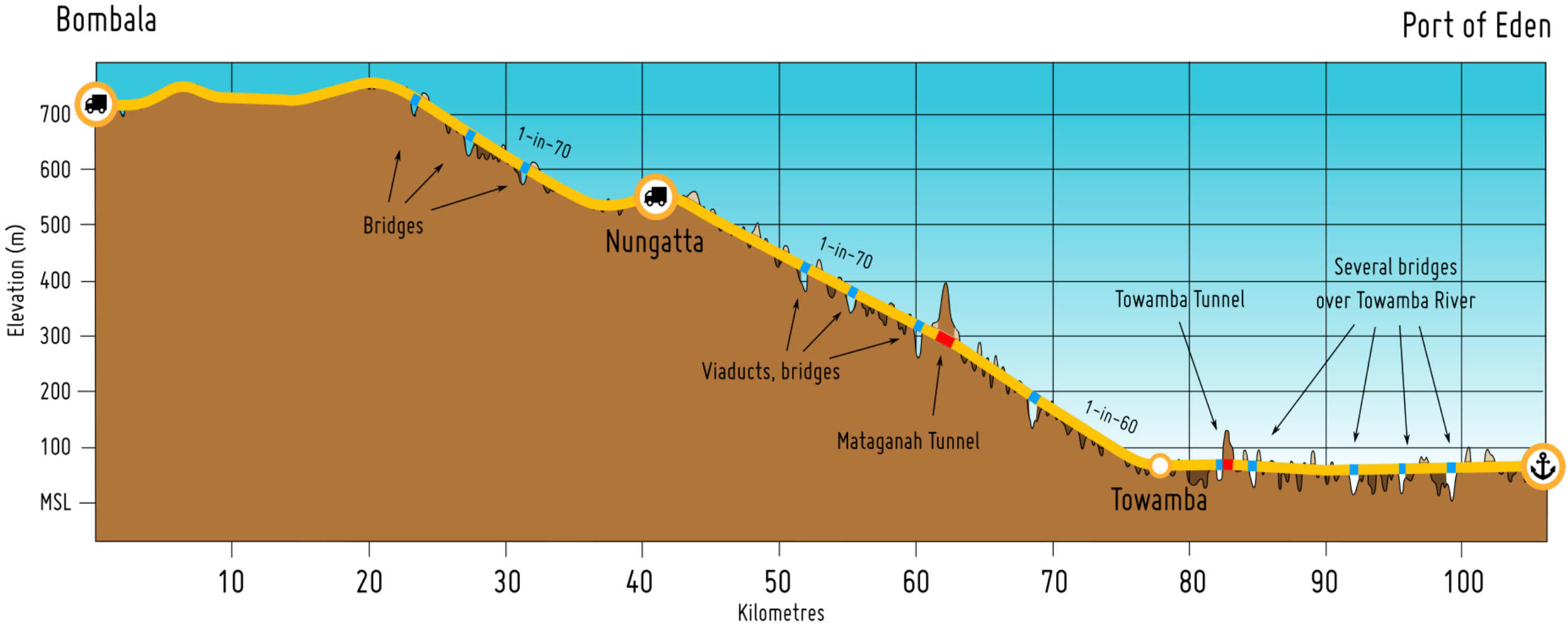

Cooma
Bombala
Elevation (m)
1100
1050
1000
950
900
850
800
750
700
1-in-70
Nimmitabel
1-in-40
Bobingah
Coonerang
Rock Flat
Maclauchlan viaducts
Holts Flat easings;
significant earthworks
1-in-40
Numerous easings;
significant earthworks
1-in-70
Jincumbilly
Native Dog Creek bridge
10
20
30
40
50
60
70
80
90
Kilometres

Bombala to Eden - $1.06 billion



- 9.5km of bridges and viaducts
  - Including 740m signature cable-stayed bridge
- 16.7 million m^3 of earthworks
- 3 tunnels totalling 1.75km
- Freight handling facilities at Nungatta and Eden


Bombala
Bombala
Coolumbooka
Lords Hill
Rosemeath
Wyndham
New Buildings
Millingandi
Pambula
Lochiel
Broadwater
Coolangubra
Burragate
Nethercote
Eden
Port of Eden
Towamba
Pericoe
Boydtown
Paddys Flat
Rockton
Nungatta
Kiah
Yambulla
Nungatta

