GOVERNMENT OF WESTERN AUSTRALIA

Department of **Transport**
Main Roads Western Australia
Public Transport Authority
Department of **Primary Industries and Regional Development**

Revitalising Agricultural Region Freight Strategy

RESPONDING TO CHANGE

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This page photo credit: BUNGE

MINISTER'S FOREWORD

Our State's agricultural sector plays an important role in Western Australia's economy. Millions of tonnes of product is moved on the road and rail network every year.

The freight supply chain that underpins the movement of agriculture products needs to keep up with global demand and increases in efficiency.

The key agricultural areas of WA generate significant freight related to agricultural products including grain, livestock, oilseed, seafood, dairy, wool, viticulture and horticulture. This requires a complex, multimodal freight network to get products to market.

WA's freight task is varied and complex, and involves an extensive transport network, covering multiple modes and staging points throughout the regions. With the agricultural and food sector representing around 10 per cent of WA's economy, we need a freight supply chain that meets the needs of those in the agricultural sector, as well as improving safety and amenity for the community.

There have been significant changes to the agricultural sector in recent years. New technologies are being introduced, while global demand and climate change are creating opportunities and challenges for our farmers and the industries that support them.

Farm size, agricultural machinery, heavy vehicle combinations and train lengths have expanded rapidly and supply chain infrastructure has not kept pace. This includes road networks, rail networks, interfaces such as intermodal terminals, and regulatory systems and processes.

Improving efficiency, safety and productivity along supply chains is central to Australia's ability to compete in international markets. Global competition is increasing, and without a cost-effective supply chain Western Australia's global competitiveness will fall.

The final *Revitalising Agricultural Region Freight Strategy* (the Strategy) identifies key project packages that will consolidate and prioritise decision-making for future infrastructure upgrades and policy and regulatory improvements for key agricultural regions in WA. This will help to improve freight productivity and assist in better positioning WA's key regional agricultural supply chains for future growth.

The Strategy covers the freight supply chains in the Mid West, Wheatbelt, Great Southern and Goldfields-Esperance regions. The South West region freight supply chain is covered separately in the South West Supply Chain Strategy, which will be released separately.

This Strategy has been developed by the Department of Transport, in conjunction with Main Roads Western Australia, the Public Transport Authority and the Department of Primary Industries and Regional Development.

The Strategy has been developed through extensive research, analysis and consultation.

The draft *Revitalising Agricultural Region Freight Strategy* was released in June 2019, with feedback provided by a broad range of respondents, which was considered and incorporated into this final Strategy. The feedback helped to inform and prioritise the regional project groupings for the Mid West, Wheatbelt, Great Southern and Goldfields-Esperance agricultural regions. This Strategy contains a more comprehensive list of road project priorities, including widening, realignments, passing lanes and bridge work.

The *Revitalising Agricultural Region Freight Strategy* provides a consolidated and ranked list of priority projects and actions that will provide the foundations for business cases to be developed for road, rail, intermodal and port projects for the next 10-15 years.

This final Strategy is a high-level framework; projects delivered under will adhere to a triple bottom line approach, to ensure that the safety, social and environmental impacts of freight movement are addressed responsibly.

As our agricultural sector continues to develop and change we need an integrated, multi-modal regional transport strategy for the agricultural regions of Western Australia that will help address the changes and challenges our agricultural sector face now and into the future.

The Hon. Rita Saffioti MP
Western Australia Minister for Transport

EXECUTIVE SUMMARY

Western Australia's agriculture and food sector represents about ten per cent of the State's economy[1] and is a significant source of employment, providing jobs for more than 30,000 Western Australians.

The State's economy is continuing to change, and while growth in the resources sector may have slowed in recent years, agricultural activity is growing.

Despite this growth, the agricultural sector faces a number of challenges that continue to impact output and global competitiveness. There is an ongoing need to be more efficient and collaborative in structural change.

The State's agricultural export value was $8.5 billion in 2016-17 which included several key export commodities such as wheat, barley, canola, wool and livestock.

