Regional Job Precincts: Intermodal Feasibility

Richmond Valley

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economic & advisory services

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Revision History

Version	Date	Summary of changes
1	24/12/21	Draft Baseline report
2	2/02/22	Updated Draft Baseline report
3	16/05/22	Draft Final Feasibility report
4	27/09/22	Final Feasibility report
5	22/11/22	Updated Final Feasibility report
6	15/09/23	Assumption review – pre-exhibition

Disclaimer

george stanley consulting (gsc) have prepared this freight analysis report in accordance with the usual care and thoroughness for the use of Regional NSW (DRNSW). It is based on generally accepted practices and standards at the time it was prepared. No other warranty, expressed or implied, is made as to the professional advice included in this report. It is prepared in accordance with the scope of work and for the purpose outlined in the proposal to DRNSW in December 2021.

The methodology adopted and sources of information used by gsc are outlined in this report. gsc has made no independent verification of any information provided by DRNSW and gsc assumes no responsibility for any inaccuracies or omissions.

This intermodal feasibility report was prepared between December 2021 and September 2023 and is based on the information available at the time of preparation. gsc disclaim responsibility for any changes that may have occurred after this time.

While gsc endeavour to provide reliable analysis, and believe the material presented is accurate, we will not be liable for any claim by any party acting on such information.

This report has been prepared to inform the planning process for the Richmond Valley RJP. The findings and recommendations have been developed where possible in collaboration with other disciplines. It is acknowledged that some of the recommendations in this report may not be included in the Structure Plan, such as where they are out of scope for the RJP, conflict with other elements of the project or are proposed to be managed via an alternate mechanism.

1. Introduction

1.1. Document Purpose

george stanley consulting (gsc) has been engaged by Regional NSW (RNSW) to undertake an intermodal terminal feasibility assessment of the Richmond Valley RJP 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 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 Precinct (SAP) program, which are dedicated areas in a regional location identified by the NSW Government to become a thriving business hub. The five key elements of an SAP are fast-track planning, infrastructure investment, government-led studies, government-led development and the provision of targeted business and concierge services to attract investment and support the establishment of businesses in each precinct. 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. Richmond Valley Regional Job Precinct

On 4 February 2021, the NSW Government announced the second RJP in support of the 20-Year Economic Vision for Regional NSW Refresh. The Richmond Valley RJP was selected to investigate opportunities in the Casino area to unlock new industrial lands and create more jobs in the high-value agriculture, food processing, manufacturing and renewable energy sectors.

The Richmond Valley RJP is at Casino, approximately 717 kilometres north of Sydney and 228 kilometres south of Brisbane at the convergence of:

- The Bruxner Highway, which is a state route that serves as the east-west link between the Northern Rivers coast at Ballina to the Northern Tablelands at Tenterfield
- Summerland Way, which is a state route that serves as a north-south link between Grafton and the Queensland border, where it continues as National Route 13 to Brisbane
- The North Coast railway line, with north-south connections between Sydney and Brisbane as well as an eastward connection via the Murwillumbah railway line (now non-operational and planned to be converted to a rail trail)

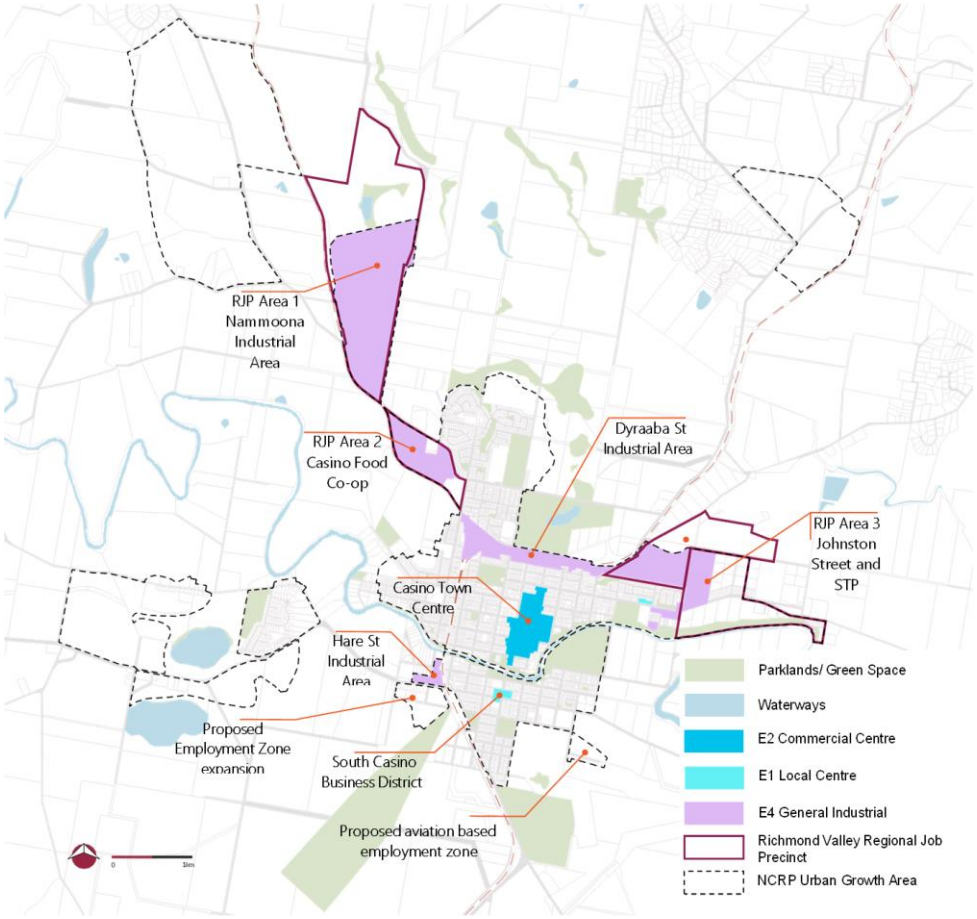
There is a well-established specialised cluster of agricultural and food manufacturing businesses within Casino, along with a variety of other traditional and niche industries.

The Richmond Valley RJP investigation area comprises multiple sites in the Casino area that have been strategically identified by Richmond Valley Council to support future industrial growth. Casino has strong freight transport linkages to Queensland and Northern NSW due to its location along the Sydney to Brisbane rail line and the intersection of the Bruxner Highway and Summerland Way.

The Richmond Valley RJP investigation area encompasses approximately 655 hectares focused on the opportunities described above.

The investigation area is identified in Figure 1 and encompasses three distinct industrial character areas within Casino.

Figure 1: Richmond Valley RJP investigation area



Land within the investigation area is zoned under Richmond Valley Local Environmental Plan 2012 as follows:

- Nammoona Industrial Precinct: Primarily IN1 General Industrial with a small portion of RU1 Primary Production and E3 Environmental Conservation to the north (area 1 in Figure 1).
- Casino Food Co-Op Complex: Primarily IN1 General Industrial and a small component of R1 General Industrial in the south-eastern corner (area 2 in Figure 1).
- Sewerage Treatment Plant and Johnson Street Industrial Areas: IN1 General Industrial and RU1 Primary Production (area 3 in Figure 1).

1.4. Purpose of the Intermodal feasibility study

DRNSW requires an investigation of the feasibility of locating an intermodal facility in the Richmond Valley. 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
- Provide recommendations to the NSW Government regarding the merit of next steps for locating an intermodal facility within the precinct

1.5. 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
- 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 Terminals.