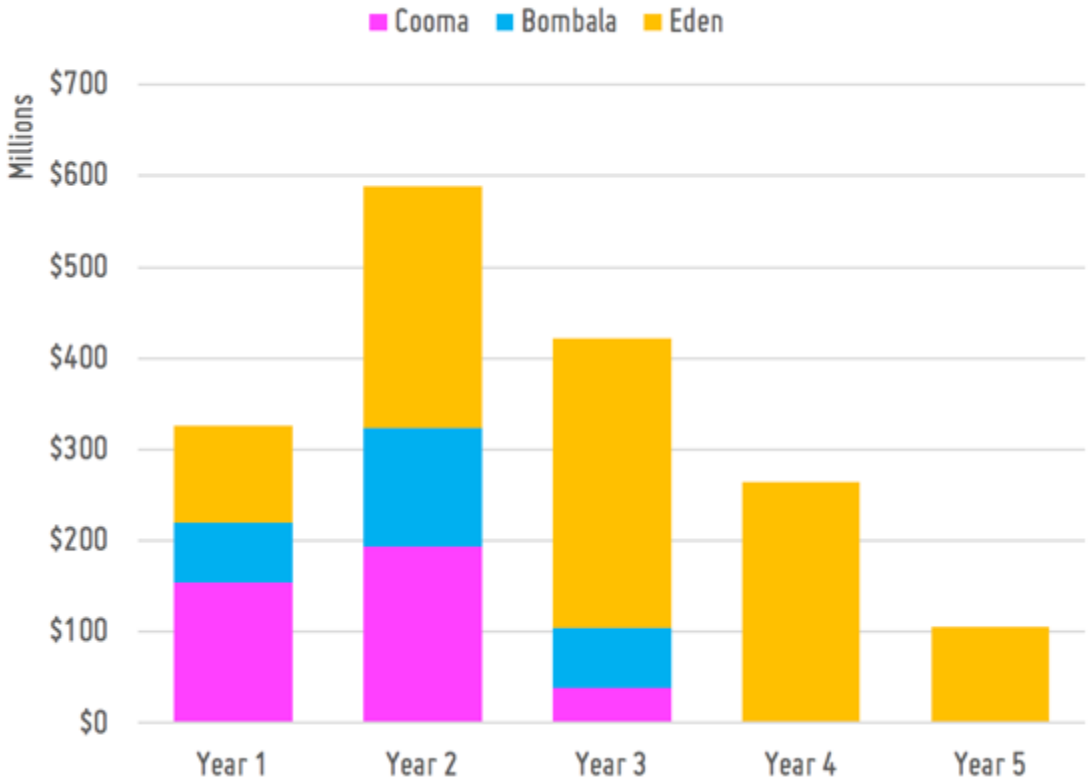

Bombala
Port of Eden
Elevation (m)
700
600
500
400
300
200
100
MSL
Bridges
1-in-70
Nungatta
1-in-70
Viaducts, bridges
Mataganah Tunnel
1-in-60
Towamba Tunnel
Several bridges
over Towamba River
Towamba
10
20
30
40
50
60
70
80
90
100
Kilometres

Construction costs and timeline

- **Direct Construction Costs:** **$1.71 billion**
- **Contractor Overheads (P&G):** **$305 million**
- **Client Costs:** **$256 million**

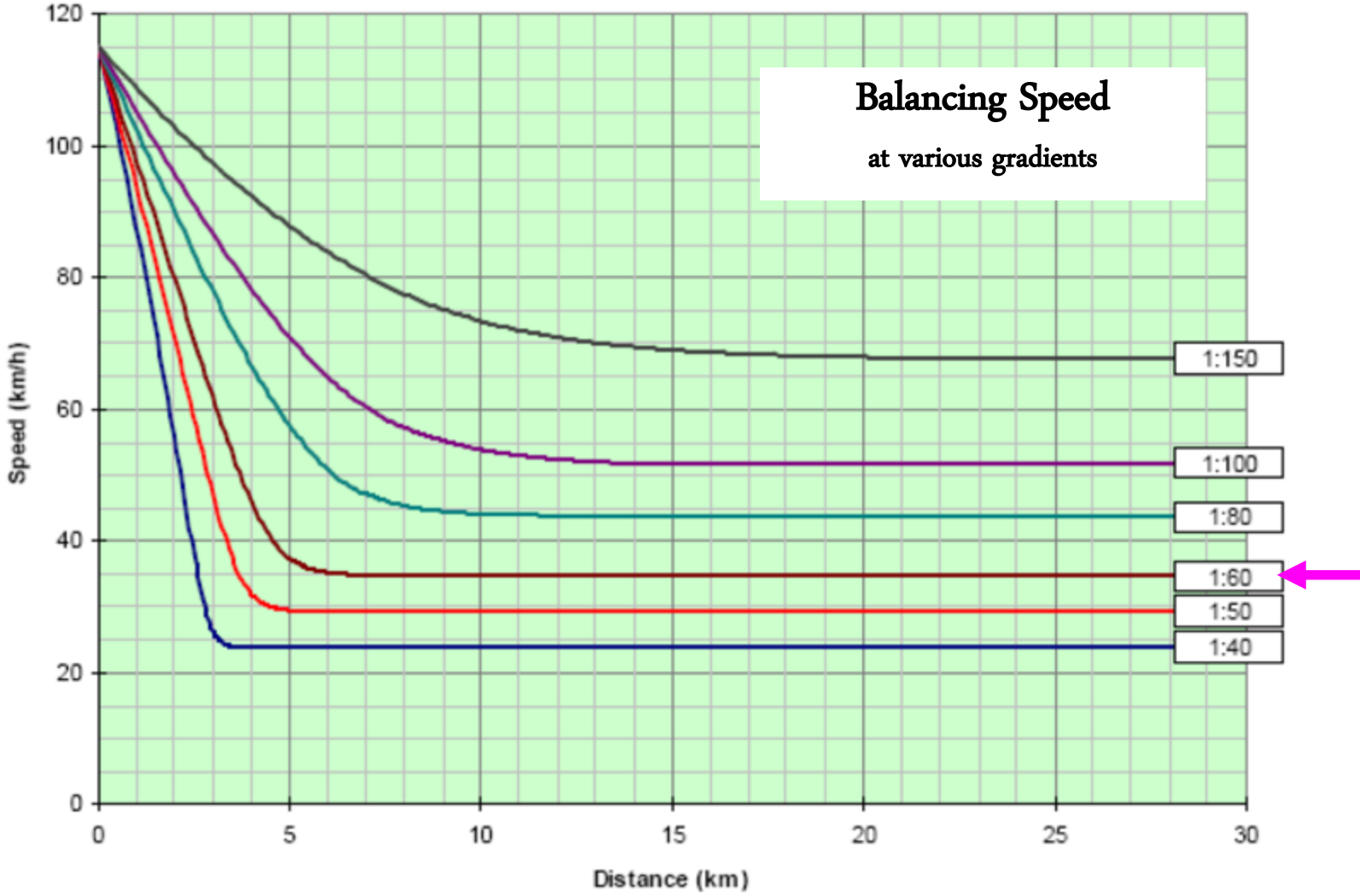
(P50 & P90 Contingency: $272 - 679 million)