Grain forms the major component of WA's agricultural freight and is sold to more than 30 countries throughout the world, against an increasingly competitive global market. The efficiency of agricultural freight transport supply chains must continue to improve to ensure WA remains globally competitive.

The Revitalising Agricultural Region Freight Strategy (the Strategy) identifies core issues relating to the movement of agricultural freight over the next 10-15 years and presents a targeted list of infrastructure and non-infrastructure priorities to support improved efficiency of the State's agriculture supply chains.

This Strategy encompasses the regions of the Mid West, Wheatbelt, Great Southern and Goldfields-Esperance, as shown in the map on the following page. Other regions, including the South West will be considered separately.

The *Revitalising Agricultural Region Freight Strategy* covers the following supply chains:

Grain

Livestock

Agricultural lime

Fertiliser

Hay

The Strategy has six key objectives:

1. Connected and continuous supply chains
2. Seamless modal integration
3. Optimised infrastructure and policy environment
4. Improved transport efficiency
5. Improved road safety
6. Regional economic growth

1 Main Department of Primary Industries and Regional Development, https://www.agric.wa.gov.au/western-australias-agriculture-and-food-sector

Figure 1: Revitalising Agricultural Region Freight Strategy Project Area

The Strategy is the culmination of extensive stakeholder consultation aimed at identifying deficiencies and opportunities in the regional transport system and includes both infrastructure and policy/regulatory settings. The Strategy also incorporates the extensive feedback provided on the draft *Revitalising Agricultural Region Freight Strategy*, released for public comment in June 2019.

Over 90 online surveys were completed in response to the draft Strategy and were considered by the Department of Transport (DoT).

A majority of respondents agreed that the supply chains examined in the Strategy provided adequate coverage of agricultural freight issues in the project area, with 71 per cent supporting increased investment in rail infrastructure, including intermodal terminals.

There was also a strong sentiment towards reinstating the Tier 3 railway lines, which were put into care and maintenance in 2014. An arbitration process initiated by CBH under the Railway (Access) Code, which began in 2013 and concluded in November 2019, determined the costs of re-opening the Tier 3. CBH considered those costs were not economically viable. Arc Infrastructure and CBH are focusing future investment in the rail network on the operational Tier 1 and 2 rail lines, so investment in State and locals roads will have to compensate for increased road traffic in the areas formerly served by Tier 3 lines.

The draft release of RARF Strategy focused on the relevant rail network and local government roads, and included only the key State roads identified as desirable 42 metre Performance Based Standards (PBS) routes. Feedback indicated the need for a more comprehensive plan for the road network. Accordingly, a comprehensive list of relevant State roads and the key improvements for future investment planning have now been included.

This Strategy identifies the most effective infrastructure investments and regulatory improvements that should be undertaken to achieve its six key objectives. This includes 20 infrastructure project packages and several non-built solutions.

These proposed initiatives will, individually and cumulatively, improve the productivity of the agricultural transport supply chain and be further developed by both industry and government.

EXECUTIVE SUMMARY

The infrastructure project packages have been prioritised across the State and by region, based on an assessment of transport demand, current infrastructure standard, road crash statistics, supply chain beneficiaries and alternative transport modes. Further information on the methodology is provided in the Strategy and appendices.

The project packages are summarised below.

Mid West

- Perth to Geraldton Rail (Watheroo to Geraldton) – rail improvements.
- Roads to Geraldton Port – targeted road network investment, increased heavy vehicle access.
- Mid West Local Roads – targeted road network investment.
- Mullewa to Perenjori Rail – rail improvements.

Wheatbelt

- Avon (Northam) Rail – rail improvements, establish intermodal terminal (containers).
- Perth to Geraldton Rail (Millendon Junction to Watheroo) – rail improvements, establish intermodal terminal (containers).
- Rail North-East of Northam – rail improvements.
- Brookton to Northam Rail – rail improvements, establish intermodal terminal (containers).
- Northam to Southern Cross – rail improvements.
- Miling to Toodyay Rail – rail improvements.
- Roads to Perth – targeted road network investment, increased heavy vehicle access.
- Wheatbelt (North West) Local Roads – targeted road network investment.
- Wheatbelt (South West) Local Roads – targeted road network investment.
- Wheatbelt (South East) Local Roads – targeted road network investment.
- Wheatbelt (North East) Local Roads – targeted road network investment.

