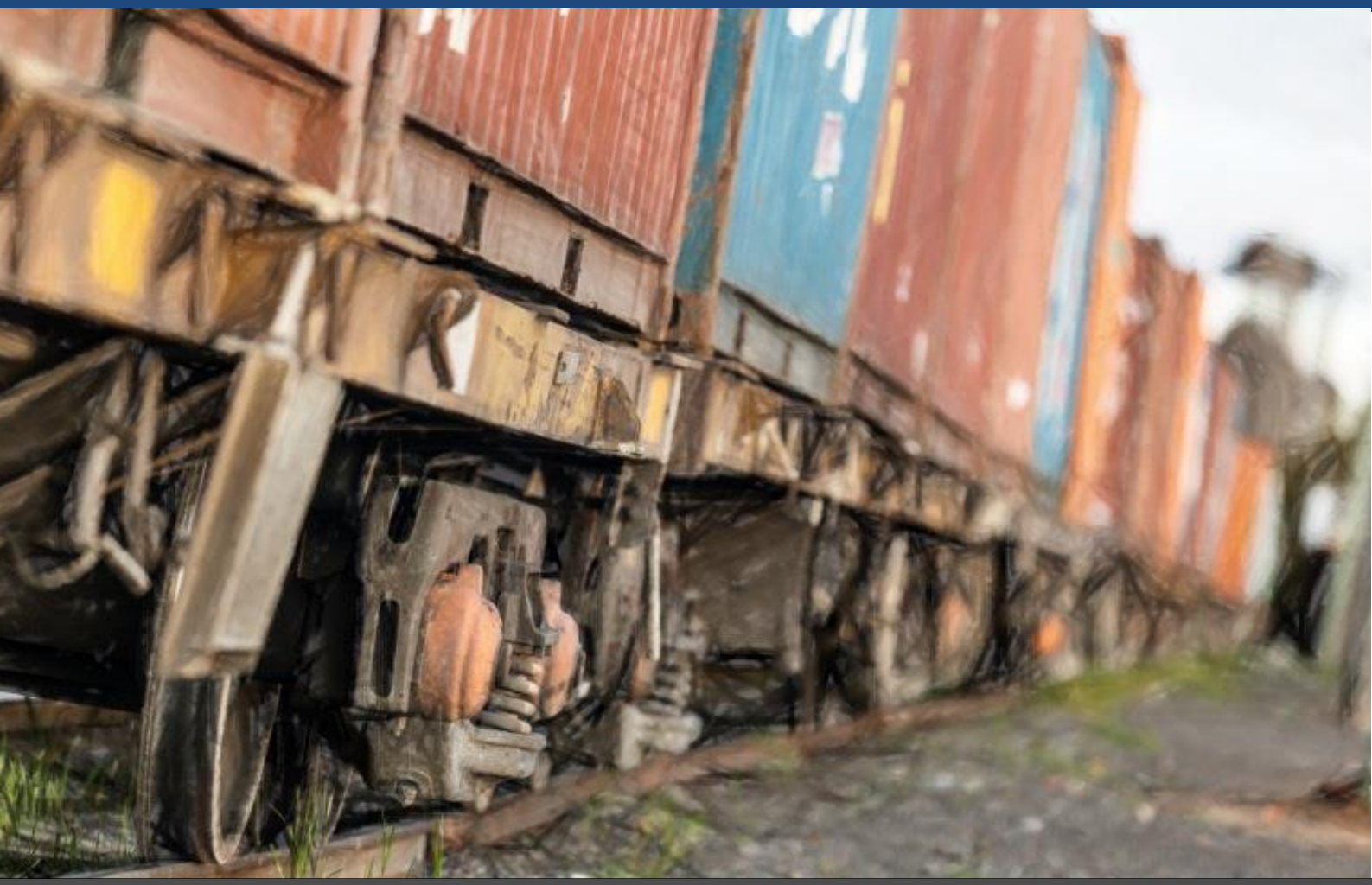

Regional Job Precincts: Intermodal Feasibility

South Jerrabomberra

george stanley consulting
economic & advisory services

November 2022

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Revision History

Version	Date	Summary of changes	Comments
1	31/1/22	Draft Baseline report	Issued to Regional NSW
2	17/05/22	Draft Final report	Issued to Regional NSW
3	24/08/22	Draft Final report	Issued to Regional NSW
4	23/11/22	Final report	Issued to Regional NSW

Disclaimer

1. Introduction

1.1. Document Purpose

george stanley consulting (gsc) has been engaged by the Department of Regional NSW (DRNSW) to undertake an Intermodal Terminal Feasibility Assessment of the South Jerrabomberra Regional Job Precinct investigation area as part of the Regional Job Precincts (RJP) program.

The required outcome of the Intermodal Terminal Feasibility Assessment is to determine the opportunity to develop an intermodal terminal within the RJP as part of a broader Master Planning process.

1.2. Regional Job Precincts

Regional Job Precincts (RJPs) are employment precincts in regional NSW identified by the NSW Government as having potential for growth that would rely on planning support, tailored planning controls and/or where planning reform is required to achieve results. The initiative is an extension of the Special Activation Precincts (SAPs), which are dedicated areas in a regional location identified by the NSW Government for fast-track planning and infrastructure investment to become a thriving business hub. The major difference between RJPs and SAPs is that infrastructure funding is provided under the SAP program.

The RJP program will deliver priority place-based or industry-based improvements in the NSW planning system that support private investment and job creation. The program focuses on locations with 'market ready' land and a demonstrated need for fast-tracked changes to relevant planning instruments. To date, RJPs have been announced at Albury, Richmond Valley (Casino), South Jerrabomberra, and Namoi.

The key initiative of the program is to promote placed-based statutory planning frameworks that will remove planning complexity and delays as a barrier to regional economic growth to attract private investment. This will effectively support a shift towards a strategic-led planning system allowing for greater growth and investment.

1.3. South Jerrabomberra Regional Job Precinct

On 5 March 2021, the NSW Government announced the third RJP at the Poplars Innovation Precinct. The South Jerrabomberra RJP was selected because of the opportunities associated with the Poplars Innovation Precinct to create a hub of defence, space, cyber-security, information technology and scientific research sectors.

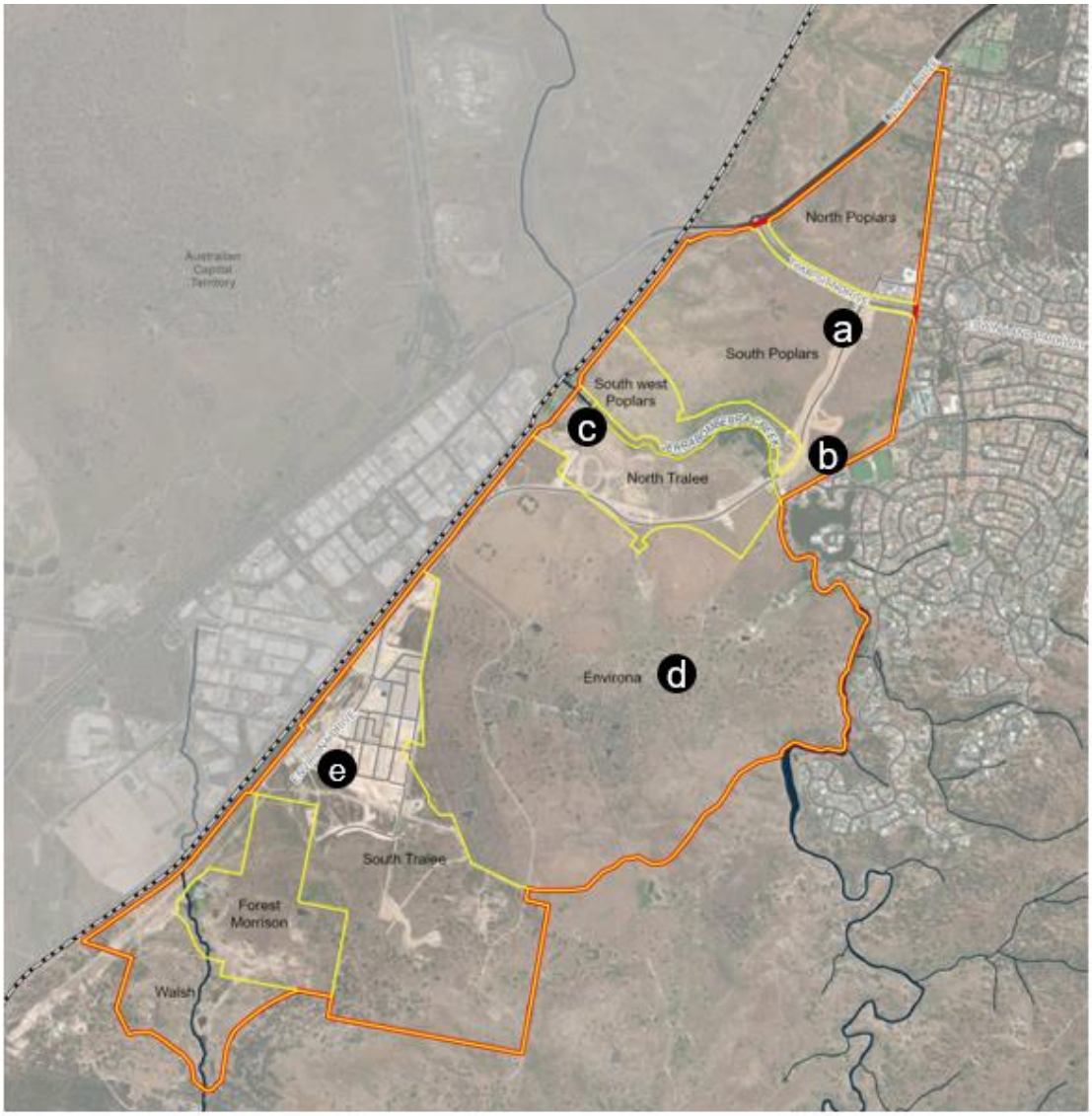
The Poplars Innovation Precinct is a series of land parcels located south of the Queanbeyan CBD, bordering the ACT and existing Hume Industrial Estate. The Precinct has the opportunity for activation of multiple precincts including a parcel of employment land, a retail and services precinct, a technology hub, a regional sports hub, a potential rail freight intermodal and a new high school.

