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Inland Rail Supply Chain Mapping

Parkes to Narromine Pilot
Executive summary

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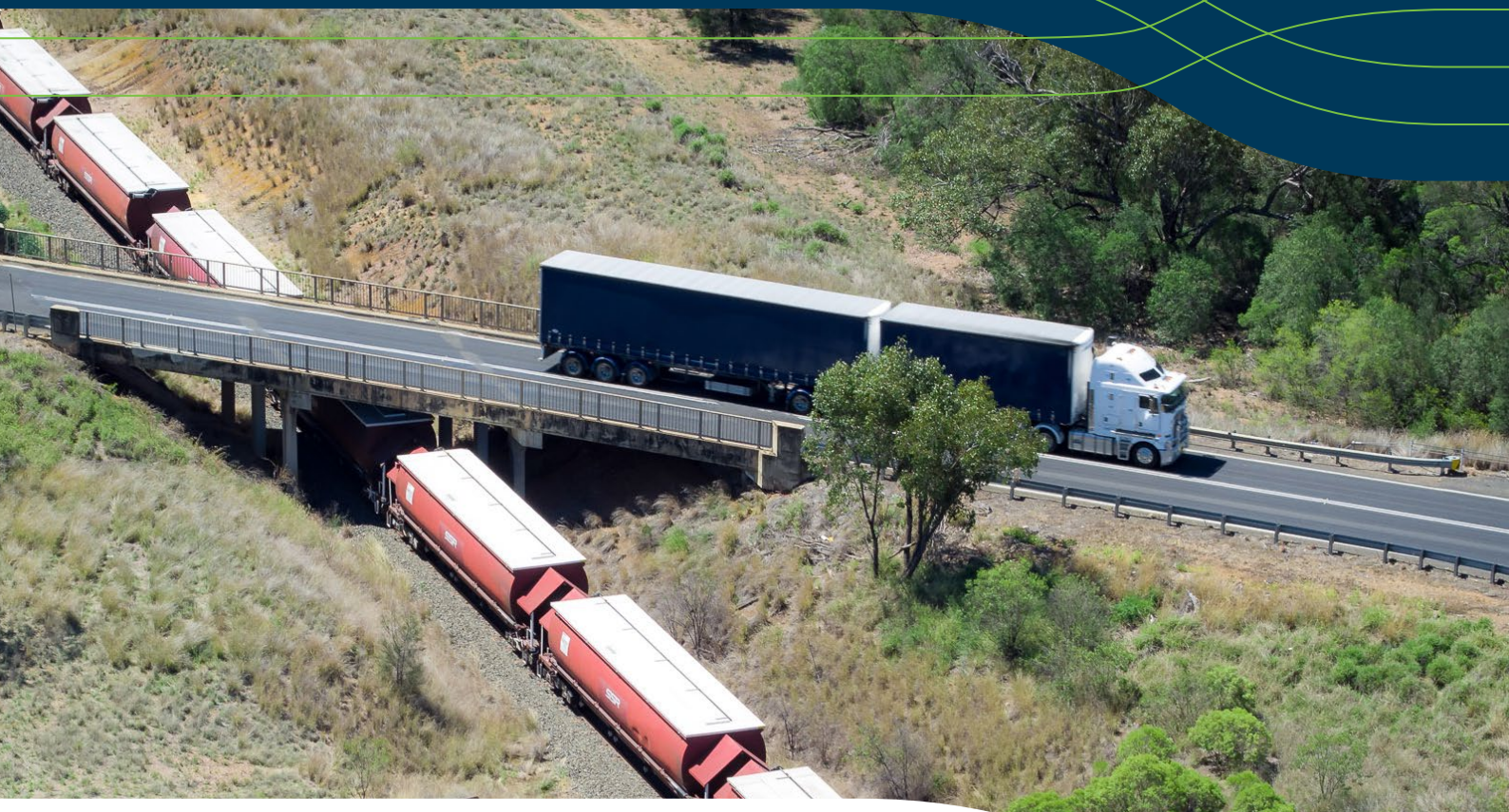
The analysis and findings contained in this report do not represent government policy



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Higgins AJ, McFallan S, Bruce C, Bondarenco A, McKeown A. (2019) Inland Rail Supply Chain Mapping Pilot Project, CSIRO, Australia.