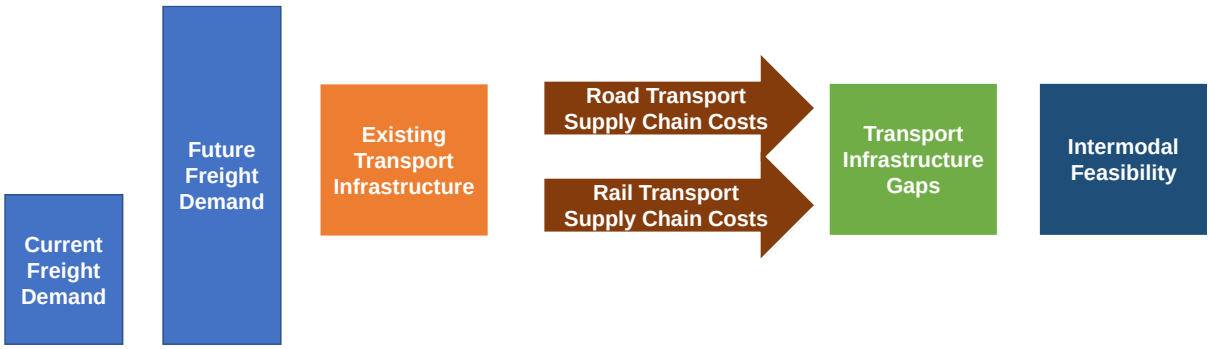
There are a range of factors that need to be considered in undertaking intermodal feasibility studies, including:

- 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 study is shown in the figure below.

Figure 2: Approach to intermodal freight feasibility



1.6. 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

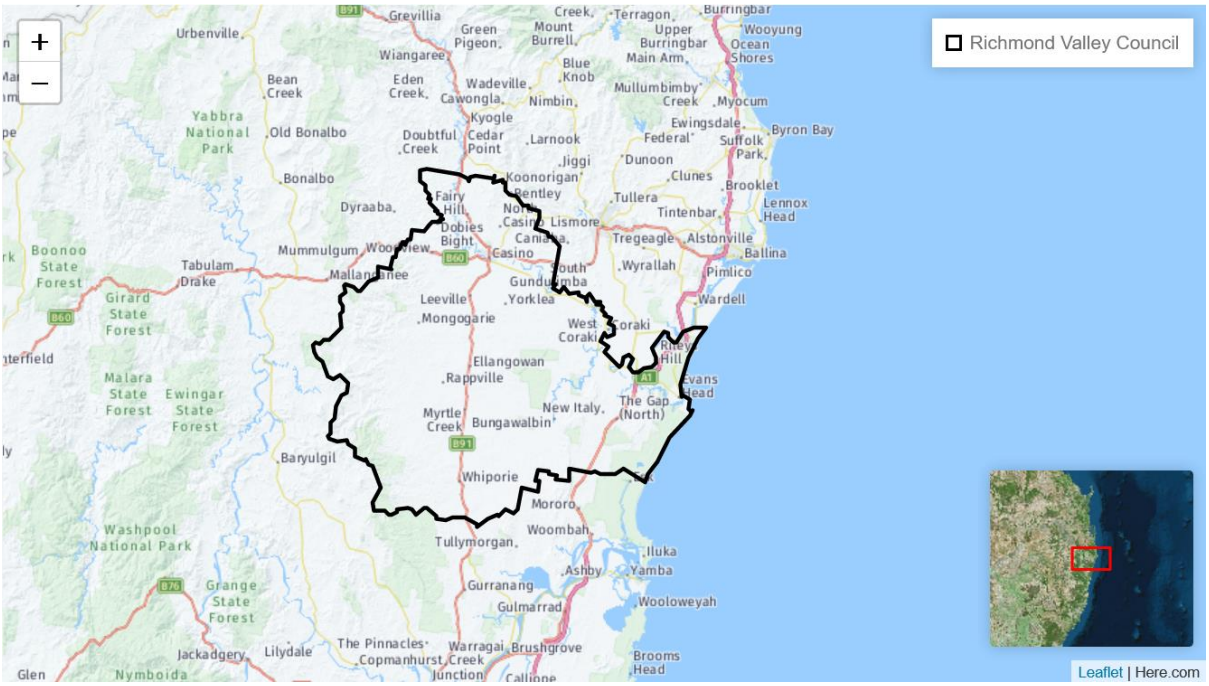
2. Freight Catchment Area

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

2.1. Richmond Valley

The Richmond Valley Council area is located in the Northern Rivers region of northern New South Wales, about 730 kilometres north of the Sydney CBD and 230 kilometres south of the Brisbane CBD. The Richmond Valley Council area is bounded by Lismore City and Ballina Shire in the north-east, the Coral Sea in the east, the Clarence Valley Council area in the south, and the Kyogle Council area in the north-west.

Figure 3: Richmond Valley LGA



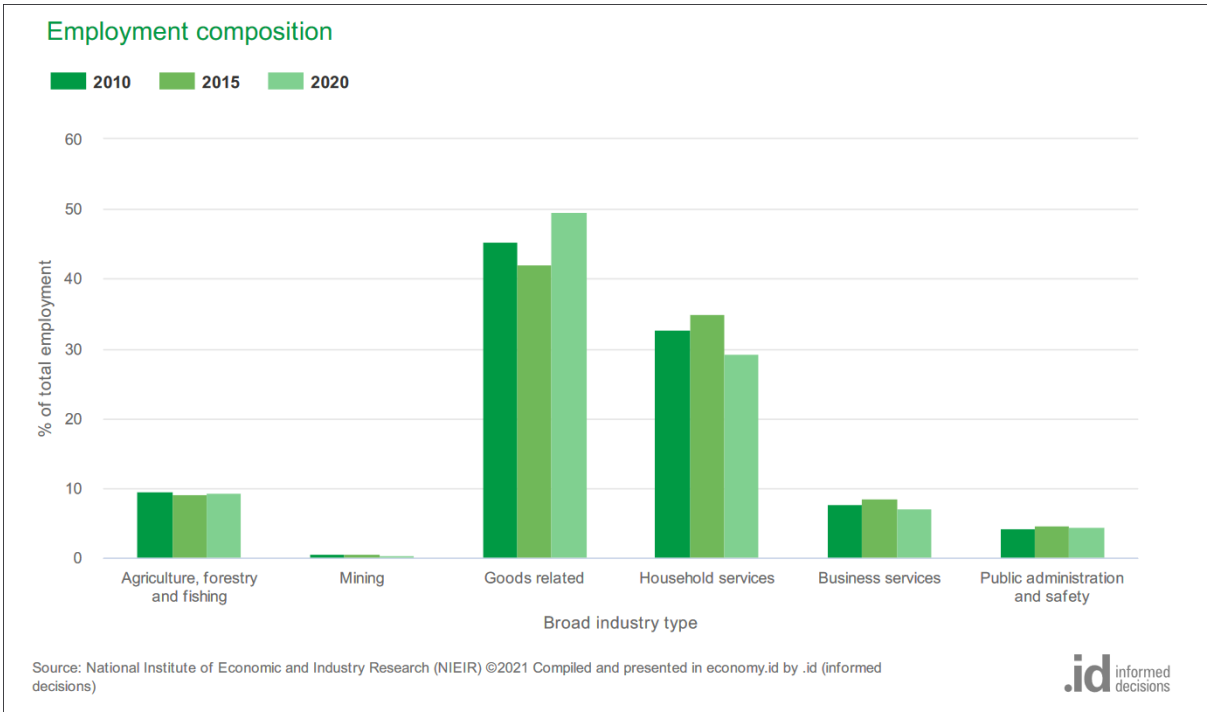
The Richmond Valley Council area is a rural and rural-residential area. The largest township is Casino, with villages at Broadwater, Coraki, Evans Head, Rappville and Woodburn. The Richmond Valley Council area encompasses a total land area of 3,050 square kilometres, including national parks and nature reserves. Rural land is used largely for agriculture, particularly cattle grazing and sugar cane and wheat growing.