The South Jerrabomberra RJP investigation area encompasses approximately 950 hectares focused on the opportunities and key features of the precinct including:

- $23 million investment from the Growing Local Economies Fund to provide an 'infrastructure spine' along Environa Drive with water, sewer, energy and fibre optic utilities in the road corridor
- A 10-hectare site for retail and services precinct, with the first stage of development completed for a range of retail uses
- A designated learning precinct (including a new high school expected to open in 2023) and innovation hub (incubator for entrepreneurs and start-ups)
- The only location in NSW with access to the secure Commonwealth ICON fibre loop

The investigation area identified in Figure 1 encompasses the Poplars Innovation Precinct to the north, with the southern portion of the precinct comprising predominantly residential urban release areas and associated services known as South Tralee. The central portion of the precinct comprises rural lands that have been strategically identified for future employment generating uses.

Figure 1: South Jerrabomberra RJP investigation area



The map denotes the following landmarks:

a. Poplars Technology Park

b. Proposed high school

c. Proposed regional sports facility

d. Environa

e. South Tralee residential development

Land within the investigation area is currently zoned as follows:

- **North Poplars:** a mix of B1 Neighbourhood Centre, B7 Business Park and E2 Environmental Conservation located north of Tompsitt Drive under Queanbeyan Local Environmental Plan (West Jerrabomberra) 2013 (identified as area a on Figure 1).
- **South Poplars:** a mix of B7 Business Park, E2 Environmental Conservation and RE2 Private Recreation located south of Tompsitt Drive under Queanbeyan Local Environmental Plan (West Jerrabomberra) 2013 (identified as area a on Figure 1).
- **South West Poplars:** RE2 Private Recreation located south of Tompsitt Drive under Queanbeyan Local Environmental Plan (West Jerrabomberra) 2013.
- **North Tralee:** a mix of IN2 Light Industrial, B7 Business Park, RU2 Rural Landscape and E2

Environmental Consideration under Queanbeyan Local Environmental Plan (West Jerrabomberra) 2013.

- **Environa:** mostly zoned Zone 1(a) Rural A, with a portion of land in the south east zoned Zone 7(b) Environmental Protection B under Queanbeyan Local Environmental Plan 1998.
- **South Tralee:** a mix of RE2 Private Recreation, R2 Low Density Residential and E2 Environmental Consideration, with small lots for B1 Neighbourhood Centre and B4 Mixed Use bordering the ACT (Queanbeyan Local Environmental Plan (South Jerrabomberra) 2012).
- **Forest Morrison:** mostly zoned R2 Low Density Residential, with small parcels of RE2 Private Recreation and E2 Environmental Conservation bordering the site (Queanbeyan Local Environmental Plan (South Jerrabomberra) 2012).
- **Walsh:** a mix of R2 Low Density Residential and RE2 Environmental Conservation, with small parcels of E2 Environmental Conservation bordering the site to the South-East and South (Queanbeyan Local Environmental Plan (South Jerrabomberra) 2012).

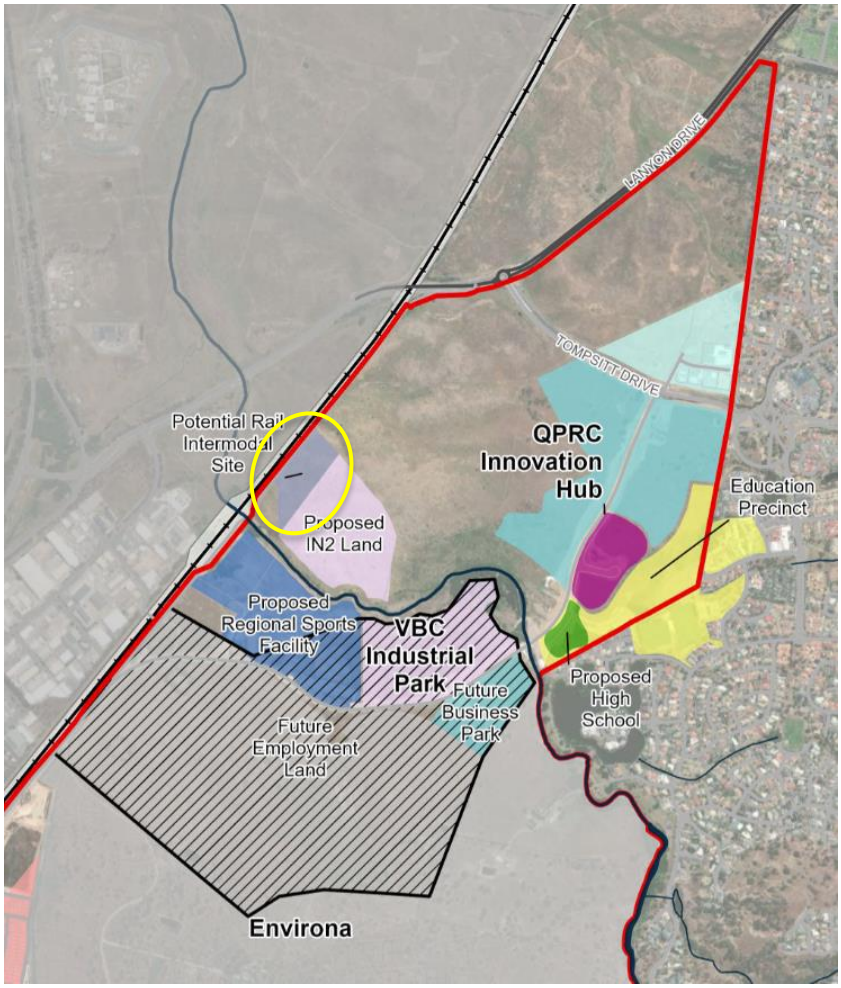
1.4. South Jerrabomberra Intermodal Terminal Proposal

The Queanbeyan-Palerang Local Strategic Planning Statement (LSPS) identifies the development of a rail intermodal facility as a key outcome of the transport infrastructure planning priority. The LSPS proposes a 3-hectare site as the location for a potential rail intermodal facility, within the portion of the RJP investigation area identified as South West Poplars.

The South Jerrabomberra RJP investigation area adjoins a non-operational rail line/corridor which has previously been the subject of the Canberra to Port Eden Rail feasibility study for re-opening. This study identified a rail link between Canberra and Port Eden as a potential opportunity to generate economic value to regional NSW. In May 2020, the study concluded that the project was not viable, and returned little, if any, economic benefits.

The figure below indicates this location, outlined in the yellow circle.