Great Southern

- Albany to Hyden/Newdegate Rail – rail improvements, establish intermodal terminal.
- Roads to Albany Port – targeted road network investment, increased heavy vehicle access.
- Great Southern Local Roads – targeted road network investment.

Goldfields-Esperance

- Roads to Esperance Port – targeted road network investment, increased heavy vehicle access.
- Esperance to Salmon Gums Rail – rail improvements.
- Goldfields-Esperance Local Roads – targeted road network investment.

Non-region specific

Various non-infrastructure initiatives have been identified to improve the transport supply chain, including:

- conducting a holistic review of the registration, accreditation and permit processes for agricultural and heavy vehicles;
- inclusion of rail lines into the National Land Transport Network;
- a review of the interface agreements for disused Tier 3 rail corridors; and
- continuing to work with industry groups to create better community understanding and support for the movement of agricultural freight, including the benefits of rail, and the benefits of heavy vehicles where rail is not available.

Since the release of the draft Strategy, the Department of Transport, in consultation with Main Roads, has published improved and updated guidance material regarding towed agricultural equipment and requirements for agricultural pilots, to assist farmers and transporters to plan appropriately for the movement of agricultural vehicles during harvest.

Harvesting Wheat York: photo credit DPIRD

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Canola: photo credit DPIRD

PART ONE: CURRENT SITUATION AND FUTURE TRENDS

Agriculture is Western Australia's second largest export industry and a major contributor to the economy.

There are a number of opportunities and challenges related to supply chains within the agricultural regions that are unique to WA.

While WA is well known as a grain producer, the agriculture industry is also a significant producer of meat, livestock, oilseed, seafood, dairy, wool, viticulture, horticulture and honey products.[1]

Agricultural land occupies a large portion of the State and transporting agricultural produce requires an extensive transport network covering multiple modes and vast distances.

Significant freight tonnages are generated across the agricultural sector, with grain requiring a mix of both road and rail transport through the intensive spring-summer harvest period. With a trend towards larger farming operations requiring less manual input and increasing global competition, producers are seeking greater efficiency in freight transport. Longer and heavier vehicle combinations are becoming more common on both the State and local road networks.

Upgrading and maintaining local roads to an acceptable standard is a challenge for many regional local government authorities due to a limited ratepayer base. This has been compounded by an increase in road freight following the cessation of rail services on the Tier 3 rail lines in 2014.

With the increasing adoption of larger vehicle combinations, road freight efficiency is expected to increase in the future. Without improvement in the efficiency of rail infrastructure and operations, transport operators will disproportionately favour road transport, to the detriment of the road network.

1 Department of Primary Industries and Regional Development. *Western Australia's Agrifood, Fibre, Fisheries and Forest Industries*, 2017, p.16.

Photo credit: ARC

GRAIN

Western Australia's grain industry is the largest agricultural sector in the State.

More than 90 per cent of the State's grain is exported.[3] Grain is a high-volume commodity, with the total production of six grain types varying from 14.3 to 18.2 million tonnes over the last five years.[4] Around 90 per cent of WA's grain harvest is handled by Co-operative Bulk Handling (CBH), a co-operative owned by around 4,200 grain growers.[5] CBH has identified 100 receival sites of the future that will be the focus of its investment and operations, using both road and rail to export grain through four ports.

Bunge Australia Agribusiness Pty Ltd (Bunge), the State's second bulk grain handler, has two receival sites in Arthur River and Kukerin and uses Coalfields Highway and Collie-Lake King Road to transport grain to Bunbury Port. This route is assessed under a separate South West Supply Chain Strategy.

While wheat is the dominant crop in the Project Area, other grain types grown and exported include barley, canola, oats, lupins and field peas. For the purposes of this Strategy, grain types and volumes are aggregated, and variations are considered to have minimal implications for the broader transport supply chain assessment.