The Estimated Resident Population of Richmond Valley Council was 23,490 as of June 2020. Population growth in the area has been minimal over the past 10 years.

In 2020, the Goods related sector accounted for 49.6% of employment in Richmond Valley Council. The importance of this sector has increased over the last 10 years (45.3% in 2009).

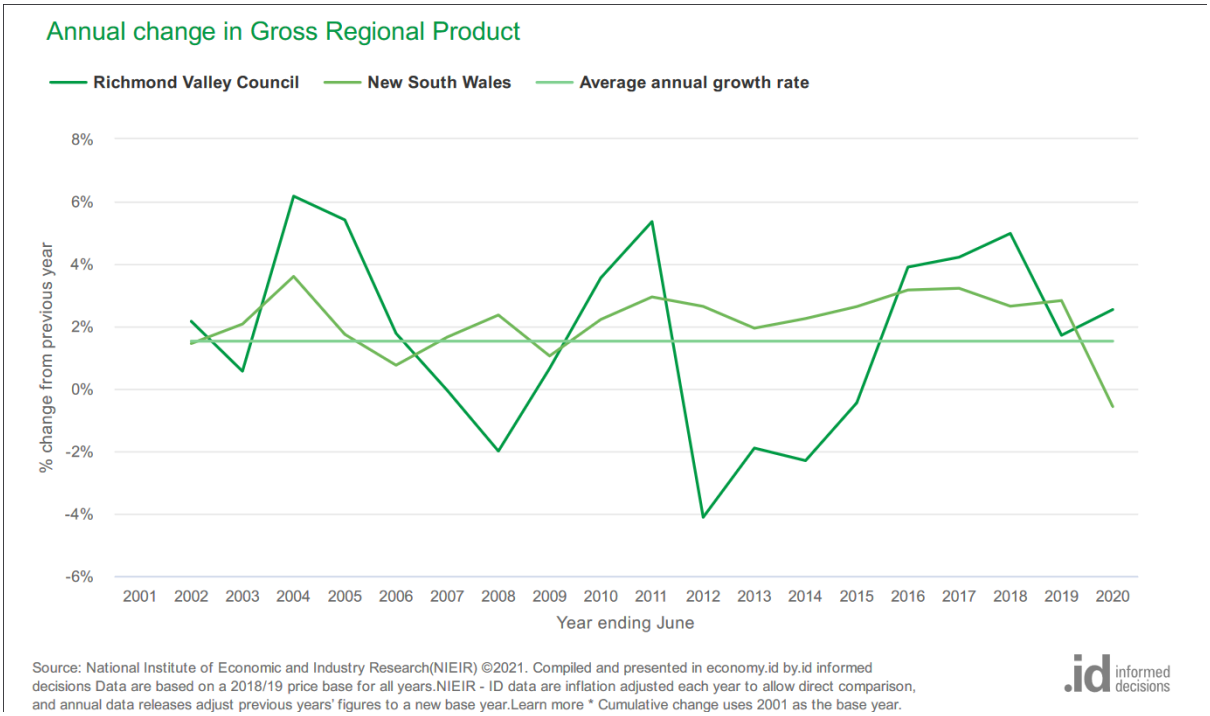
The employment by broad industry category is shown in the figure below.

Figure 4: Employment composition



Richmond Valley Council's Gross Regional Product was $998m as of the 30th June 2020.

Figure 5: Annual change in GRP



2.2. Current catchment area freight volumes

The freight generation activities surrounding the Proposal are dominated by the movement of bulk commodities such as timber, sugar and livestock.

Freight attraction activities into the Proposal catchment area are dominated by general freight flows including food and non-food consumer goods, business inputs, farm 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.

There is also a significant intra-regional freight task associated with ex-farm movements of livestock, distribution from local wholesalers to farms, commercial businesses and construction. As these flows tend to be of short distance and/or carry smaller consignments, they are also dominated by road transportation.

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

Table 1: Current catchment area volumes

Commodity	Volume (tonnes)
General Freight	102,373
Dairy	80,453
Livestock	293,226
Forestry	67,558
Horticulture	4,803
Meat	82,544
Building materials	1,216
Machinery & Transport Equipment	29,126
Manufactured Goods	105,962
Sugar	1,158,713
Fuel & Chemicals	119,731
Total	**2,045,705**

Source: TfNSW Strategic Freight Model

2.3. Future freight volumes

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

- Grains, oilseeds and pulses: 1.1% p.a
- Horticulture: 1.5% p.a
- Building materials: 1.2% p.a
- Meat: 2.6% p.a
- Distribution and Logistics - General Freight: 1.5% p.a
- Manufacturing: 1.3% p.a
- Machinery and transport equipment: 1.0% p.a
- Livestock: 1.2% 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

Commodity	Volume (tonnes)
General Freight	137,882
Dairy	108,359
Livestock	372,231
Forestry	84,081
Horticulture	6,469
Meat	137,922
Building materials	1,544
Machinery & Transport Equipment	35,539
Manufactured Goods	137,195
Sugar	1,413,850
Fuel & Chemicals	132,290
Total	**2,567,362**

Source: Source: TfNSW Strategic Freight Model

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 sch 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 Richmond Valley commodities for rail transport.

Table 3: Commodity rail contestability

Commodity	Rail contestability	Description
General Freight		Road supply chain costs typically more cost competitive from Brisbane given distribution warehousing locations and distribution networks in regions. Multiple distribution locations and destinations in smaller consignments reduces rail contestability.
Dairy		Road supply chain costs typically more cost competitive given distribution warehousing locations and distribution

Commodity	Rail contestability	Description
		networks in regions. Multiple distribution locations and destinations in smaller consignments reduces rail contestability. Cost of handling, cold chain requirements impact cost competitiveness.
Livestock		Road supply chain costs more cost competitive on road. Multiple loading sites, not connected to rail. Lack of equipment for livestock transport.
Forestry		Forestry can be transported by rail in bulk or containers. Requires a consistent supply of timber to sustain a rail operation.
Horticulture		Road supply chain costs typically more cost competitive. Multiple distribution locations and destinations in smaller consignments reduces rail contestability. Potential requirement for cold storage infrastructure. Volumes unlikely to support rail operations.
Meat		Meat can be transported by rail. However, existing supply chains from the Richmond Valley have been established for road transportation. Rail could support export volumes, however, connectivity and distance to the Port of Brisbane makes competitiveness difficult.
Building materials		Building material volumes identified are currently transported by road. Small consignments and distance from markets with multiple distribution points make it difficult for rail to compete.
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 Brisbane given distribution warehousing locations and distribution networks in regions. Multiple distribution locations and destinations in smaller consignments reduces rail contestability.
Sugar		Although sugar can be transported by rail, competing facilities in the region established by processors makes it difficult for a new site to compete.
Fuel & Chemicals		Not contestable by rail. Transport of fuel and chemicals by rail has not occurred in any substantive way since the early 2000's. Rail industry no longer has equipment to support.
	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.