Figure 2: South Jerrabomberra RJP investigation area



1.5. Purpose of the Intermodal feasibility study

DRNSW requires an investigation of the feasibility of locating an intermodal facility in the South Jerrabomberra RJP. The objectives of this study are to:

- Provide an analysis of key planning opportunities and constraints to locating an intermodal facility within the precinct
- Provide an analysis of major freight and supply chains within and near the precinct, and surrounding regions
- Provide a market analysis to test the appetite for locating an intermodal facility within the precinct; and
- Provide recommendations to the NSW Government regarding the merit of next steps for locating an intermodal facility within the precinct.

1.6. Approach to the Intermodal assessment

Feasibility, when it comes to Intermodal Terminals is about defining a need, a service or operating requirement and establishing a commercial or economic sustainability.

In order to establish intermodal terminal feasibility, the following must be established:

- Defining the freight need over time for the proposed locations

- Defining the required infrastructure and service frequency to encourage intermodal use; and
- Identify the potential financial or economic benefit for freight transport users and operators.

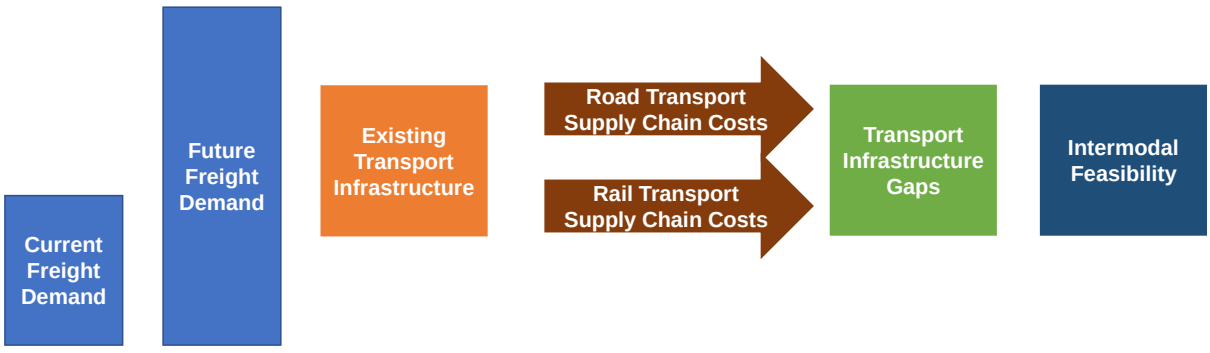
The approach to feasibility involves quantifying and comparing the demand for services based on freight growth and development with the availability or supply of existing and planned infrastructure under a range of growth scenarios. The intersection of the demand and supply outcomes will determine the need for the intermodal terminal.

There are a range of factors that need to be considered in undertaking intermodal feasibility studies, which include:

- Develop future demand and supply analysis within the study area, including:
  - The forecast demand for future freight rail services on the corridors and likely timing. The forecasting of demand would use up to date information and be developed through discussions with nominated key stakeholders
  - Creation of engine industries and the impact on freight demand
  - The policy context for investigation of the corridor
  - Capacity of current freight train paths across the network, and analysis of when this capacity may decrease to unviable levels due to growth in passenger rail movements
- Justification for investment in intermodal terminal infrastructure within the study areas, including:
  - In the context of the future freight demand, a discussion on the implications of not proceeding with freight rail infrastructure within the study area. This analysis should focus on both economic and social implications
  - Analysis of the role of the facilities on the broader freight network including capacity on existing rail lines
  - A discussion on the alternatives supported by analysis where possible
- Potential transport and productivity benefits of the proposed intermodal terminal infrastructure, including:
  - Encouragement and development of engine industries in the surrounding precinct
  - Improved freight reliability and productivity
  - Freight operator time savings, and supply chain efficiency
  - Substitution of heavy vehicle movements for rail on the regional road network (and any corresponding wider productivity and safety benefits)

The approach to the Intermodal Feasibility Assessment is shown in the figure below.

Figure 3: Approach to intermodal freight feasibility



1.7. Structure of the report

The remainder of the report is structured as follows:

- Chapter 2: Freight catchment area analysis – identification of current and future freight volumes

- Chapter 3: Infrastructure and capacity – identification of existing and future transport infrastructure
- Chapter 4: Freight supply chain analysis – analysis of the supply chain costs from the region
- Chapter 5: Market considerations
- Chapter 6: Intermodal feasibility

2. Freight Catchment Area

The following section details the current and future freight volumes in the study area.

2.1. South Jerrabomberra catchment area

The South Jerrabomberra Regional Job Precinct comprises several parcels of land bordering the ACT with the opportunity for activation and possible expansion for multiple precincts – including a technology park, industrial estate, a business innovation hub, regional sports hub, freight and logistic hub and a new high school.

The initial boundaries of the investigation area for the RJP comprise some 950 hectares of land, approximately 5.5km south of the Queanbeyan CBD and bordering the ACT and existing Hume Industrial Estate within the ACT.

The eastern boundary follows the Goulburn/Bombala Rail reserve boundary to the ACT. A portion of the western boundary of the precinct comprises the limit of the zoned areas of West Jerrabomberra and South Jerrabomberra. Similarly, the northern and southern boundaries comprise the limits of the zoned lands of these precincts.

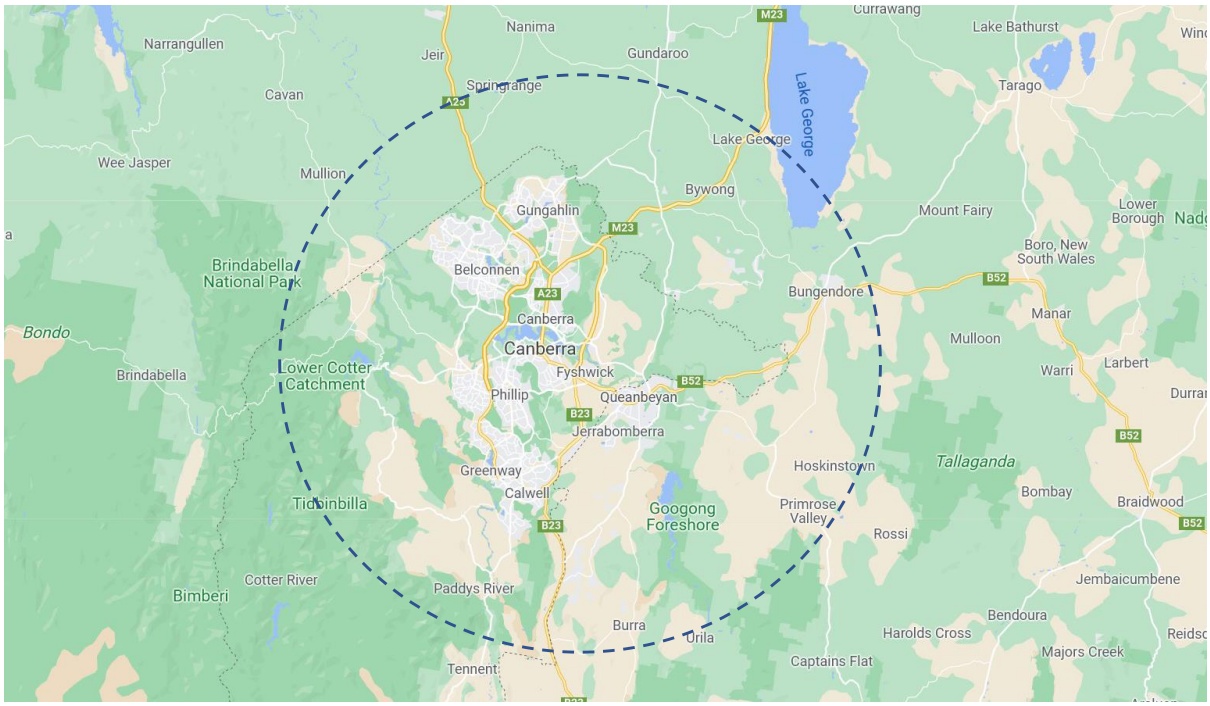
Centrally, the western boundary runs along the western extremity of the paper subdivision that overlays the Environa lands and extends to Jerrabomberra Creek, which is a physical and natural barrier to the residential portion of the suburb of Jerrabomberra.

The area includes the Poplars Innovation Precinct in the northern portion of the precinct, with the southern portion of the precinct comprising predominantly residential urban release areas and associated services known as South Tralee. The middle of the precinct currently comprises rural lands – a portion of which is identified for future employment lands, known as Environa.