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Executive summary

Inland Rail is a major national infrastructure project that will deliver direct and indirect benefits to regional producers and industries. Capitalising on Inland Rail's full potential to support these industries requires a robust understanding of the characteristics of local supply chains, including transport distribution patterns.

The Parkes to Narromine Inland Rail Supply Chain Mapping pilot project was designed to apply the capability of CSIRO's Transport Network Strategic Investment Tool (TraNSIT) to the underlying data to identify and assess any competitiveness improvements in certain supply chains due to Inland Rail.

A baseline of existing freight movements associated with the study area (Figure 1) was established using TraNSIT, with input from stakeholders, to model any potential transport cost savings for supply chains should they use Inland Rail. The pilot project sought to demonstrate the effectiveness of TraNSIT as a means of modelling complex supply chains at the national and local level.

While some further refinements will be made to the analysis as the project is rolled out along the Inland Rail corridor, the pilot demonstrated:

- the ability of TraNSIT to identify potential supply chains that might benefit from Inland Rail
- the relative significance of the potential transport savings, and
- the potential for modal shift from road to rail as a consequence of lower transport costs.

The results of this pilot are preliminary and will be tested further in subsequent phases of the project.

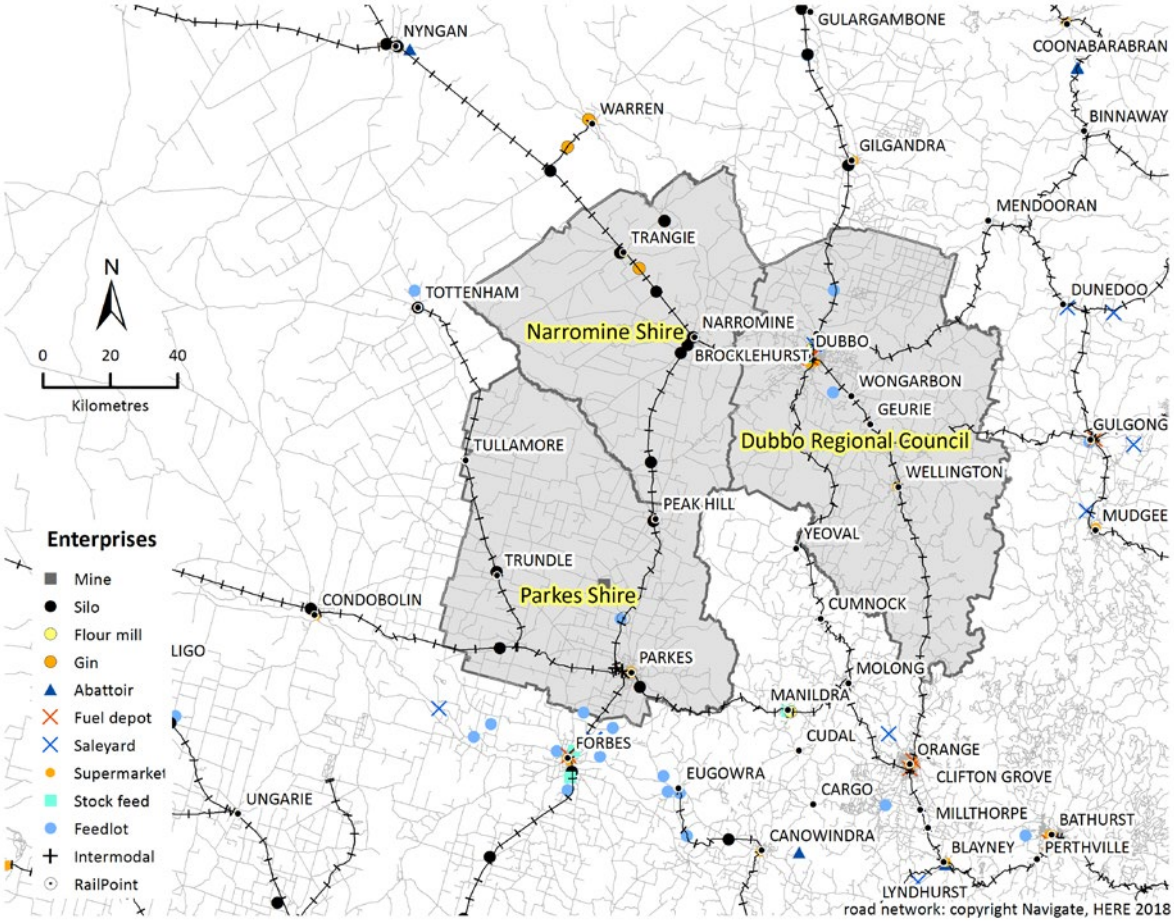


Figure 1: The study area rail network and major industrial enterprises of interest

Key insights on the potential benefit of Inland Rail to regional industries

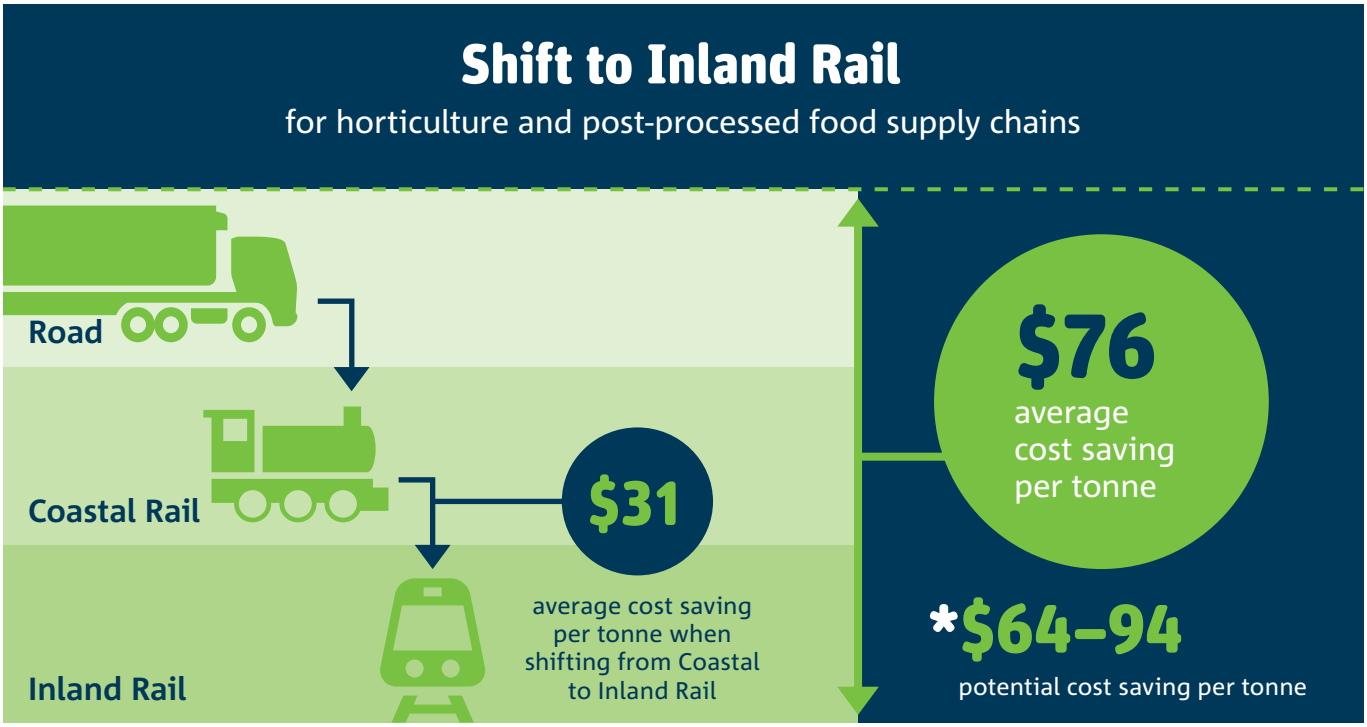
1

For this pilot study, the majority of the transport movements identified and modelled using TraNSIT are not related to local supply chains (defined as having an origin or destination within the region) but are those that have the potential to use the majority of Inland Rail to move freight between Victoria and Queensland and beyond:

a. The analysis suggests a potential average transport cost saving of $76 per tonne for horticulture products and post-processed food road trips shifted to Inland Rail. The analysis is sensitive to different backloading scenarios, but it is expected that the majority of products in the two supply chains have the potential to save between $64 per tonne and $94 per tonne in transport costs by shifting from road to Inland Rail.