2.4. Potential freight opportunities

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

Alternative Waste Treatments (AWTS)

NSW government policy encourages alternative waste treatments if this can deliver positive outcomes for people and the environment. Alternative waste treatments are an emerging technology in Australia and involves the treatment of waste or waste-derived materials for alternative uses.

Using alternative waste treatments can:

- Offset the community's use of other non-renewable products and resources
- Avoid the methane emissions that can result when waste is disposed of to landfill

Richmond Valley has been identified by the NSW Government Energy from Waste Infrastructure Plan - Supporting the NSW Waste and Sustainable Materials Strategy 2041 (September 2021) as a potential location to establish an alternative waste treatment facility. The proposal is currently at a very early stage of development and the potential freight implications are not fully understood.

It is proposed that the Richmond Valley Regional Job Precinct could service the waste management needs of northern NSW and catalyse opportunities to create new jobs in the waste management sector.

The location of the source of waste and regulatory framework will determine if rail can be used to support the transfer of waste. If an alternative waste treatment site is established to service Northern NSW, the distance to Casino and the ability to consolidate waste at an intermediatory site would be limited, geographically and from a supply chain cost perspective. If waste was sourced from Sydney or Brisbane, the opportunity to transport waste by rail would increase.

The waste will be transported by rail if it is a regulatory requirement that rail be used to consolidate waste in the Richmond Valley.

Consultation with Council has determined the estimate of waste transport used in this feasibility study.

Table 4: Waste volumes

Commodity	Operations start date Volume (tonnes)	2041 Volume (tonnes)
Waste	80,000	108,000

Grain and Soybean distribution and processing

Rail could be used to provide inbound grain and soybeans for processing for stockfeed or in agricultural food manufacturing.

However, the existing rail network will make it difficult to compete with direct road access from Northern NSW and Southern Queensland growing regions.

An estimate of potential grain and soybean volumes is provided in the table below.

Table 5: Grain and Soybean volumes

Commodity	Operations start date Volume (tonnes)	2041 Volume (tonnes)
Grain and Soybeans	30,000	38,000

Structure Plan developments

The development of the Richmond Valley Regional Job Precinct could create freight volumes. However, the proposed development opportunities on the RJP site include:

- Minimal heavy industry
- Agricultural and processing industry
- Light industrial
- Residential or hospitality

Although heavy industry and agricultural processing developments have the potential to increase freight movements to and from the region, the types of business opportunities currently identified will provide minimal additional volumes contestable by rail.

2.5. Potential contestable demand estimates

Based on the catchment area analysis and rail contestability assessment, the potential contestable rail volumes are shown in the table below.

Table 6: Contestable rail demand

Commodity	Operations start date Volume (tonnes)	2041 Volume (tonnes)
Forestry	67,558	84,081
Waste	80,000	108,000
Grain and Soybeans	30,000	38,000
Total	**177,558**	**229,167**

3. Infrastructure and transport capacity

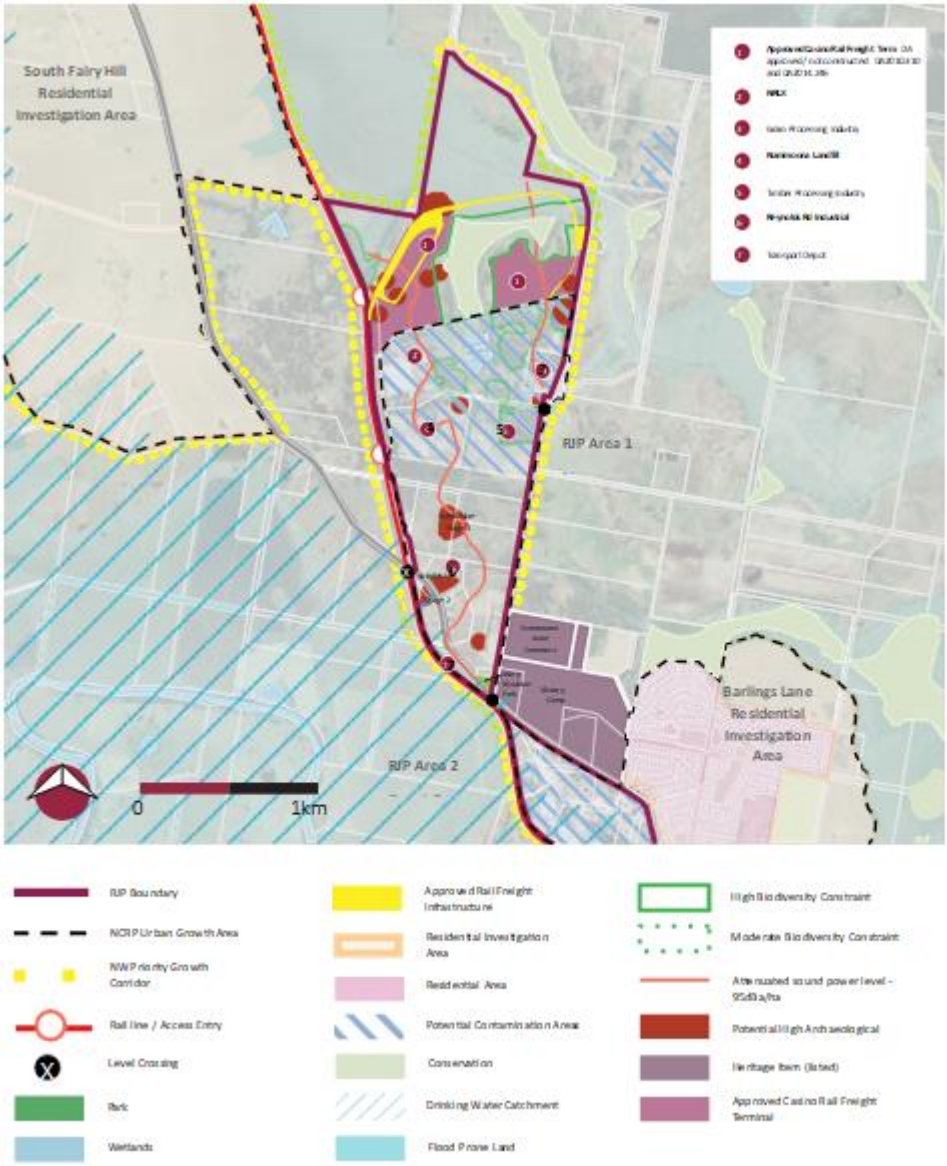
This section details the Intermodal terminal, rail and road transport infrastructure and capacity.

3.1. Intermodal terminal infrastructure

Preliminary work has previously been undertaken to explore the potential development of intermodal facilities within the Richmond Valley RJP investigation area. Two facilities have been proposed by separate private applicants on separate sites within the Nammoona Industrial Precinct. These sites include:

- The Casino Rail Freight Terminal (CRFT). This terminal was originally proposed in 2010, with development application and subsequent DA modification approved in 2014. To date, the CRFT has not been constructed (area 1 in the figure below).
- Pacific Intermodal & Industrial Hub. This intermodal facility was proposed in 2016 but has not progressed past the concept stage (area 6 in the figure below).