TOTAL **$2.27 - $2.95 billion**

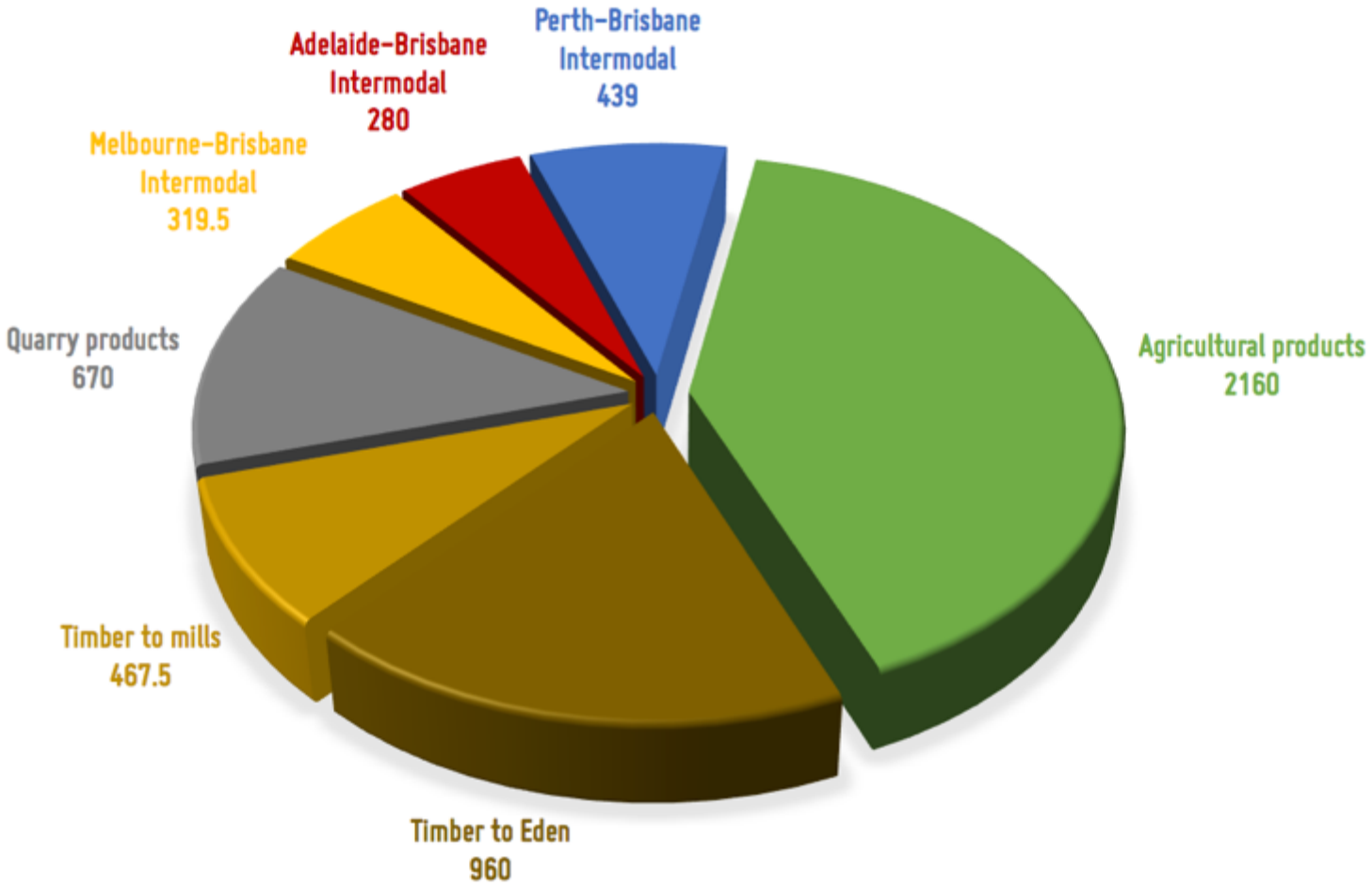


Freight Performance

- Maximum speed of 115km/h, some sections limited to 100km/h
- Travel time (approx.)
  - 4hrs southbound
  - 4.5hrs northbound
- Average speed comparable to Inland Rail (~75km/h)