The catchment area considered as part of this Feasibility Assessment includes:

- Queanbeyan-Palerang Local Government Areas
- Australian Capital Territory
- Corridor between Goulburn and Queanbeyan, including the Tarago waste facility

Figure 4: South Jerrabomberra catchment area



2.2. Current catchment area freight volumes

Freight attraction and generation activities into the RJP investigation area catchment are dominated by general freight flows including food and non-food consumer goods, business inputs, bulk fuel and transport equipment and machinery. Road transport tends to be the mode of choice for these flows with rail transportation being limited by proximity of the freight generator (i.e., organisations) to rail loading points.

The current catchment area volumes are shown in the table below.

Table 1: Current catchment area volumes

Commodity	Volume (tonnes)
General Freight	2,611,000
Crude Materials	1,527,000
Metals & Scrap	74,000
Horticulture	18,000
Building materials	5,448,000
Machinery & Transport Equipment	263,000
Manufactured Goods	1,652,000
Fuel & Chemicals	743,000
Total	**12,338,000**

Source: ABS SA4 data, TfNSW Strategic Freight Model, george stanley consulting analysis

2.3. Future freight volumes

The current commodity freight demand is assumed to grow as per Transport for NSW (TfNSW) long-term demand forecasting assumptions. The growth assumptions by commodity include:

- Distribution and Logistics - General Freight: 1.5% p.a.
- Building materials, crude materials and scrap: 1.2% p.a.
- Horticulture: 1.5% p.a.
- Machinery and transport equipment: 1.0% p.a.
- Manufacturing: 1.3% p.a.
- Fuel and chemicals: 0.5% p.a.

The future catchment area volumes are shown in the table below.

Table 2: Future catchment area volumes (2041)

Commodity	Volume (tonnes)
General Freight	3,517,000
Crude Materials	2,057,000
Metals & Scrap	95,000
Horticulture	24,000
Building materials	6,916,000
Machinery & Transport Equipment	321,000
Manufactured Goods	2,139,000
Fuel & Chemicals	821,000
Total	**15,890,000**

Source: ABS SA4 data, TfNSW Strategic Freight Model, george stanley consulting analysis

Not all freight is contestable by rail. Freight has certain characteristics that make it rail-contestable including:

- Transport and logistic costs are often emphasised as the key factors behind freight modal choice. There are, however, a range of other factors including travel distances, product characteristics, consignment size, or pathway constraints that play a key role in whether freight volumes will realistically be transported by rail
- In general, road transport has a distinct competitive advantage over rail when:
    - Consignments are relatively small (e.g., less than 40 tonnes) and suppliers/customers are requiring rapid fulfilment of orders
    - Products are perishable, fragile, or require rapid movement within a supply chain
    - High value goods requiring security, product integrity, or welfare (such as live animals)
    - In addition, the movement of domestic freight volumes tends to favour road as movement by rail often requires additional road transport and handling costs. Most domestic consignments are to/from nodes not located on rail lines and, as such, will require a road journey at each end of the rail path (i.e., from origin to sending rail terminal, and from receiving rail terminal destination). As a result, direct door-to-door transportation via road may represent the lowest cost for the supplier or customer for domestic volumes
    - Road transport also offers greater flexibility in moving consignments as trains travel according to fixed timetables and road avoids the need for additional coordination and transaction costs through intermediaries such as freight forwarders
- Rail transport tends to be most competitive for the movement of export consignments. As the train has direct access to port terminal infrastructure, the need for an additional road movement at the destination is mitigated. This provides rail transport with a distinct competitive advantage over road freight within export shipments.

The table below provides an assessment of the suitability of identified South Jerrabomberra commodities for rail transport.

Table 3: Commodity rail contestability

Commodity	Rail contestability	Description
General Freight		Road supply chain costs typically more cost competitive from Sydney given distribution warehousing locations and distribution networks in regions. Multiple distribution locations and destinations in smaller consignments reduces rail contestability.
Crude Materials		Inputs into production processes. Given distribution to multiple locations in smaller consignment loads, supply chain costs typically favour road.
Metals & Scrap		Potential for rail given export supply chain. Potential for containerisation of product.
Horticulture		Road supply chain costs typically more cost competitive. Multiple distribution locations and destinations in smaller consignments reduces rail contestability. Requirement for cold storage infrastructure.
Building materials		Building material volumes identified are mainly from the Southern Highlands and are currently transported by rail or distributed to in smaller consignments by road. Given existing rail connectivity, the volumes that would be transported by rail already are.
Machinery & Transport Equipment		Products may not be suitable for containerisation. Road supply chain costs typically lower given small consignments and distribution locations.
Manufactured Goods		Road supply chain costs typically more cost competitive to and from Sydney given distribution warehousing locations and distribution networks in regions. Multiple distribution locations and destinations in smaller consignments reduces rail contestability.

Commodity	Rail contestability	Description
Fuel & Chemicals		Not contestable by rail. Transport of fuel and chemicals by rail has not occurred in any substantive way since the early 2000s. Rail industry no longer has equipment to support.

Table 3-1: Key for commodity rail contestability table

Colour	Meaning
	Potentially contestable by rail based on distribution locations and consignment transportation
	Moderate levels of rail contestability. Unlikely to use rail due dispersed distribution networks and lack of consolidation points for rail loading
	Not contestable by rail. Nature of the commodity type and rail transport suitability mean that rail is not likely to be used

The contestability analysis is further explored in Section 4 when freight supply chain costs are developed.

The table below shows the freight flows for the major origin and destinations into the catchment area. The freight flows show that over 30% of freight movements are inter-catchment area movements and over 30% of freight transport movements are between the catchment area and Sydney.

Table 4: Distribution of freight volumes (2021) – ('000s tonnes)

Origin/ Destination	Australian Capital Territory	Bega Valley	Cooma-Monaro	Eurobodalla	Goulburn Mulwaree	Griffith	Hunter	Palerang	QLD	Queanbeyan	SA	Snowy River	Sydney	Upper Lachlan	VIC	Wagga Wagga	Yass Valley	Young	Total
Australian Capital Territory	3,348	83	27	81	73	19	33	43		96		23	800	20		43	26	33	**4,749**
Bega Valley	123																		**123**
Cooma-Monaro	43																		**43**
Eurobodalla	121																		**121**
Goulburn Mulwaree	549							17		50									**616**
Greater Hume Shire	744																		**744**
Hunter	159																		**159**
Illawarra	374																		**374**
Palerang	47							347	3		1				20				**419**
Queanbeyan	216								13	704	6				94				**1,033**
Sydney	3,080							180		431									**3,691**
Victoria								82		185									**267**
Total	**8,804**	**83**	**27**	**81**	**73**	**19**	**33**	**669**	**16**	**1,466**	**7**	**23**	**800**	**20**	**114**	**43**	**26**	**33**	**12,338**

Source: ABS SA4 data, TfNSW Strategic Freight Model, george stanley consulting analysis

2.4. Potential freight opportunities

There are a number of potential freight opportunities that could be developed in the South Jerrabomberra region which are detailed below.

Canberra Airport

The proposed Intermodal Terminal (IMT) location is 12 km from Canberra Airport. There are potential for linkages to air freight volumes from the IMT to the airport. However, the characteristics of air freight are unlikely to support rail contestability as:

- Air freight volumes are typically high value and small consignments
- Air freight volumes are typically transported by road directly from producer
- Air freight volumes can involve cold storage which adds complexity to rail journeys and warehousing/consolidation facilities

It is unlikely that freight that is to be transported by air would use rail to access the airport.

Waste transfer

The Woodlawn Eco Precinct is Veolia's 6,000ha site located approximately 70km north of South Jerrabomberra in Tarago and comprises several facilities, including:

- Bioreactor landfill - a municipal solid waste landfill in which liquids are added to help bacteria break down the waste, actively capturing and extracting gas to recover energy. To date, 8.5 million tonnes of waste have been safely processed
- BioEnergy plant - recovering clean energy generated by the waste in the Bioreactor
- Mechanical and Biological Treatment (MBT) - extracting organic content from the waste to produce compost for environmental rehabilitation

Currently, the site receives waste from a number of Councils in Sydney. This waste is transported by rail from Sydney to the Crisps Creek Intermodal Facility and then transferred by road to the Woodlawn facility.

There could be an opportunity to transport waste from Queanbeyan and Canberra to the Woodlawn site from South Jerrabomberra via rail. This would require a waste consolidation facility. The facility would need to be located in the RJP to reduce multiple road movements.