Figure 6: Intermodal terminal study area



3.1.1. Casino Rail Freight Terminal

The Casino Rail Freight Terminal (CRFT) proposes the development of a rail freight terminal precinct at Casino in northern NSW. The terminal development includes a bulk handling facility for grain, woodchip and forest products as well as around 18 hectares of industrial land development opportunities. The activity streams proposed by CRFT are:

- Rail Based Logistics Business
- Grain Storage, Handling and Stock feed Production
- Beef Cattle Fattening
- Timber Handling and Packing
- Property Development

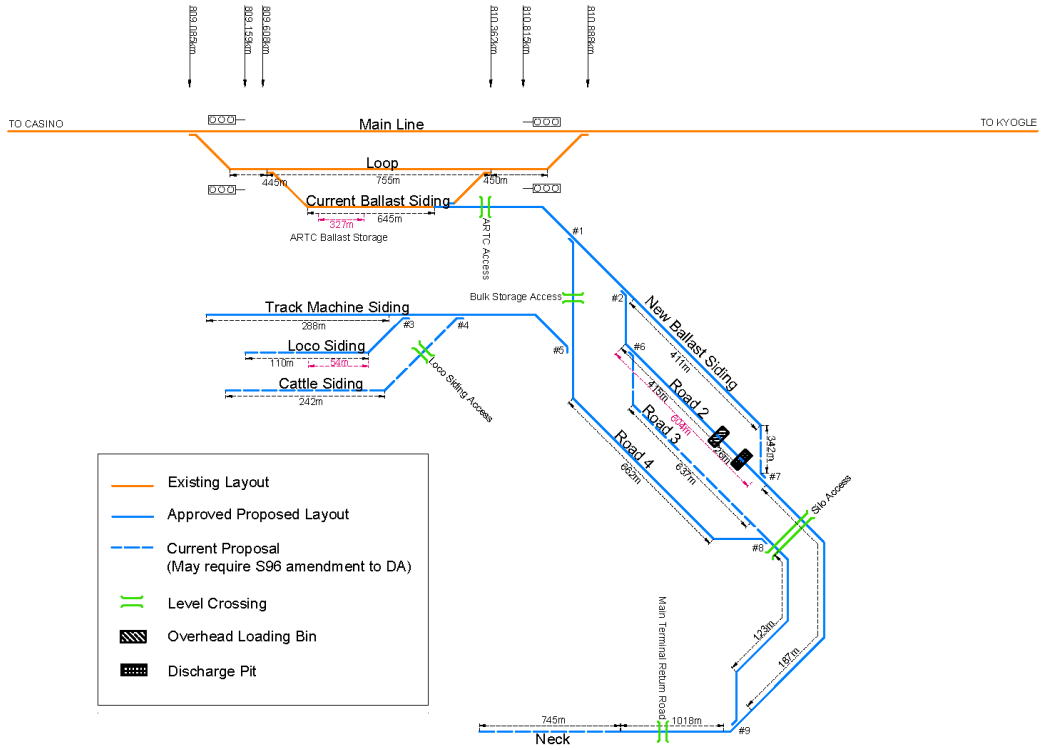
The CRFT development at Nammoona is proposed for “Summerdowns” property owned by Casino Rail Freight Terminal Pty Ltd, which is adjacent to the North Coast Railway Line, Casino Industrial Estate, Northern Rivers Livestock Exchange, Richmond Valley Waste and the Boral Timber Processing Plant and Riverina Grain Distributors.

The approved rail terminal development allows for trains with a maximum of length 1800 metres to terminate at the location. The development approval also includes a hardstand area with an initial loading face length of 450 metres for loading containers.

A large area has been left as a buffer zone for the development and no industrial development is proposed at this stage on the high ground fronting Reynolds Road in the northern edge of the property. This would still be available for grazing or stock holding. The coastal wetlands habitat zone has been left unaltered although it is proposed to fence and remove weeds from the zone.

It is proposed that the 40 m buffer zones around the wet land area be used for grazing.

Figure 7: Proposed CRFT site layout



3.1.2. Pacific Intermodal and Industrial Hub

The proposed Pacific Intermodal Terminal at Casino is a proposed rail terminal connecting to the Australian Rail Track Corporation (ARTC) North Coast Line at the Nammoona Rail loop North of Casino.

The Pacific Intermodal Terminal proposed that a development on the 36 hectare site would provide links to export/import markets and supply chain services for commodities such as timber, meat, dairy and horticulture.

The following characteristics have been identified for the terminal:

- Allow access to the terminal for Northbound and Southbound traffic
- Ability to provide standing room for trains up to 1500m in length
- Intermodal terminal for the handling of local and regional freight
- Connection to the North Coast Rail Line

Figure 8: Proposed Pacific Intermodal site layout

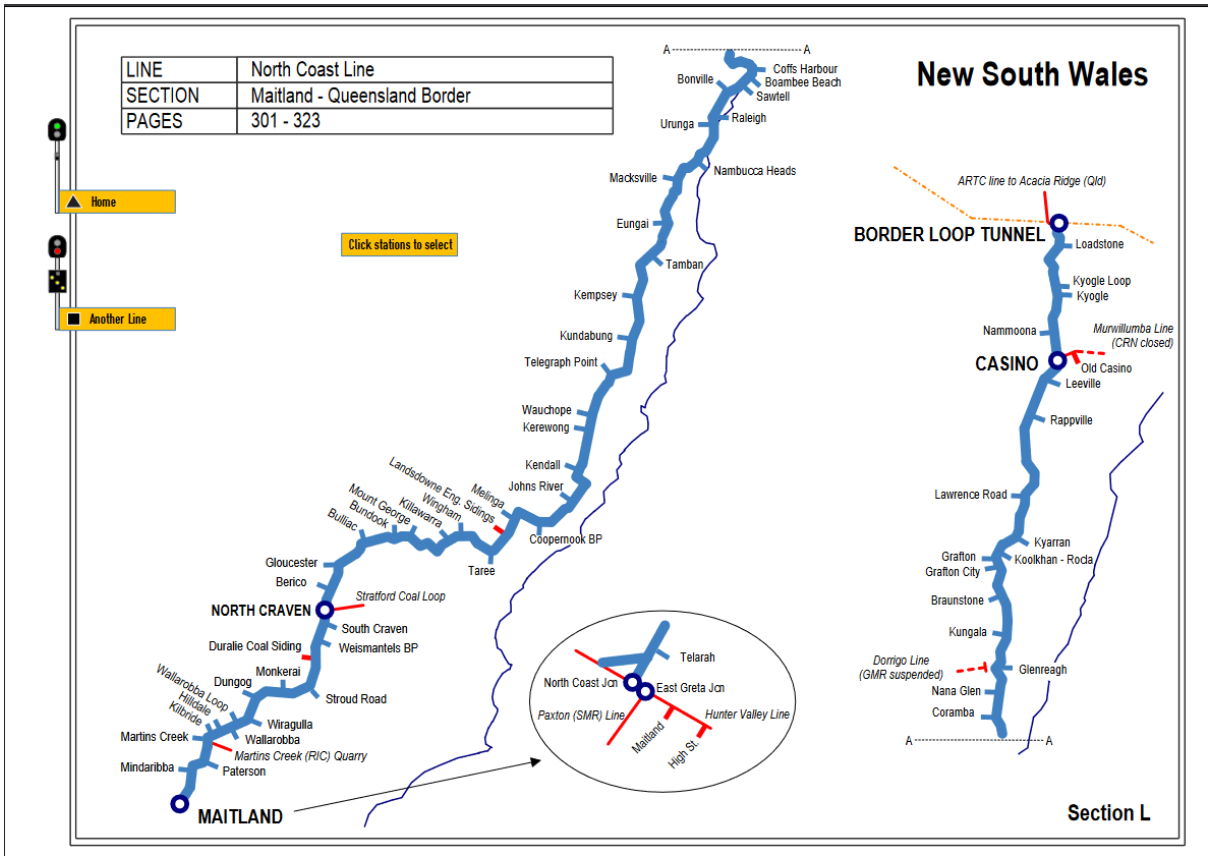
The actual design for the site would be developed by the site developer.