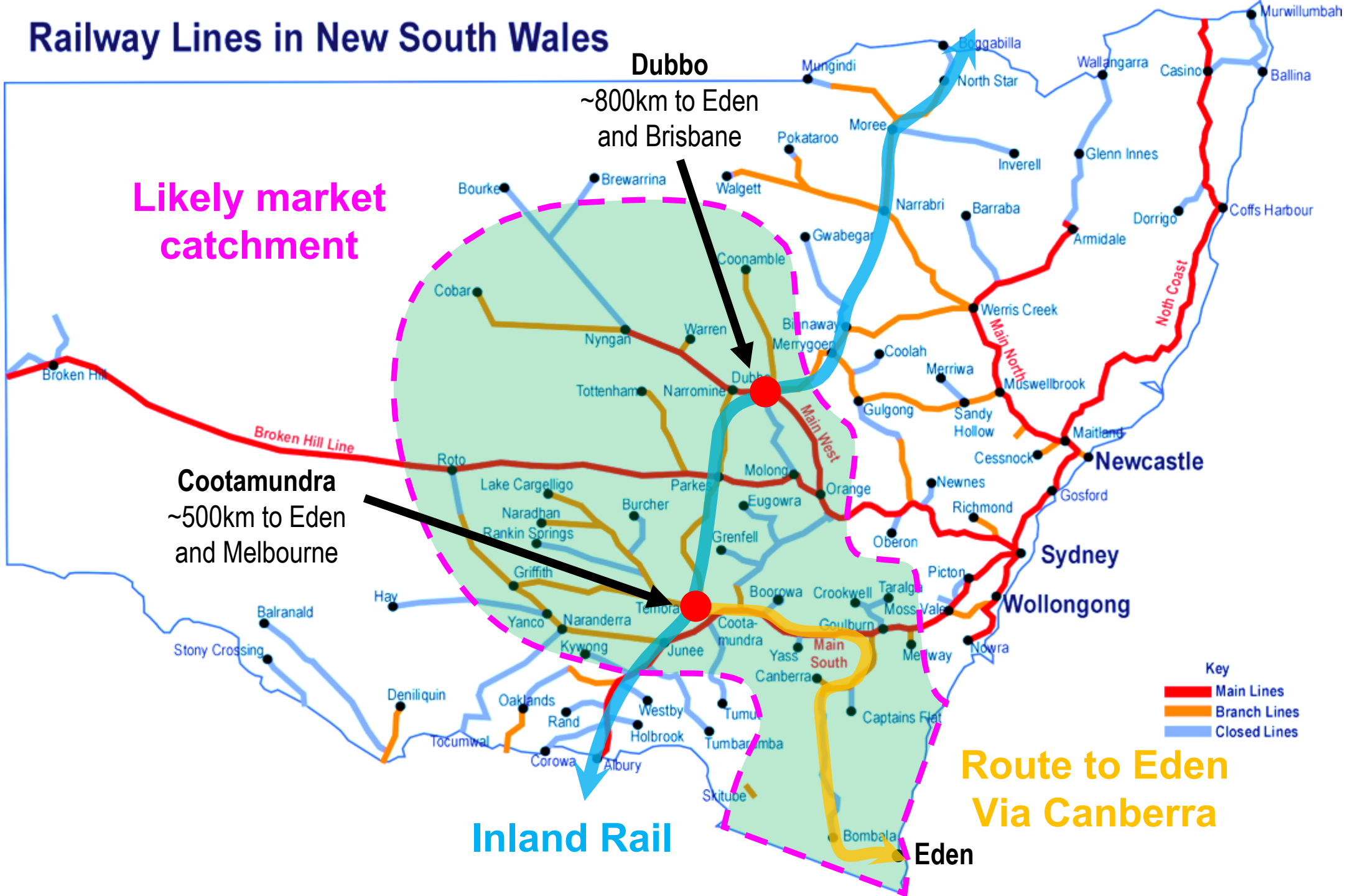


Freight Demand – ktons/ annum



Total freight demand (2026):

5.3 million tons per annum


Railway Lines in New South Wales
Dubbo
~800km to Eden
and Brisbane
Likely market
catchment
Cootamundra
~500km to Eden
and Melbourne
Inland Rail
Route to Eden
Via Canberra
Eden
Sydney
Newcastle
Wollongong
Broken Hill Line
Main West
Main North
Main South
North Coast
Key
Main Lines
Branch Lines
Closed Lines
Broken Hill
Bourke
Brewarrina
Cobar
Nyngan
Warren
Coonamble
Walgett
Mungindi
Boggabilla
North Star
Moree
Pokataroo
Inverell
Narrabri
Gwabegar
Barraba
Wallangarra
Glenn Innes
Armidale
Casino
Ballina
Murwillumbah
Dorrigo
Coffs Harbour
Werris Creek
Coolah
Merriwa
Gulgong
Sandy
Hollow
Muswellbrook
Maitland
Cessnock
Gosford
Newnes
Richmond
Oberon
Picton
Tottenham
Narromine
Merrygoen
Roto
Lake Cargelligo
Parkes
Molong
Orange
Eugowra
Burcher
Naradhan
Rankin Springs
Grenfell
Griffith
Hay
Balranald
Stony Crossing
Yanco
Naranderra
Kywong
Junee
Temora
Boorowa
Crookwell
Taralga
Moss Vale
Goulburn
Cootamundra
Yass
Canberra
Captains Flat
Nowra
Deniliquin
Oaklands
Rand
Westby
Holbrook
Tumut
Tumbarumba
Tocumwal
Corowa
Albury
Skitube
Bombala