Based on the distance from the South Jerrabomberra catchment area to Tarago and the need for multiple handling, it is unlikely that it would be commercial to transfer waste via rail. The supply chain analysis undertaken in Section 4 of this report, supports road over rail for waste movements in the catchment area.

Master Plan developments

The development of the South Jerrabomberra Regional Job Precinct could create freight volumes. The proposed development opportunities on the RJP site include:

- High tech or knowledge industries
- Light industrial
- Residential or hospitality

However, the proposed developments and any potential freight volumes created are not likely to be conducive to rail contestability.

3. Infrastructure and transport capacity

This section details the intermodal terminal, rail and road transport infrastructure and capacity.

3.1. Intermodal terminal infrastructure

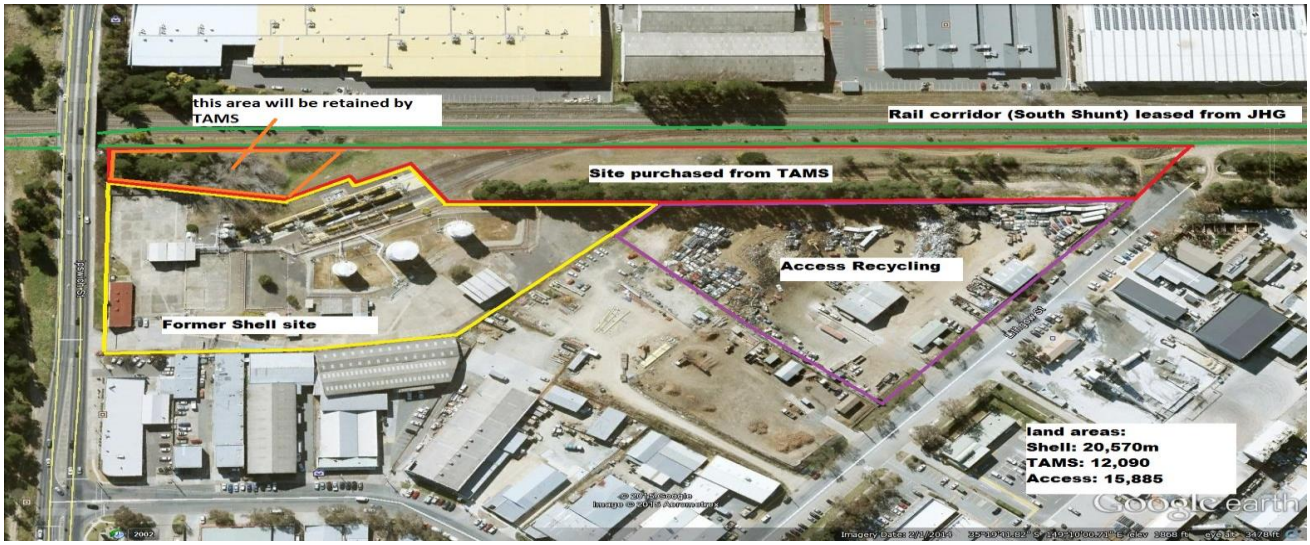
At present, there has been limited analysis of what infrastructure an intermodal terminal at South Jerrabomberra would require. At a high level, an intermodal terminal at the location would require the following infrastructure:

- Provide capacity for 21 tonne axle loads and class S4 locomotives
- Establish an approximate siding length of 1,200 metres for loading or to run around locomotives
- Upgrade of 6 kilometres of track on the Bombala line, including sleepers, track, ballast and bridges
- Hardstand for loading containers
- Associated storage and handling equipment and infrastructure; and
- Road access for pick up and delivery.

Alternative proposed site locations

Access Recycling has proposed establishing and operating rail services from Canberra to Port Botany. The project involves South Shunt Fyshwick Restoration, which currently features rail infrastructure and sidings at the former Shell Railway Fuel Terminal. The proposal is in the planning and development stage but does not currently have development support from the ACT government to build a fragmentiser to shred whole car bodies.

Figure 5: Alternative IMT site – Fyshwick, ACT



The proposed intermodal facility is located in the ACT on the rail line to Canberra and owned by TfNSW. In May 2017, the NSW Government announced up to $1 million the development of the siding in the pilot round of Fixing Country Rail.

Given the changing nature of the Fyshwick area, an intermodal terminal may not be feasible in this location in the future, but it is located on the existing operational rail corridor servicing passenger operations.

3.2. Rail network and freight

There is a non-operational existing rail line corridor from Queanbeyan to Bombala via Cooma. This line was progressively made non-operational between 1986 and 1990. The line is currently in non-

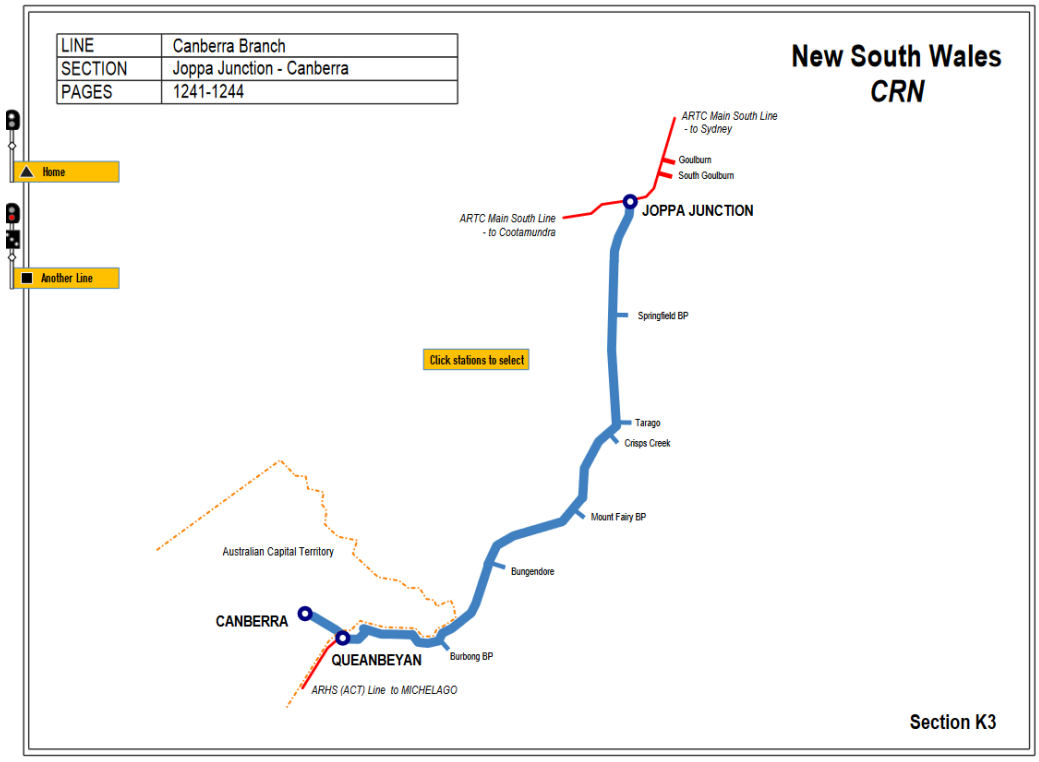
trafficable condition as its age and non-operational status has led to several issues including rail breakage, sleeper degradation, timber bridge deterioration/removal and discontinuation of the rail line at several locations (including level crossings).

The proposed intermodal terminal at South Jerrabomberra would require 6 kilometres of the Queanbeyan to Bombala line, from Queanbeyan to South Jerrabomberra, to be reinstated to an operational standard. This line would then connect to the Canberra Branchline.

The rail line is shown in the figure below (Figure 6). At the northern end of Figure 6, the existing connection of the Canberra Branchline to the Interstate Rail network operated by ARTC at Joppa Junction is shown. At the southern end of Figure 6 is the connection of the Canberra Branchline to the currently non-operational Queanbeyan to Bombala line.

The Canberra Branchline is part of the Country Rail Network. The CRN links broad areas of regional NSW to interstate and metropolitan rail systems. The network covers 2,386 route kilometres of operational passenger and freight rail lines and 3,139 route kilometres of non-operational lines. The Country Regional Network (CRN) is owned by Transport for NSW and is operated and maintained by the rail infrastructure manager, UGLRL. In January 2022 UGLRL took over the contract for operation and maintenance of the CRN from John Holland Rail (JHR). Any change to the operational status of the Queanbeyan to Bombala line would need to be negotiated with UGRL, including train service management and maintenance costs. These new costs would need to be added to the management contract.