Grain in Western Australia is generally harvested between October and January each year, with most of the crop harvested before Christmas. Heavy vehicle movements on local roads between farm and receival sites increase during harvest, although the timing and mode of transport for grain between receival sites, and from receival sites to port may vary.

Grain is mostly accumulated at receival points and transported in bulk to port terminals at Kwinana, Albany, Geraldton, Esperance, and Bunbury. In some cases, it is delivered directly from farm gate to port. Approximately 60 per cent of grain handled in CBH's network of receival sites is transported to port by rail, with the remainder using the road network.

Rail connectivity is critical for transporting large volumes of grain through regional areas. Rail lines connecting high-throughput rail receival sites with regional ports are heavily utilised after harvest, with rail being used to transport grain from all rail receival sites throughout the year. Significant parts of the regional rail network are only used for transporting grain.

With the exception of rail carrying multiple commodities, Australia's grain rail infrastructure quality ranks poorly when compared to other major grain export competitors around the world, with Australia ranking 35th.[6] The only competitor that ranks substantially lower than Australia in terms of grain rail infrastructure is Argentina, which has multi-billion dollar renovations of its rail network commencing in the coming years.

The transition of Tier 3 rail lines into care and maintenance has increased freight volumes on some local roads; however, most of this freight is still being transferred onto rail at other sites.

An arbitration process initiated by CBH under the Railways (Access) Code, which began in 2013 and concluded in November 2019, determined the costs of re-opening the Tier 3 rail lines. CBH considered those costs were not economically viable. Arc Infrastructure and CBH are focusing future investment in the rail network on operational Tier 1 and 2 rail lines, so that investment in state and local roads will have to compensate for increased road freight traffic in areas formerly served by Tier 3 lines.

A high level assessment of each non-operational line will be undertaken by an independent expert as part of Arc Infrastructure's 2020 review of Performance Standards to report on lines or sections of line which are considered to be beyond what would be reasonably practicable to rehabilitate.

The WA Government has commissioned a further full engineering assessment of the Tier 3 lines to advise on the cost and time required to rehabilitate each line, so that any future stakeholder proposals to reopen these lines can be informed by this analysis.

3 Grain Association of Western Australia, WA Grains Industry Strategy 2025+, February 2015, p.7.
4 Grain Industry Association of Western Australia, 2013-2017 Season Crop Reports, http://www.giwa.org.au/
5 About CBH, 2017, https://www.cbh.com.au/about-cbh
6 Australian Export Grains Innovation Centre, Australia's Grain Supply Chains – Costs, Risks and Opportunities, October 2018, p.50.