Passenger Performance

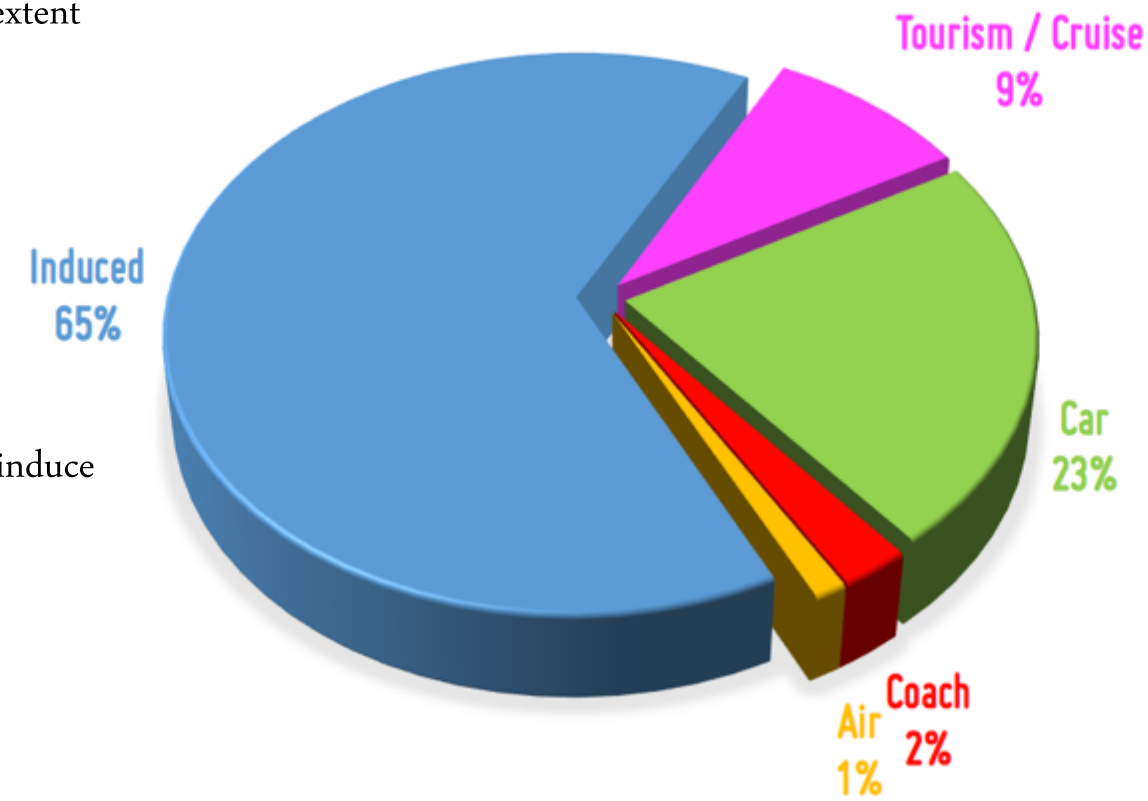
- **Maximum speed of 160km/h with tilting trains, no speed-restricted sections**
- **8 potential stations:** CBR, Michelago, Bredbo, Cooma, Nimmitabel, Bombala, Towamba, Boydtown (Eden).
- **Travel time**
  - Cooma: 0:52 hrs (1:16 by car)
  - Bombala: 1:33 hrs (2:13 by car)
  - Eden: 2:19 hrs (3:11 by car)

Passenger demand

- **Car** – 10% capture of existing private car traffic
- **Coach** – 100% switch to rail
- **Air** – Assume 20-100% capture of existing demand (depending on extent of improvement on Sydney-Canberra line)
- **Tourism**
  - Cruise passenger excursions to Canberra
  - Seaside holiday demand from Canberra
- **Induced**
  - ACT population growth ~9,000 per year; 5% diversion would induce ~1,500 return trips per day within 3 years.
  - Residential development at Station Precincts – Value Capture