Figure 6: Canberra Branchline – Connection to South Jerrabomberra



The existing rail infrastructure in Canberra is shown in the figure below (Figure 7).

No strategic or detailed engineering or costing analysis on the reinstatement of the 6 kilometres of the Queanbeyan to Bombala line has been undertaken for this study. The cost of reinstating the rail line would be dependent on the condition of the line, structures and requirements to modernise operating conditions, such as level crossings. A recent rail reinstatement at Tamworth cost $35 million for 5 kilometres of line. Using previous construction costs as a guide, the reinstatement of the required 6 kilometres of rail line to Queanbeyan could be in the order of $40 million.

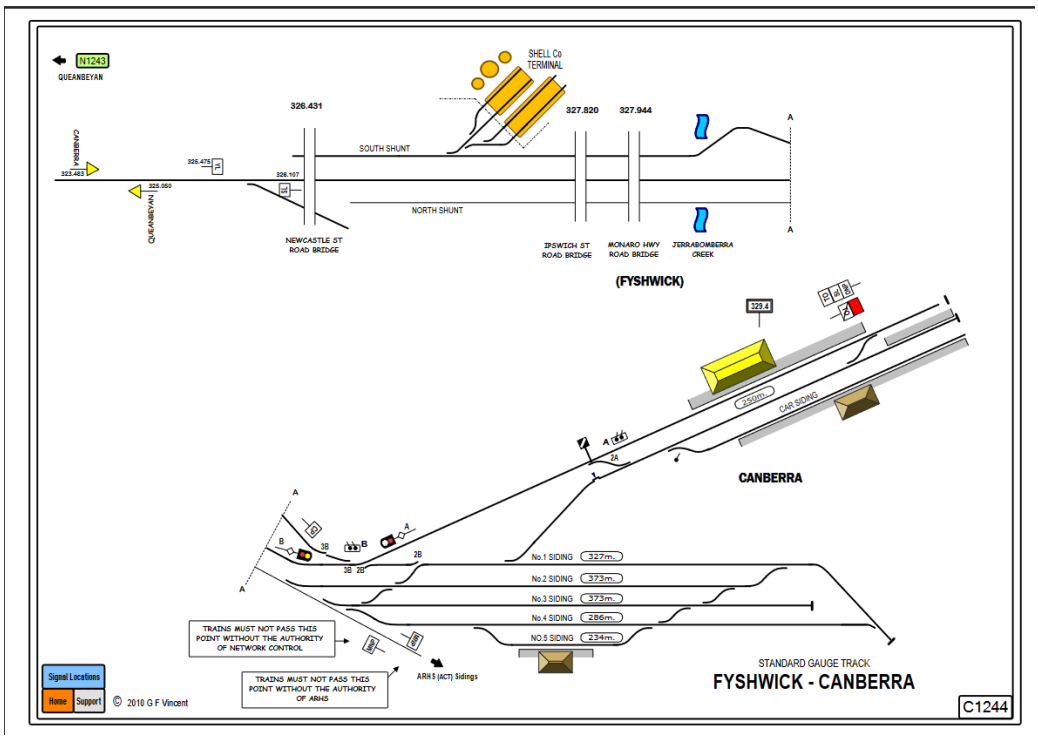
In addition to the upfront capital cost, the reinstatement of the rail line would require major periodic maintenance and annual operating maintenance. The maintenance costs would need to be determined in consultation with UGLRL and included in the below rail CRN management contract. Maintenance includes:

- Major Periodic Maintenance includes elements such as rail, ballast, culverts and other replacement of infrastructure along the rail lines
- Annual maintenance ensures a safe and ongoing operation

Managing the reinstated rail line would also need to consider TfNSW's Level Crossing Policy which aims to minimise risks to the public. TfNSW has developed three policy positions in relation to level crossings. The policy includes the following positions:

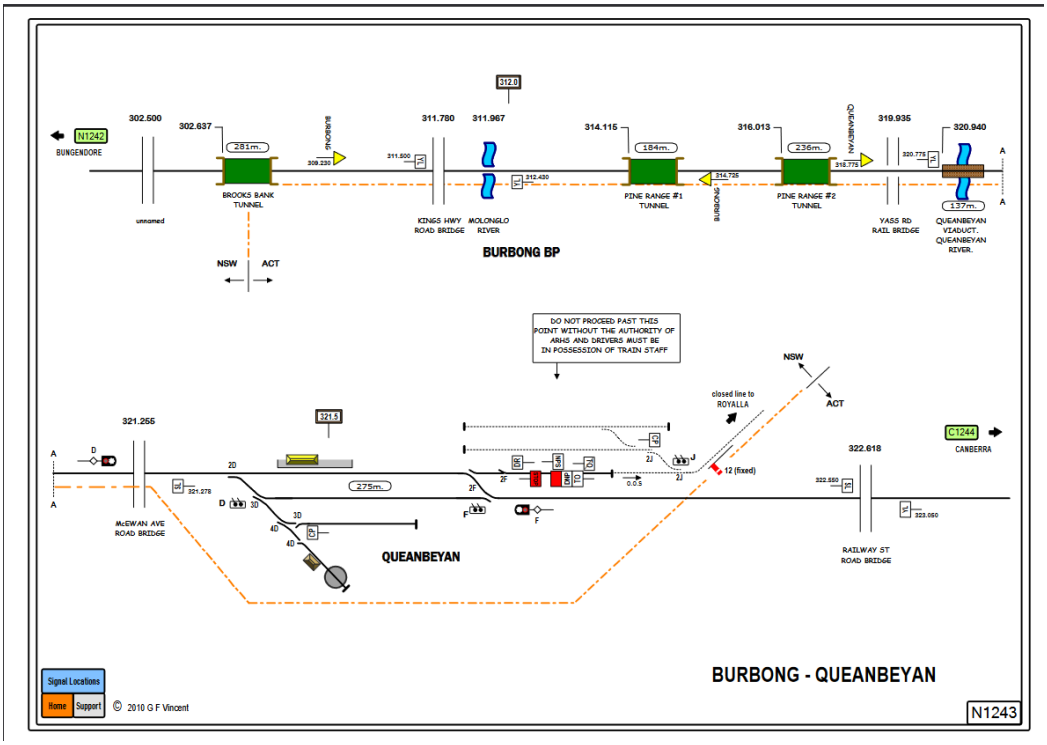
- Construction of New Level Crossings - building new level crossings is to be avoided wherever possible and all other options including grade separation and use of existing level crossings should be explored before a new crossing is proposed
- Level Crossing Closures - public and private level crossings should be closed wherever it is practical and cost effective to do so. Access can often be managed by a grade separation or by redirecting traffic via an alternate route
- Speed Limit on Approach to Active Level Crossings Policy - the purpose of this policy is to set speed limits to a maximum of 80 kilometres per hour on approach to level crossings actively controlled by flashing lights or flashing lights and boom gates

Figure 7: Canberra rail infrastructure



Existing railway infrastructure in the Canberra and Queanbeyan area is mostly unsuitable for loading modern freight trains. Modern freight services operate at over 1,000 metres in length in order to be financially feasible. The existing infrastructure in Queanbeyan has siding lengths of less than 300 metres, making it unsuitable for loading freight services, for example a containerised rail service. The existing rail infrastructure in the Queanbeyan area is summarised in Figure 8 below.

Figure 8: Queanbeyan infrastructure



Alternative line use – Monaro Rail Trail proposal

The Monaro Rail Trail proposes to create a 214 kilometre cycling and walking track through the Snowy Monaro using non-operational railway corridor from Queanbeyan to Bombala. The reinstatement of 6 kilometres of the rail line from Queanbeyan to South Jerrabomberra for freight rail operations will mean that the rail trail would need to start after the proposed IMT with a buffer zone for safety purposes. If the IMT was a feasible operation, significant truck movements into and from the facility would create a potential interface with cyclists accessing the rail trail. Appropriate separation between trucks and cyclists would need to be factored into the access point of the rail trail.

3.3. Road network and freight

The NSW road network carries about 60 per cent of the total NSW freight task, so the role of heavy vehicles in moving freight is substantial and will continue to grow to meet increased future demand. Planned road network upgrades will allow wider use of heavier and longer higher productivity trucks. The use of road transport for volumes identified in Section 2 of this report is particularly dominant, in particular, general freight and building materials given the disparate distribution of products to multiple location.