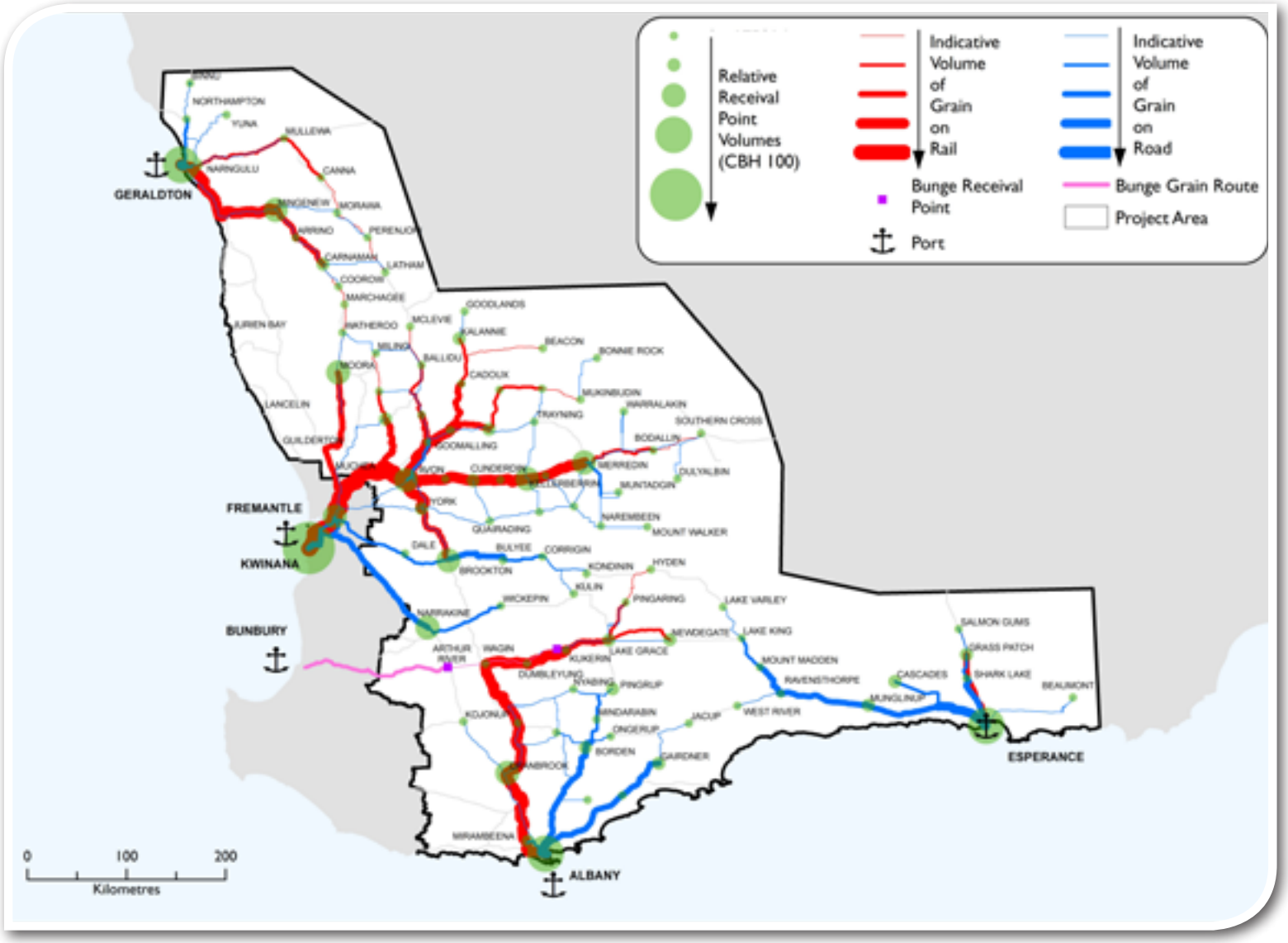
PROJECT AREA - GRAIN TRANSPORT ROUTES

Key point:

There will be incremental increases in grain yields over time, due to better alignment of grain varieties, with soil and weather conditions and improving grain resistance to certain pests and conditions. This will likely increase the total volume of grain to be transported within the same harvest season. Changing rainfall patterns will see increased focus on southern areas of the grain growing region.

Key point:

There is increasing demand for larger vehicles and concessional mass to move the growing volumes and to increase productivity. Improvements are generally required to the road network to allow larger and heavier vehicles.



LIVESTOCK

Western Australia's live exports include approximately 1.6 million head of sheep[7] and 220,000 head of cattle[8] per year.

For the purposes of the Strategy, "livestock" includes cattle, sheep (including lambs) and pigs. Fremantle Port handles the entirety of the State's live sheep export trade, and around 62 per cent of its live cattle export trade.[9]

The livestock supply chain is generally more complex and has more variations compared to the grain supply chain. Livestock are entirely transported via road.

Livestock staging points include feedlots, saleyards and abattoirs, which are scattered throughout the Project Area. Significant volumes of livestock are transported into the Perth metropolitan area via Great Northern Highway (20,600 trailers* per year) and Albany Highway (14,370 trailers per year), for either live export out of Fremantle or processing at abattoirs.[10] Livestock volumes increase notably along Albany Highway between Kojonup and Williams, capturing freight from connections further inland.[11]

Significant cattle volumes from the north of the State travel into the Mid West, with many transport operators preferring to use the coastal route for movements from Karratha.[12] Cattle are either exported from Geraldton, or further transported for export from Fremantle.