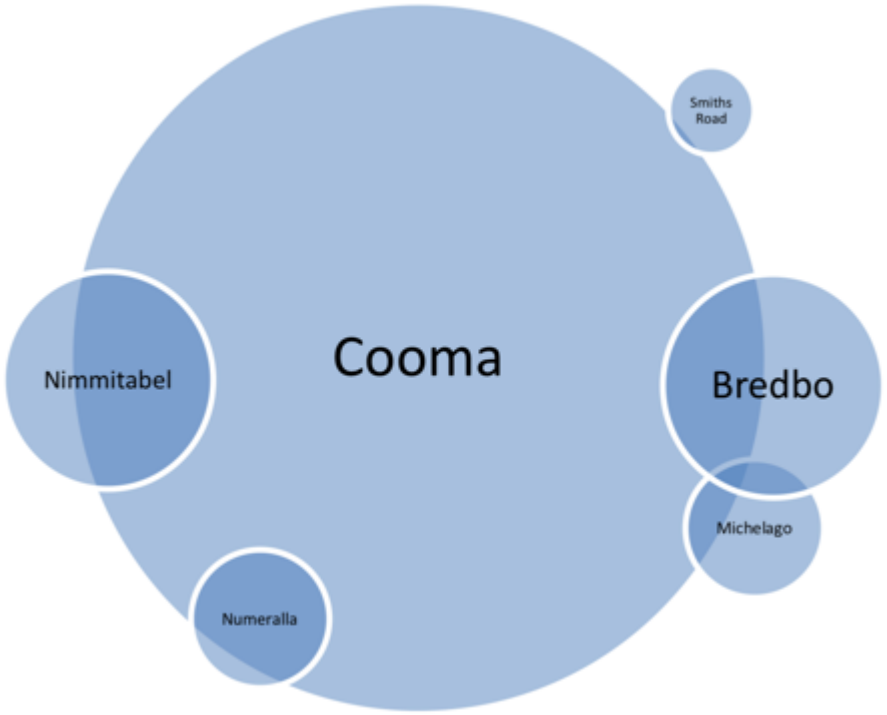
Total demand: 3,500 pax/day

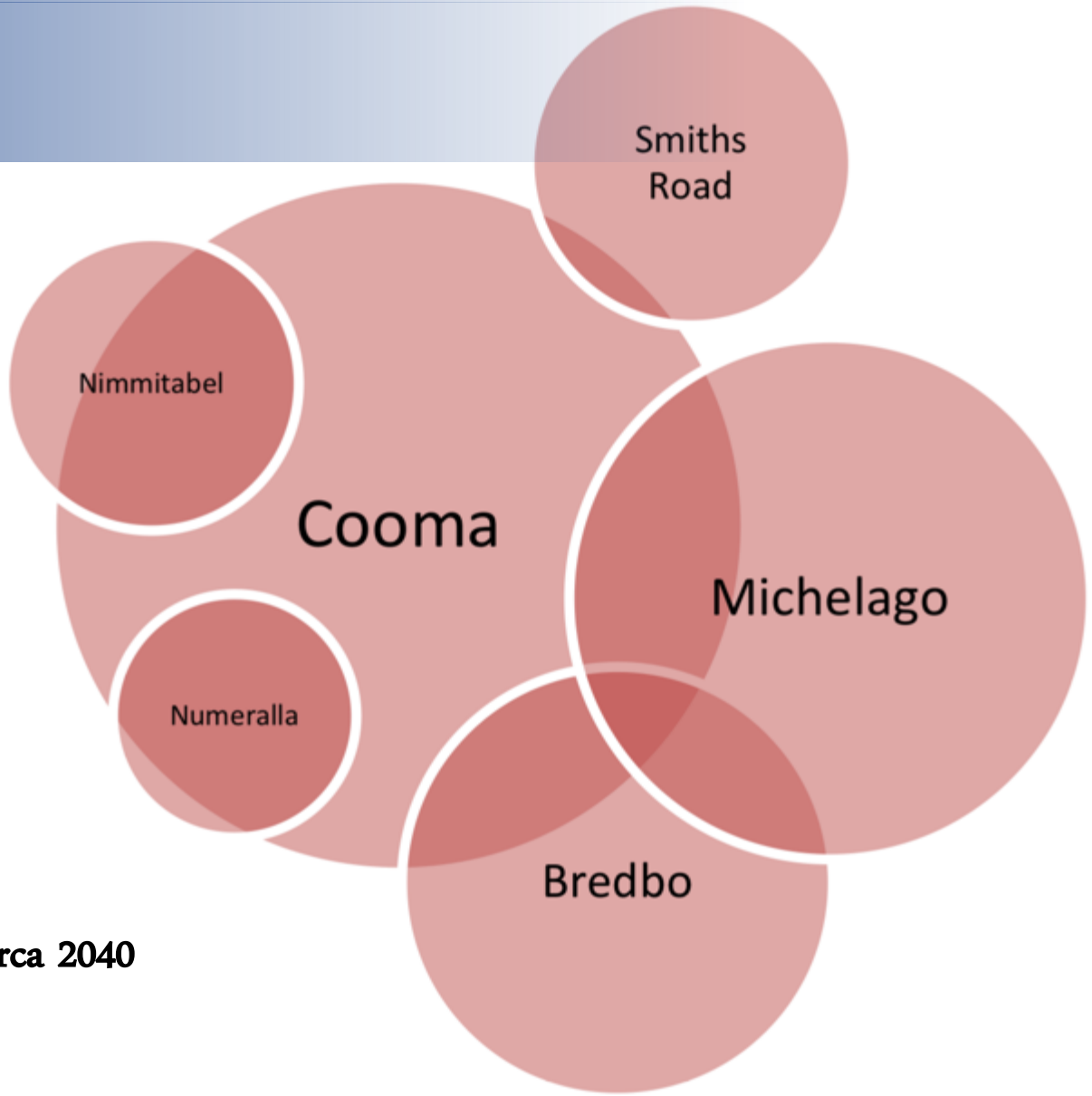
(1.3 mppa)