On average, these supply chains currently have a road transport leg of over 2000 kilometres, which is approximately 20 per cent further than the commonly used road distance between Melbourne and Brisbane. Many of these trips will be from a farm or processor, along local and regional roads that incur a marginally higher road transport cost per kilometre due to lower transport efficiencies.

b. For horticulture products currently transported by rail on the coastal line, the modelling suggests a potential average transport cost saving of $31 per tonne by shifting to Inland Rail. This result is also sensitive to different backloading scenarios, but it is expected that the majority of these products have the potential to save between $28 per tonne and $36 per tonne in transport costs by using Inland Rail.



*Depending on back loading

2

Should these potential transport cost savings result in a shift from road to Inland Rail, the analysis indicates a substantial benefit to the community in the study area through a reduction of up to 63,000 heavy vehicle trips per year along various segments of the Newell Highway:

a. While there is a reduction in total heavy vehicle trips in the study area, there is a degree of concentration of heavy vehicles on particular sections of the national road network. This outcome reflects a redistribution of existing truck trips to intermodal terminals in order to access Inland Rail. Further analysis will be conducted to determine the level of concentration around certain nodes and corridors.

63,000 fewer heavy vehicle trips per year along sections of the Newell Highway

Lower congestion on regional roads

3

The modelling is based on existing supply chain channel structures and intermodal facilities. The degree of benefit for local supply chains is highly dependent upon the length of Inland Rail that can be used in meeting the needs of the supply chain:

a. For the pilot study area, most local supply chains are oriented perpendicular to the Inland Rail corridor, supported by a substantial existing road and rail network to move product to and from the Newcastle, Sydney and Wollongong metropolitan markets and associated ports, and therefore will not use much of the Inland Rail line.

b. On average, the supply chains modelled in TraNSIT for this pilot study currently have a road transport leg of more than 2000 kilometres and many of these trips will be from a farm or processor, along local and regional roads that incur a marginally higher road transport cost per kilometre due to lower transport efficiencies.

c. The analysis did not consider new opportunities Inland Rail might deliver for local industries; however, preliminary counterfactual scenarios of new processing facilities at Parkes and Dubbo were tested. They showed that the use of Inland Rail to Brisbane (including transfers from Acacia Ridge to distribution centres) had a similar cost per tonne to supplying markets in Newcastle and Sydney via road. The market-diversifying potential of Inland Rail will be explored further through more counterfactual scenarios as the project is rolled out along the corridor.

It should be noted that TraNSIT uses operating cost models for heavy vehicles and trains rather than actual freight rates (prices) charged by transport service providers. As TraNSIT is a knowledge-based tool, the analytical capacity of the tool increases as more data becomes available. The next phase of the project will include a more extensive definition of the study area for TraNSIT to model the potential transport cost savings for more local supply chains along the Inland Rail corridor.

The potential transport cost savings modelled using TraNSIT generally only relate to the freight movement. The multitude of logistical, relational and behavioural decisions throughout the supply chain will determine whether Inland Rail is used and how and whether potential benefits are captured.

The results of this pilot should not be inferred as occurring elsewhere. Every region and supply chain will be different due to differences in the type and distribution of industrial activity relative to the Inland Rail corridor. The next phase of the supply chain mapping project will focus on the southern half of the Inland Rail corridor between the Narromine and Seymour regions.

The complexity of the local road and rail network, and the many and dispersed freight-related enterprises in the study area meant that the pilot did not specifically seek to identify potential locations for Inland Rail complementary infrastructure investments:

- Local stakeholders are best placed to consider and pursue options for complementary projects and policies to leverage the benefits of Inland Rail for local industry.
- By undertaking this pilot, the evidence base has been improved for third parties to approach CSIRO to model options using TraNSIT. This benefit will be enhanced as the project is rolled out along the Inland Rail corridor and more supply chains are added to the model.

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