3.2. Rail network and freight

Casino was once a railway transportation hub providing a location where freight and passengers from the Northern Rivers Region join the main interstate railway line between Sydney and Brisbane. Casino is located at 804 kilometres on the North Coast rail line which connects Sydney and Brisbane.

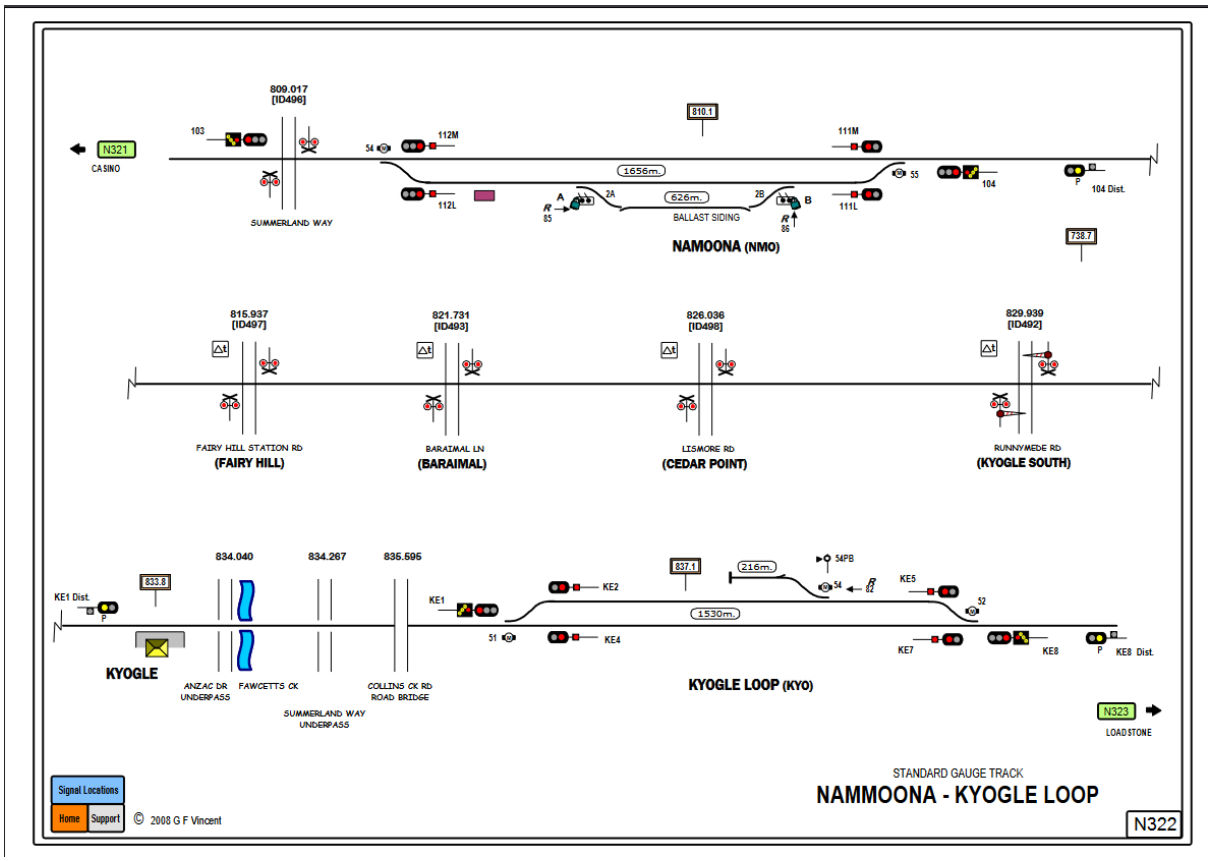
The rail line is shown in the figure below.

Figure 9: North Coast rail line



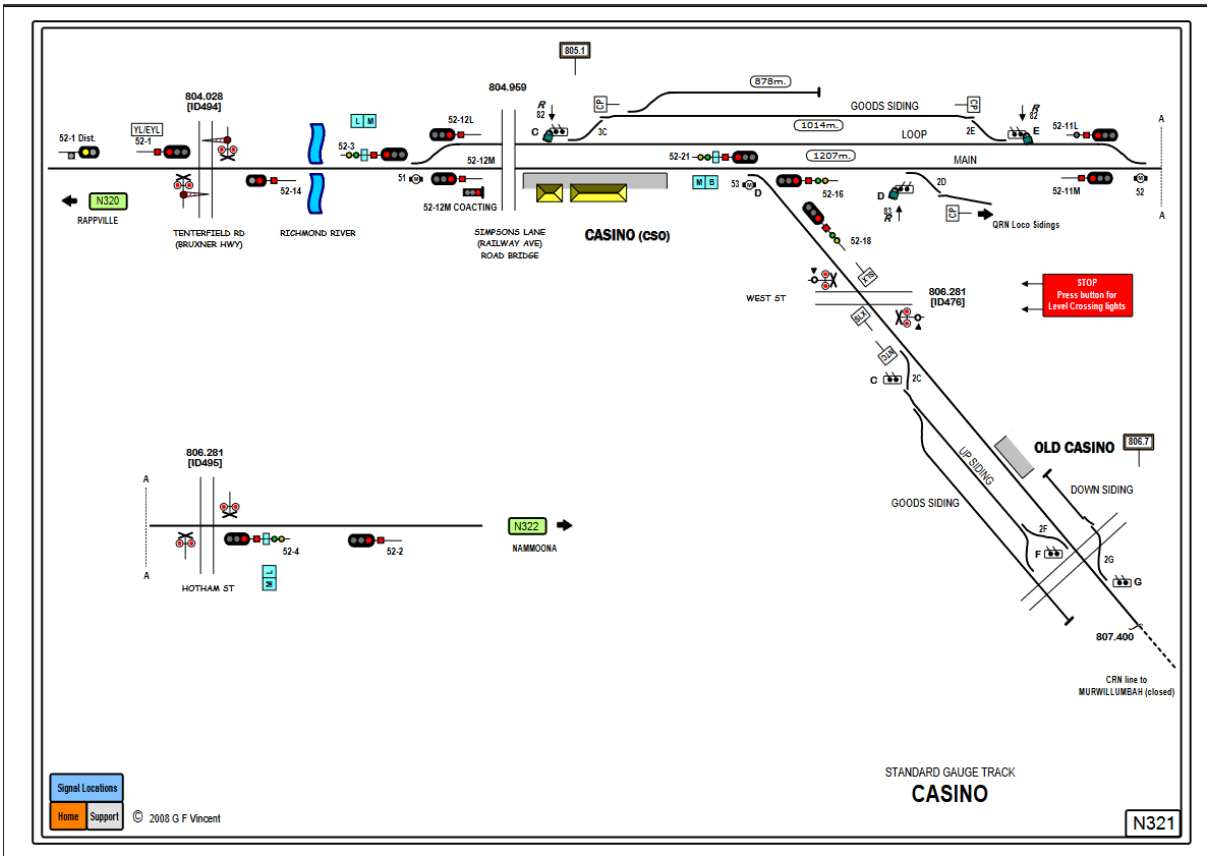
The existing rail infrastructure at Nammoona is shown in the figure below.