Monaro Population Distribution

Present





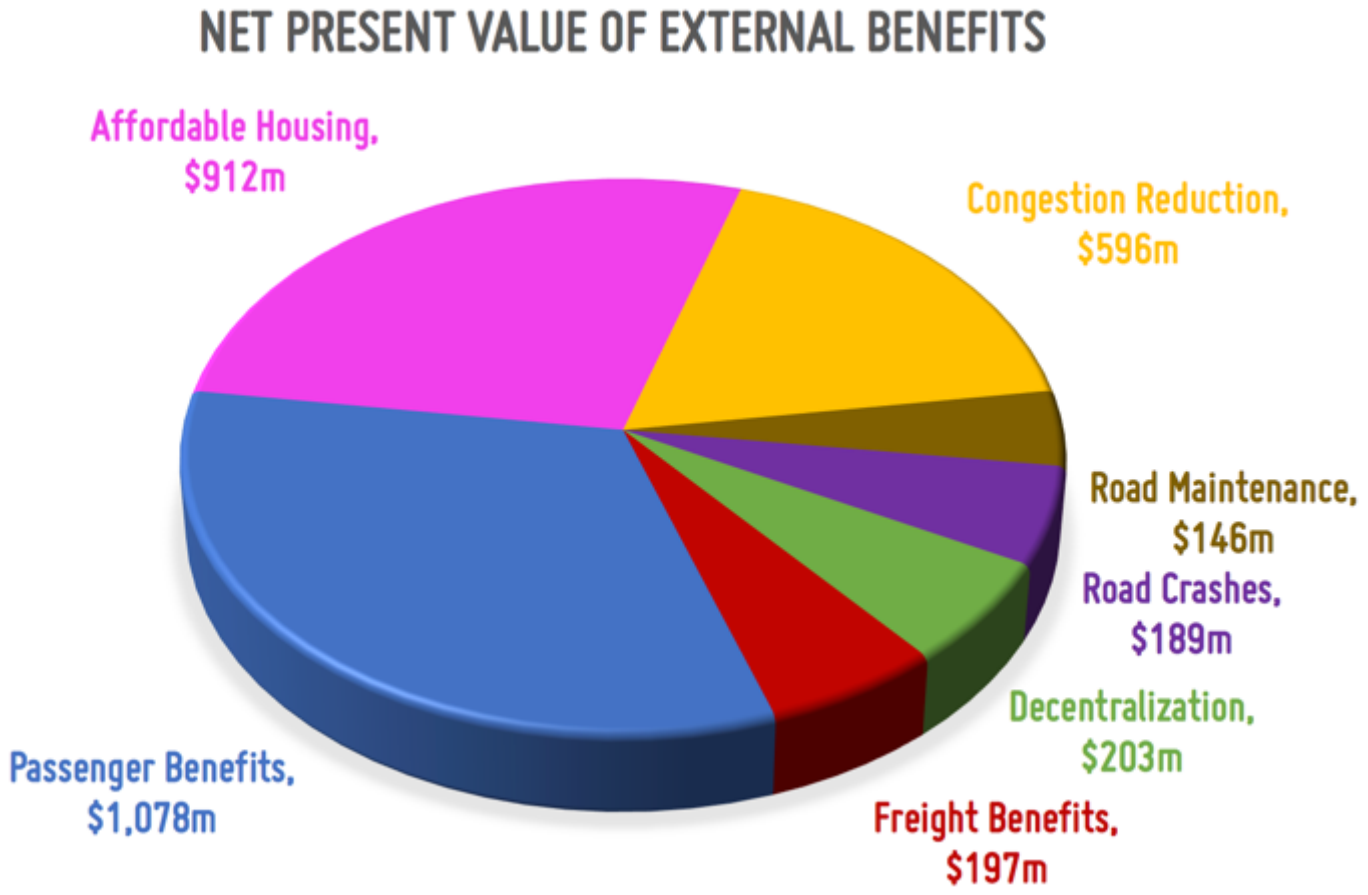
Circa 2040

Financial Appraisal

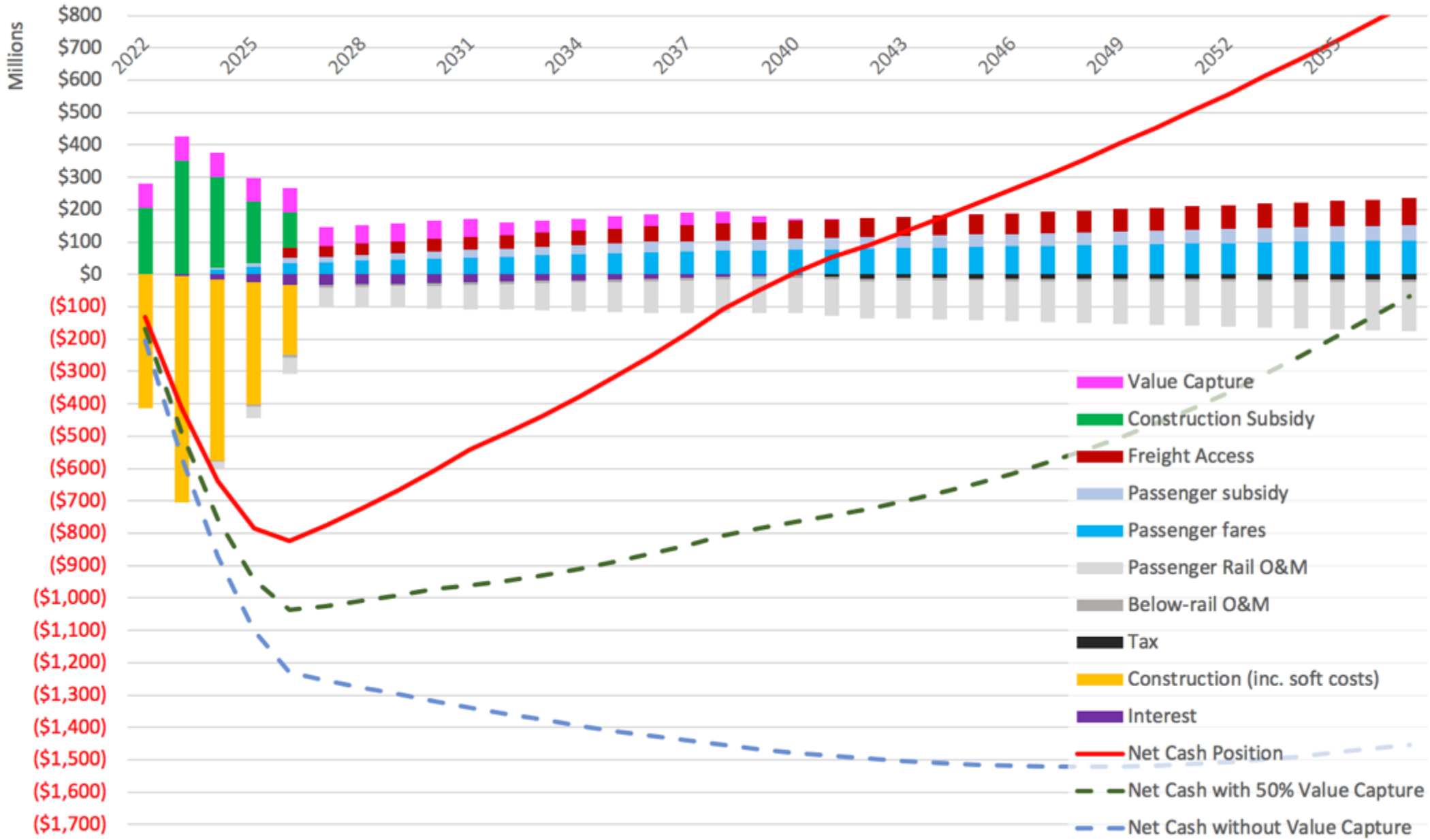
- **Freight access charge: $24 per thousand net-ton-km**
  - Competitive with existing North Coast route
  - Annual revenue $32 million exceeds $8m operating costs
- **Passenger rail facilitates Value Capture development**
  - 1,000 dwellings per year over 8 townships
  - Potential income $50 million+ per year
- **Public-Private Partnership: 50% government owned**
  - 50% construction contribution - $966 million over 5 years (net present cost)
  - $12/passenger for regional passenger service - $367 million over 30 years
- **Payback Period of 19 years**
  - IRR: 4.41%