The road network that would influence rail competitiveness and access to the ACT/Queanbeyan regions include:

- Hume Highway/Federal Highway which provides access between Sydney/Melbourne and the study area
- M5 motorway which provides access to Port Botany and the major distributions centres in Western/South Western Sydney
- Monaro Highway which provides access to major industrial centres in the study area

IMT road access requirements

The road access to the RJP study area identified for potential development of an IMT in its current form is unlikely to be suitable. Although the identified site is located close to the Monaro Highway, the access from the Highway could be difficult on the existing road network and may not support High Productivity Vehicle (HPV) operations. The site in relation to other potential developments in the RJP may result in increased interaction between residential and business traffic and heavy vehicle movements.

The road network into the identified IMT precinct would need to:

- Accommodate HPV's to at least B-Double levels
- Allow 24-hour operations at an IMT and supporting warehousing facilities
- Accommodate up to 100 or more heavy vehicle movements per day
- Be grade separated from the rail section of potential development

The road requirements will put pressure on the existing road network and may require additional investment in road infrastructure. This will impact on the site feasibility and deliverability.

4. Freight supply chain analysis

This section details the freight supply chain analysis undertaken to assess the opportunity for an intermodal terminal in South Jerrabomberra.

4.1. Supply chain cost analysis

The development of intermodal facility in South Jerrabomberra could provide the following supply chain paths to market:

- Containerised transport by rail from South Jerrabomberra to Port Botany for export
- General freight and commodities transported to Sydney, Melbourne and Brisbane by rail
- Container transport of waste to Tarago
- Road freight to each of the identified pathways above for comparison

Figure 9: South Jerrabomberra supply chain pathways

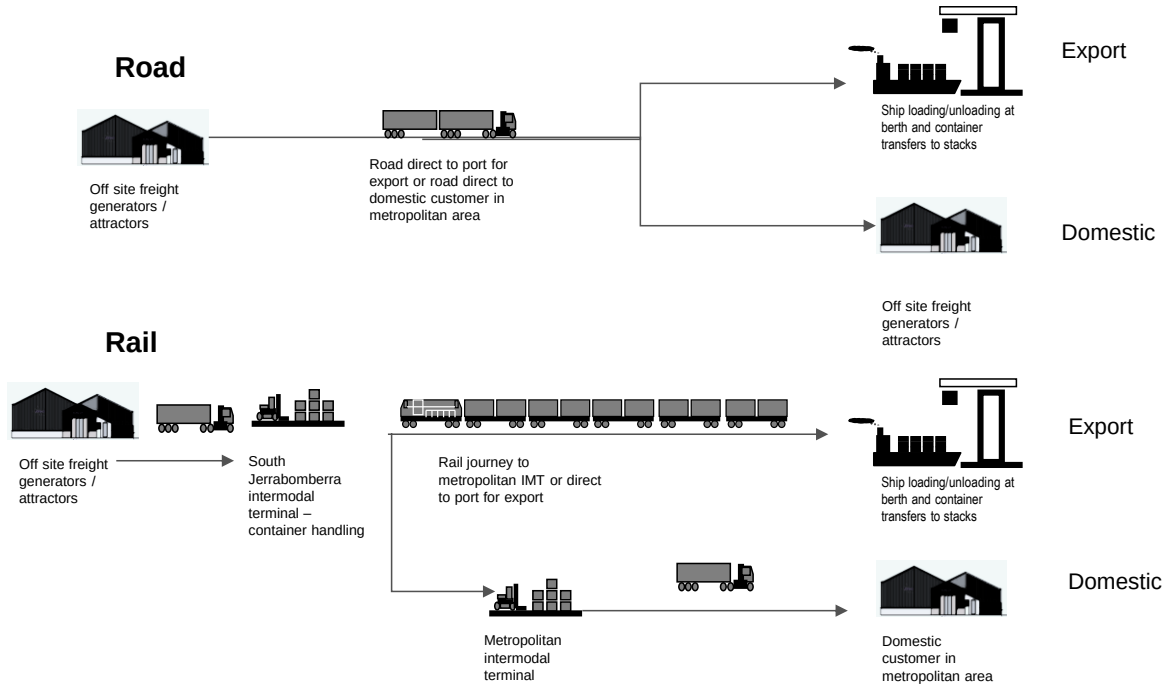


Figure 9 above shows the following characteristics for rail when compared to road.

- Rail has between 3 to 5 more components to the supply chain (i.e., road to consolidation facility, lifts and handling, container packing, distribution to domestic customers) compared to road. As a result, the cost differential between road and rail needs to be substantial to encourage mode switching
- Road also provides flexibility in terms of delivery locations and times, while rail is timetabled and has destinations at set IMTs

The generalised freight cost analysis is based on industry insights and inputs for distance, train length, mass, and travel time. Key cost components include labour costs, maintenance, fuel, network access, rollingstock capex and finance, and operating costs. Unit cost parameters are sourced from TfNSW.

The table below (Table 4) presents the results of the pathway and modal cost analysis. The table shows the road and rail cost comparison for delivery to a domestic IMT and port in Sydney, Melbourne and Brisbane. In addition, the rail and road supply chain costs for waste transfer to Tarago is shown. The analysis identifies the supply chain paths that result in a rail cost advantage.

The outcomes of the supply chain cost analysis are shown in the table below.

Table 5: Supply chain cost analysis

South Jerrabomberra Supply Chain Cost				
	Domestic Customers/No Port Connection		Port for export	
	Road-Rail Difference	Advantage	Road-Rail Difference	Advantage
Sydney				
South Jerrabomberra (20km delivery)	- 22.19	Road	- 8.39	Road
South Jerrabomberra (50km delivery)	- 27.07	Road	- 13.27	Road
South Jerrabomberra (100km delivery)	- 35.90	Road	- 22.10	Road
Tarago - Containerised Waste				
South Jerrabomberra (20km delivery)	- 5.13	Road	N/A	N/A
South Jerrabomberra (50km delivery)	- 10.02	Road	N/A	N/A
South Jerrabomberra (100km delivery)	- 18.84	Road	N/A	N/A
Melbourne				
South Jerrabomberra (20km delivery)	- 0.88	Road	12.92	Rail
South Jerrabomberra (50km delivery)	- 5.76	Road	8.04	Rail
South Jerrabomberra (100km delivery)	- 14.59	Road	- 0.78	Road
Brisbane				
South Jerrabomberra (20km delivery)	15.49	Rail	29.30	Rail
South Jerrabomberra (50km delivery)	10.61	Rail	24.41	Rail
South Jerrabomberra (100km delivery)	1.79	Rail	15.59	Rail

The analysis provides the following outcomes for consideration of the feasibility of an intermodal terminal at South Jerrabomberra:

- Rail has a cost advantage for long distance freight, such as transport to Brisbane
- Road has a cost advantage for short distance freight, such as transport to Sydney
- Road has a cost advantage for non-export commodities
- Road would have advantages for waste transfer to Tarago unless regulated to use rail
- The proximity of the ACT and Queanbeyan to Sydney means, that for most commodities, road will be cost advantaged for freight transport.

4.1.1. Interstate Waste Transfer

The supply chain cost analysis shown above for non-export commodities is consistent with the costs associated with road and rail transport of waste from the Queanbeyan/ACT region to interstate locations. The analysis shows that:

- Rail would have cost advantage for long distance freight, such as transport to QLD, South Australia or Western Australia
- Road would have a cost advantage for waste transfer up to 600 kilometres as a result of the need to consolidate waste volumes at a central location, containerisation and container handling at the load and unload point of the service

5. Market considerations

The following section details the market considerations associated with locating an intermodal terminal in the South Jerrabomberra RJP.

5.1. Rail operators

Consultation was undertaken with rail operators to determine interest in operating a rail service or an intermodal terminal. The following feedback was received:

- Interest in operating a rail service if baseline volumes were to be guaranteed. Baseline volume or service levels could be guaranteed through a take or pay contract where a freight generator would pay for a set number of services per year. This reduces risk for the rail operator, but places the risk on to the freight generator. Based on the volume and supply chain analysis undertaken in Section 2 and 4 of this report, it is unlikely that a freight generator would be willing to provide this contractual certainty
- Minimal to no interest in investing in or operating and intermodal terminal, particularly without a baseline volume
- Concerns about the ability to secure a baseline volume based on distance to existing markets

5.2. Government/network operators

Consultation was undertaken with government and network operators. In terms of government and network operator support, the following feedback was received:

- Prefer commercial decisions drive the development of intermodal terminal locations
- The network operator would be supportive of the proposal but does not have an appetite for investing in line reinstatement (i.e., re-opening the Queanbeyan to Bombala line)
- The network operator does not have plans to invest in the access to the South Jerrabomberra site

6. South Jerrabomberra Intermodal Feasibility

This section provides the outcomes of the Intermodal Feasibility Assessment for the South Jerrabomberra RJP.