Heavy vehicles carrying livestock can apply for a concessional livestock permit from Main Roads allowing the carriage of extra mass when transporting livestock, provided the operator meets certain requirements. Operators can also seek an exemption to operate larger vehicle combinations where there are exceptional circumstances, such as flood or drought conditions that require livestock to be transported quickly, to ensure animal welfare requirements are met. These are considered on a case-by-case basis.

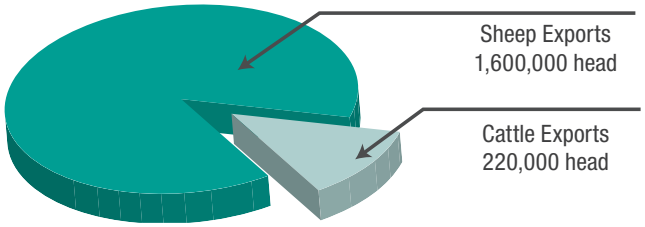


Figure 2: Western Australia exports approximately 1.6 million head of sheep and 220,000 head of cattle per year.

Key point:

Planned Restricted Access Vehicle (RAV) improvements to the north of the Perth metropolitan area will accommodate RAV 10 access along Great Northern Highway between Wubin and Muchea.

Key point:

There has been increasing interest from industry in the potential long-term adoption of RAV 10 network status along the coastal route from the Pilbara region to Muchea.

Key point:

There is some uncertainty at the federal level regarding the future of live sheep and cattle exports from Western Australia. This has been further explored in Part Four.

7 Mecardo, Live Sheep Export – Brief Report, 20 April 2018, p. 3.
8 Department of Primary Industries and Regional Development, https://www.agric.wa.gov.au/livestock-animals/livestock-species/beef-cattle
9 Fremantle Ports, Fremantle Ports Annual Report 2016/17, https://www.fremantleports.com.au/publications
10 CSIRO, Unlocking options for efficient logistics in infrastructure in Australian Agriculture, 2017.
11 CSIRO, Unlocking options for efficient logistics in infrastructure in Australian Agriculture, 2017.
12 Midwest Development Commission, written submission.

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AGRICULTURAL LIME

Soil acidity is estimated to cost the Western Australian agricultural industry $1.6 billion per annum in lost production.[13]

Agricultural production in Western Australia, in combination with the use of ammonium-based fertilisers, has contributed to the acidification of soil in agricultural regions.

To remedy the effects of soil acidification, enhancers are added to soil to increase alkalinity and change the overall soil pH. These include agricultural lime and dolomite. Agricultural businesses in Western Australia continue to be the largest users of agricultural lime across Australia.[14]

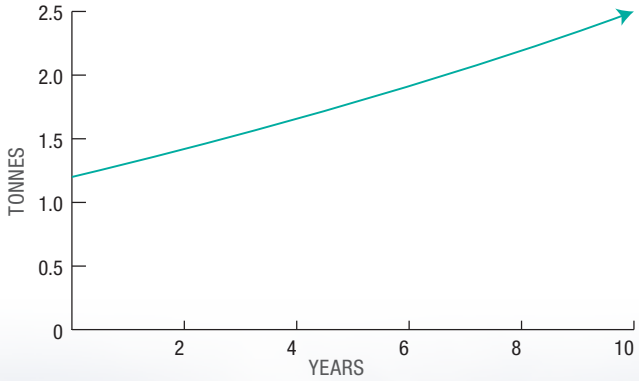


Figure 3: Demand for agricultural lime continues to increase in line with grain production

While coastal lime sand deposits north of Perth are the most effective at increasing soil pH, there are alternative sources of crushed lime in the South West and Great Southern. These are accessed less frequently as the crushed lime is less effective at increasing alkalinity. Other options to improve soil condition in the Project Area are used less frequently and in smaller volumes, so are not further explored in this Strategy.

Agricultural lime is often collected after grain is transported to a receival site, allowing efficient use of the heavy vehicle movement in both directions by 'backloading'.

Six agricultural lime routes were identified by Main Roads in 1996, with priority given to the route connecting Lancelin to Goomalling. This route was prioritised due to a substantial increase in heavy vehicle movements along local roads, and because Lancelin is the most significant lime sand source.