Cost-Benefit Analysis

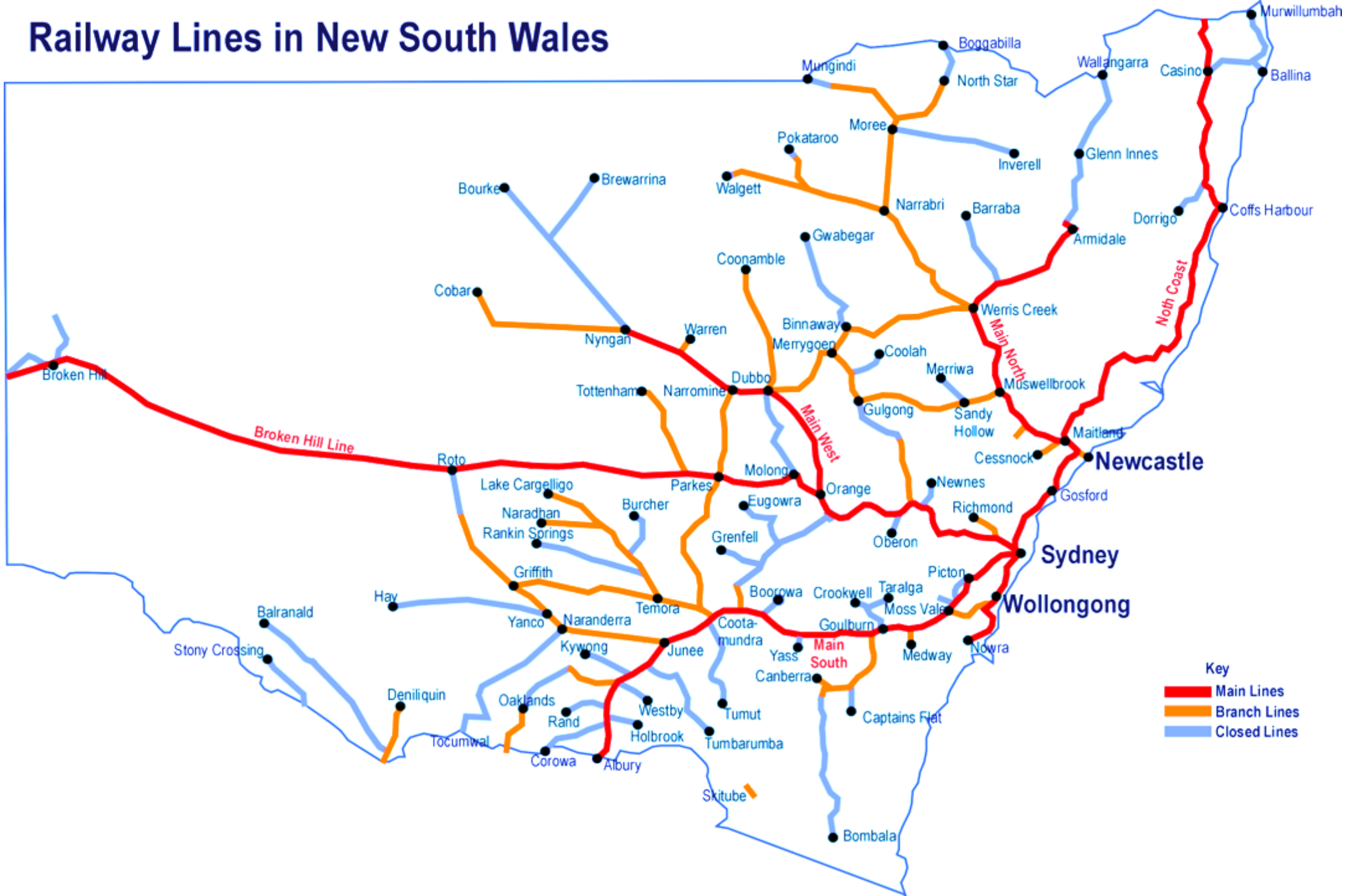
- Net External Benefit **$3.32 billion** over 30 years
- Exceeds proposed government contribution of **$1.29 billion** (under 50% PPP model)
- **BCR 2.54** (@ 7% discount rate)
- Public paypack period of **7 years**



Cash Flow to 2057



Railway Lines in New South Wales



Cosmo and Monkstown Progress Association

SNOWY MONARO REGIONAL COUNCIL

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