6.1. Intermodal terminal feasibility benchmarking

For a regional intermodal terminal to be economic and viable, volume of around 10,000 loaded Twenty-foot Equivalent Units (TEU) or 100,000 tonnes per annum, and preferably operates at more than 15,000 loaded TEU's or 150,000 tonnes per annum is required.

Demand for regional based intermodal terminals is somewhat static over the medium term, with rural production (mainly commodities) growing at less than 1% per annum. Moreover, there are issues such as seasonality and drought which further impact on commercial sustainability

Intermodal supply chains are not efficient across all distances, volumes and service levels, and where insufficient volume exists or service flexibility is necessary, road-based transport offers a superior economic alternative

Regional intermodal terminals do not represent a significant means of directly stimulating employment, as even large terminals (>25,000 TEU p.a.) employ less than 20-30 direct staff.

The terminal may stimulate secondary employment opportunities by co-locating secondary and tertiary processes nearby, however the initial terminal development can only be considered viable where there are substantial start-up volumes or where volumes build quickly in the early stages of the terminal's life

Ancillary services provide a marginal benefit for terminal revenues and the overall benefit depends on the type/nature of the terminal owner and their capacity to "jam-spread" overhead costs over other activities such as rail operations.

Intermodal terminals are only sustainable to the extent that they exist as elements in supply chains that provide low cost paths to markets or ports. Consequently, these chains will compete with other supply chains for market share. Therefore, not only must the terminal itself be efficient, it must exist within an efficient chain where the total cost of the elements is lower than the cost of competing chains for a comparable level of service.

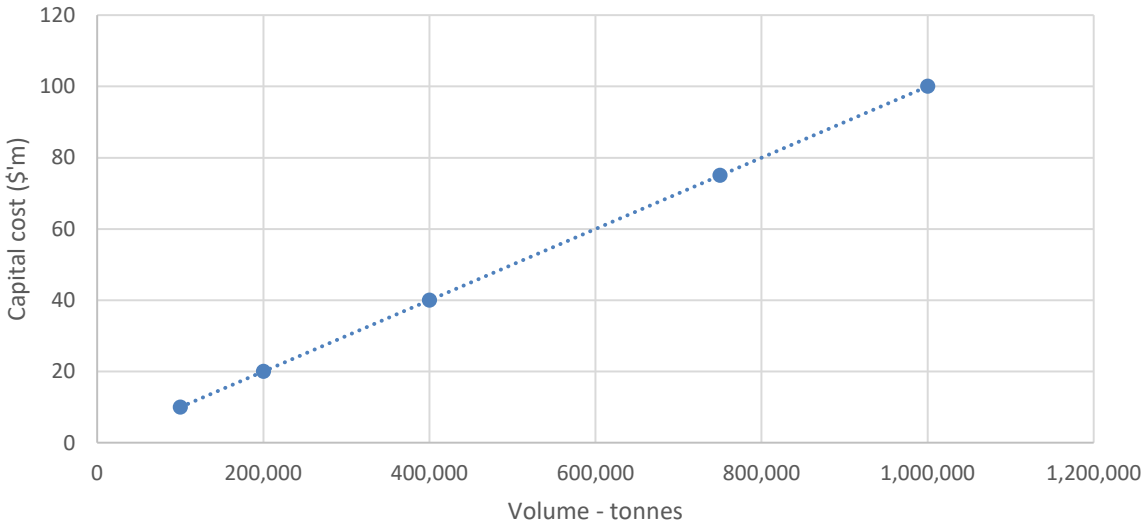
Table 6: Intermodal feasibility

Terminal Size	Overall container volumes pa			Distance to port (one-way)			
	Loaded TEU's (export)	Empty TEU's (inbound)	Total TEU's	300 kms	500 kms	650 kms	800 kms
Small	<2,500	<2,500	5,000	☒	☒	☒	☒
Medium	2,500 to 10,000	2,500 to 10,000	5,000 to 20,000	☒	☒	☒	☐
Large	10,000 to 20,000	10,000 to 20,000	20,000 to 40,000	☒	☑	☑	☑
Super	>20,000	>20,000	>40,000	☐	☑	☑	☑

☒ Not sustainable ☐ Marginal ☑ Sustainable

The figure below (Figure 9) shows a high-level analysis of the relationship between capital costs and required throughput volumes and financial feasibility of an IMT. As an example, a $40 million capital cost for IMT development would need 400,000 tonnes of throughput or 35,000 TEU per year.

Figure 10: Capital investment and volume requirements



The revenue estimates are based on IMT operations only. IMT's may offer supplementary services onsite which may increase revenues and reduce volumes required for feasibility.

The rail contestable volumes identified in this study are unlikely to support the capital investment that would be required at the site for an effective IMT. This analysis also does include required investment in the:

- Re-instatement of the 6 kilometres of currently non-operational rail line (i.e., from Queanbeyan to South Jerrabomberra on the Queanbeyan to Bombala line)
- Road network to support heavy vehicle access

6.2. South Jerrabomberra intermodal terminal feasibility

The following section discussed the feasibility of locating an intermodal terminal on the South Jerrabomberra RJP site.

Volume

Based on the potential demand analysis undertaken in Section 2 of this report, there is unlikely to be rail contestable volume that could support an intermodal terminal in the South Jerrabomberra RJP. Based on the benchmarks provided above, potential rail contestable volumes would not meet the threshold of between 100,000 to 150,000 tonnes.

The volumes identified as rail contestable would make the investment in an intermodal terminal unfeasible.

Supply chain costs

The proximity of the South Jerrabomberra catchment area to Sydney means, that for most commodities, road will be cost advantaged for freight transport. This makes the opportunity to capture the rail contestable demand at an intermodal terminal in the South Jerrabomberra RJP more difficult.

Rail transport tends to be most competitive for the movement of export consignments. As the train has direct access to port terminal infrastructure, the need for additional road movement at the destination is mitigated.

General freight is likely to move by road via Sydney. The cost advantage of not having to handle freight volumes multiple times and the dispersed nature of distribution means road is the preferred method of transport.

Again, this supports the conclusion that an investment in an IMT in the South Jerrabomberra RJP is not feasible.

Site and infrastructure

From a rail operating perspective, the South Jerrabomberra site would be able to accommodate an intermodal terminal and associated infrastructure such as a hardstand and warehousing, however, road access is limited.

An assessment of the site works and costs to establish an intermodal terminal would need to be undertaken to fully define the site feasibility.

If further work was to be completed on the engineering and cost of reinstating the rail line and developing an IMT and warehousing precinct to confirm feasibility, the rail corridor and proposed IMT site could be reserved to account for any changes in the future.

The work undertaken as part of the RJP assessment on biodiversity on the proposed IMT site would need to be managed, but would not exclude the development of an IMT.

Market considerations

A range of market stakeholders were consulted as part of the feasibility assessment. Rail operators would service a site if there were commercial volumes of product available for rail transport. Rail operators did not signal an intention to invest in the site. The network operator does not have plans to invest in the access to the South Jerrabomberra site.

Intermodal Feasibility Conclusion

As detailed in this section of the document, an intermodal terminal on the South Jerrabomberra site is unlikely to be feasible based on the existing information available. The feasibility of the site is limited by:

- A lack of rail contestable volume to support the development and operation of an intermodal site and a financially feasible rail service.
- Road has a cost advantage over rail for short distance export/import freight, such as transport of freight from/to Port Botany of between $22 and $36 per tonne.
- Road has a cost advantage for non-export commodities, such as transport of domestic freight from/to Sydney of between $22 and $36 per tonne.
- Given the location of the intermodal terminal on a branchline, it is unable to be serviced by existing rail services as a drop off/pick up location. As a result, the intermodal terminal would need to provide volumes to support the operation of a stand-alone service. Rail operators need a consistent and frequent (3-5 times per week) service to support the allocation of rollingstock assets.
- Road access to the site is limited or difficult for heavy vehicles and would require substantial infrastructure investment to support operations.
- There is a lack of market support from rail operators to develop the site. The site is not a current priority for investment from the government transport agency (TfNSW).
- A return on investment at the site would be difficult, given the capital investment required and the potential volumes that could be attracted to the site.
- The development of the RJP, based on the proposed Master Plan activities, does not enhance the potential rail volumes within the precinct.

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