Figure 10: Nammoona rail infrastructure



The rail infrastructure in Casino is shown in the figure below.

Figure 11: Casino rail infrastructure



Most of the existing railway infrastructure in the Casino area is unsuitable for loading modern freight trains given the length of the sidings (i.e. less than 1000 metres) or their location relative to potential loading points/terminals or surrounding residential dwellings or businesses. The existing rail infrastructure in the Casino area and the potential limitations for intermodal services are summarised below.

Table 7: Rail infrastructure in Casino

Siding	Length	Issues
Old Casino	300 metres	Rail access blocks West St Level Crossing
Casino Loco Depot Complex	200 metres	Access to the sidings in the former locomotive depot requires trains to block the mainline whilst shunting and because of length restrictions within the complex several shunts are required to build up a freight train of reasonable length
No 1 Goods Siding	1,017 metres	There is no available land adjacent to this siding for terminal development and the siding runs through residential areas
No 2 Goods Siding	485 metres	In the centre of the town residential area. Would generate truck movements through residential streets
Nammoona Ballast Siding	648 metres	Terminal loading and stockpiling operation is close to running line. Unable to be expanded within current railway corridor

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.

4. Freight supply chain analysis

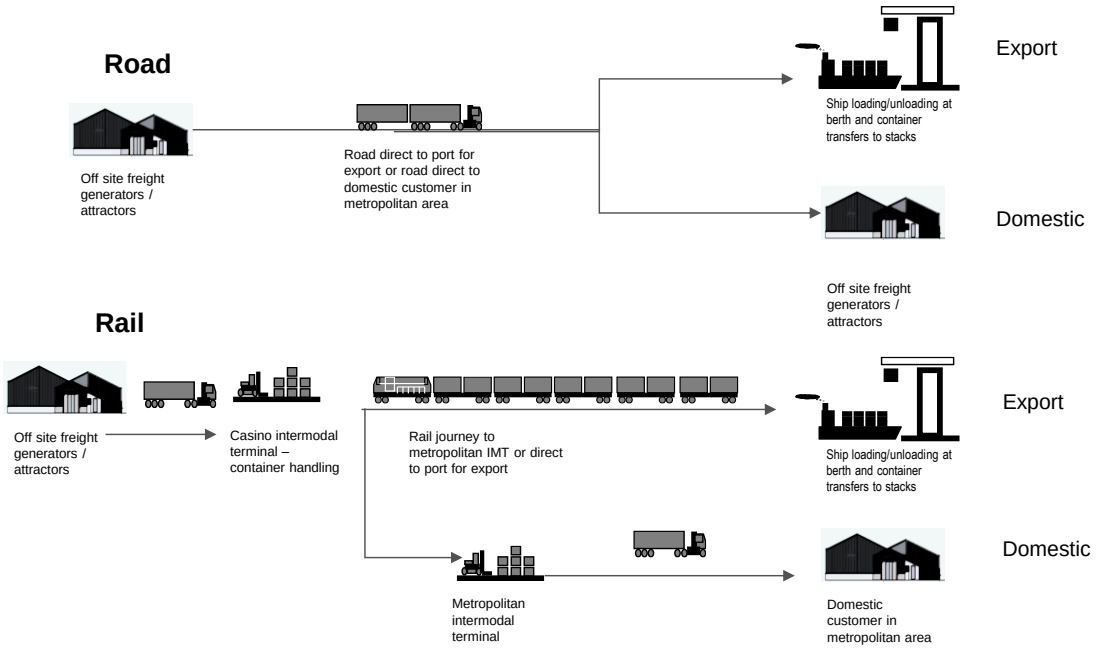
This section details the freight supply chain analysis undertaken to assess the opportunity for an Intermodal terminal in the Richmond Valley.

4.1. Supply chain cost analysis

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

- Bulk transport by rail from Casino to the Port of Newcastle or the Port of Brisbane
- Containerised transport by rail from Casino to Port Botany or the Port of Brisbane
- General freight and commodities transported to Brisbane and Port of Brisbane by rail
- Road freight to each of the identified pathways above for comparison

Figure 12: Casino supply chain pathways



The figure above shows the following characteristics for rail when compared to road.

- Rail has between 3 to 5 more components to the supply chain (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 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. 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 8: Supply chain cost analysis

Casino Supply Chain Cost				
	Domestic Customers/No Port Connection		Port for export	
	Road-Rail Difference	Advantage	Road-Rail Difference	Advantage
Sydney				
Casino (20km delivery)	- 0.79	Road	13.01	Rail
Casino (50km delivery)	- 5.67	Road	8.13	Rail
Casino (100km delivery)	- 14.50	Road	- 0.70	Road
Newcastle - Bulk				
Casino (20km delivery)	34.16	Rail	47.96	Rail
Casino (50km delivery)	29.28	Rail	43.08	Rail
Casino (100km delivery)	20.45	Rail	34.26	Rail
Melbourne				
Casino (20km delivery)	27.56	Rail	41.36	Rail
Casino (50km delivery)	22.67	Rail	36.48	Rail
Casino (100km delivery)	13.85	Rail	27.65	Rail
Brisbane				
Casino (20km delivery)	- 26.71	Road	- 12.91	Road
Casino (50km delivery)	- 31.60	Road	- 17.79	Road
Casino (100km delivery)	- 40.42	Road	- 26.62	Road
Brisbane - Bulk				
Casino (20km delivery)	- 15.56	Road	- 1.76	Road
Casino (50km delivery)	- 20.45	Road	- 6.64	Road
Casino (100km delivery)	- 29.27	Road	- 15.47	Road

The analysis provides the following outcomes for consideration of the feasibility of an Intermodal terminal at Casino:

- Rail has a cost advantage for long distance freight, such as transport to Melbourne
- Road has a cost advantage for short distance freight, such as transport to Brisbane
- Road has a cost advantage for non-export commodities
- Rail has a cost advantage for bulk commodities if they are destined for ports in NSW, such as the Port of Newcastle
- The proximity of Casino to Brisbane means, that for most commodities, road will be cost advantaged for freight transport

5. Market considerations

The following section details the market considerations associated with intermodal terminals in the Nammoona precinct.

5.1. Intermodal terminal proponents

As detailed in Section 3 of this report there are two proponents with plans to develop intermodal terminals in the Nammoona precinct:

- Casino Rail Freight Terminal
- Pacific Intermodal and Industrial Hub

Both proponents believe that they can develop a viable and feasible intermodal terminal on their identified sites.

Issues impacting feasibility:

- Funding to develop intermodal terminals or engaging a developer to fund an intermodal terminal
- Establishing a base line volume to encourage development, funding and operations
- Engaging a rail operator to provide a service

Neither proponent has currently secured funding, developer commitment or rail/intermodal terminal operators.

5.2. 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
- Minimal to no interest in investing in or operating an intermodal terminal, particularly without a baseline volume
- Concerns about the ability to secure a baseline volume
- Concerns about scale of volumes and service requirements, including:
    - Need to service multiple locations
    - Need to service multiple commodity types – need for bulk and containerised services and impact on scale of volumes for each service type

5.3. Government and statutory agencies/network operators

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

- Prefer commercial decisions drive the development of intermodal terminal locations
- Does not have current plans to invest in intermodal terminal facilities or operations on the Nammoona sites

From network operators, the following feedback was received:

- The network operator would be supportive of the proposal on the provision that loading was undertaken off the interstate corridor to avoid blocking the line to other services. Not interested in funding access to the site from the mainline
- The network operator does not have plans to invest in the access to the Nammoona sites
- The development of the Inland Rail will provide a capacity opportunity on the section of the network where Melbourne-Brisbane services switch to the inland route

6. Richmond Valley Intermodal Feasibility

This section provides the outcomes of the Intermodal Feasibility analysis for Richmond Valley.

6.1. Intermodal terminal feasibility benchmarking

For a regional intermodal terminal to be economic and viable volume of around 10,000 loaded TEU's 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.

Regional intermodal terminals must target higher growth commodities and products to enhance throughput and improve commercial viability. Agricultural commodities and rural production tend to have gradual and steady volume growth rates and are subject to seasonality and drought impacts.

Intermodal supply chains require sufficient volume and economies of scale to minimise the cost of handling and transport. Providing some level of service flexibility or appropriate service frequency is required to compete with road based transport options.

Regional Intermodal terminals do not represent a significant means of directly stimulating employment, as even large terminals (>25,000 TEU pa) 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.

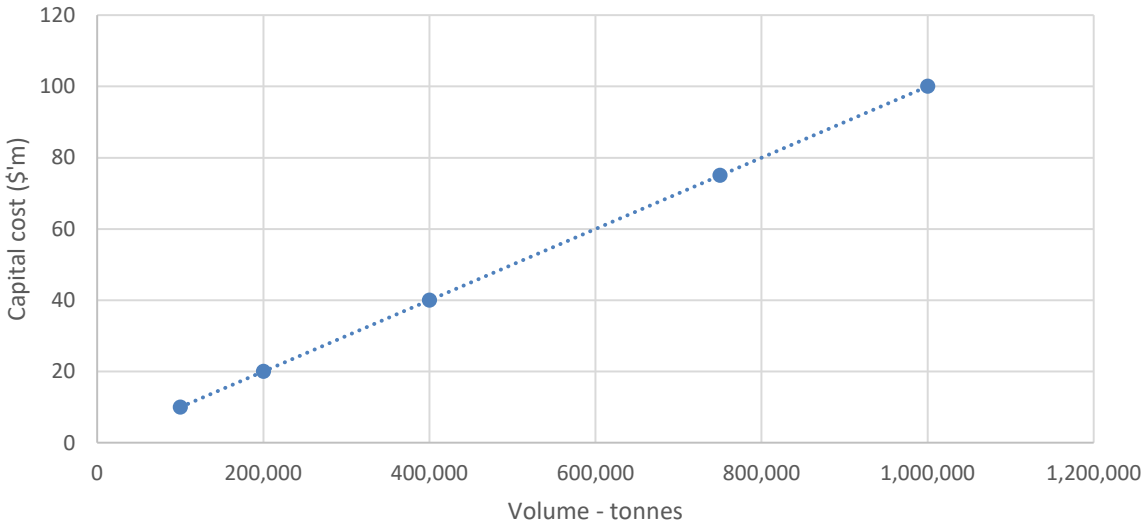
Table 9: Intermodal feasibility

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 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 13: 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.

6.2. Richmond Valley intermodal terminal feasibility

The following section discussed the feasibility of intermodal terminals on the Nammoona site.

Volume

Based on the demand analysis undertaken in Section 2 of this report, there is potential rail contestable volume that could support an intermodal terminal in the Nammoona precinct. Based on the benchmarks provided above, potential rail contestable volumes would meet the threshold of between 100,000 to 150,000 tonnes. However, this volume is reliant on alternative waste treatments being transported to the site by rail. This would require waste to be sourced from outside the Northern NSW region and/or the regulatory requirement for waste to be transported by rail. If waste was sourced from close proximity, it would not be cost competitive to use rail to transport to the region. If waste was sourced from more distant locations (typically greater than 300 kilometres) rail would become cost competitive. If waste volumes were sourced from Brisbane or southern Queensland, the cost competitiveness of rail could be marginal, given the distance between Brisbane and Casino (approximately 230 kilometres). In this instance, regulatory or legislative requirements might be used to encourage rail transportation.

The volumes identified as rail contestable would make the investment marginally feasible in a single terminal. The volumes identified as rail contestable are unlikely to support two terminals within the Nammoona precinct.

Supply chain costs

The proximity of Casino to Brisbane means, that for most commodities and products, rail contestability will be challenging. The focus of any intermodal terminal development will need to be identifying opportunities to capture the rail contestable demand in the Nammoona precinct and surrounding regions.

Rail transport tends to be most competitive for the movement of export and bulk consignments. As the rail service has direct access to port terminal infrastructure, the need for addition road movement at the destination is mitigated. For bulk volumes that are transported by rail through the Port of Newcastle, rail would likely have a cost per tonne advantage. From a feasibility perspective, this would require all forestry products to be transported in bulk through the Port of Newcastle.

General freight is likely to move by road via Brisbane. 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.

Investment in an IMT in the Nammoona precinct needs to consider supply chain cost competitiveness and potential service offerings to ensure feasibility.

Site

From a rail operating perspective, neither site in its current form provides a better location for an IMT. Given the proximity of location between the sites, volume, rail operating costs and access do not provide a differentiation.

An assessment of the site works and costs to establish an intermodal terminal at either location may differentiate the sites.

Market considerations

A range of market stakeholders were consulted as part of the feasibility study. Rail operators would service either 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 would be supportive of the proposal on the provision that loading was undertaken off the interstate corridor to avoid blocking the line to other services. The network operator does not have plans to invest in the access to the Nammoona sites.

Intermodal Feasibility Conclusion

As detailed in this section of the document, an intermodal terminal on the Nammoona site is marginally feasible based on the existing information available. The feasibility of the site is impacted by:

- There is potential rail contestable volume that could marginally support an intermodal terminal in the Nammoona precinct. The volumes identified as rail contestable are unlikely to support two terminals within the Nammoona precinct
- The proximity of Casino to Brisbane 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 Nammoona precinct more difficult.
- From a rail operating perspective, neither site in its current form provides a better location for an IMT. An assessment of the site works and costs to establish an intermodal terminal at either location may differentiate the sites.
- Rail operators would service either site if there were commercial volumes of product available for rail transport. The network operator would be supportive of the proposal on the provision that loading was undertaken off the interstate corridor to avoid blocking the line to other services.
- Targeting potential volumes where rail has a competitive advantage will be necessary to ensure a return on investment given the likely scale of capital investment to construct and intermodal terminal
- The development of the RJP and region will need to enhance potential rail volumes to enhance intermodal terminal feasibility

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