Agricultural lime is currently only transported by road, and shares many road networks with tourists.

Key point:

Current use of agricultural lime is over one million tonnes per annum, and is expected to increase to 2.5 million tonnes per annum over the next ten years.[15]

Key point:

Demand for agricultural lime is forecast to increase in response to efforts to increase grain yields. Identified routes for the transport of lime inland will see increased heavy vehicle movements. Transporters are seeking higher levels of heavy vehicle access to farm gate.

13 Peterson, 'Economic analysis of the impacts and management of sub-soil constraints', Grains Research and Development Corporation, Canberra, E 2015.
14 Australian Bureau of Statistics, Soil Enhancer Use, 30 June 2017.
15 Department of Primary Industries and Regional Development, https://www.agric.wa.gov.au/soil-acidity/soil-acidity-western-australia

Photo credit DPIRD

FERTILISER

Western Australia is the largest user of nitrogen-based fertilisers in the country.

Almost 600,000 tonnes is applied to an area of eight million hectares annually.[16]

Similar to agricultural lime, fertiliser is often 'backloaded' by transport operators who have just emptied their trailers of grain at receival sites. Fertiliser is collected throughout the year, though there may be increased distribution during harvest when operators are undertaking more trips.

Major fertiliser facilities have been established in Kwinana, and within or in close proximity to the four regional ports at Bunbury, Geraldton, Albany and Esperance. Additional stockpiles and depots are scattered throughout the Project Area.

The routes used for the transport of fertiliser are largely identical to those used to transport grain to port, and distribution centres are typically located close to major State roads. The towns of Goomalling, Merredin, Wagin and Tambellup all contain fertiliser depots. Grain receival sites in these towns utilise the rail network, however fertiliser is transported entirely by road.

Major fertiliser distribution facilities are in port precincts, which are subject to congestion and community scrutiny. Truck movements to distribution centres interact with general traffic. The efficient movement of fertiliser is dependent on unconstrained road access to port areas and relies solely on the road network, despite good rail connectivity to regional distribution centres.

Key point:

There is an increasing demand for backloading of fertiliser, in-line with increasing grain production. This is putting additional pressure on port precincts, where fertiliser is often stored, and on improved access from the Restricted Access Vehicle (RAV) network to farm gate. Whilst fertiliser depots exist in locations that have access to the grain rail network, rail is not utilised to transport fertiliser.

16 Australian Bureau of Statistics, Land Management and Farming in Australia, 2014-15

HAY

Each year, Western Australia produces around 600,000 tonnes of cereal hay, and exports around 400,000 tonnes.[17]

Unlike grain, which is almost exclusively exported, significant quantities of hay are retained on farm or traded in the domestic market.[18]

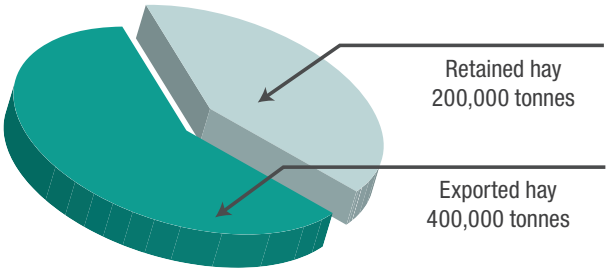


Figure 4: 600,000 tonnes of cereal hay is produced each year, of that 400,000 tonnes is exported each year.

Hay is produced throughout the Project Area and is either transported directly to stockfeed suppliers or to larger accumulation points for containerisation prior to export. The highest levels of production occur in the Wheatbelt area, with the Wagin, Moora, Kulin, Brookton and York-Beverley areas accounting for more than 300,000 tonnes per annum.[19]

There are two main accumulation clusters for hay export:

- the Bindoon-New Norcia area, which has good connectivity to the Great Northern Highway; and
- an arc spanning from Northam to Wagin. These sites have good connectivity not only to the Great Southern Highway, but to major east-west routes, including Great Eastern Highway, Williams-Kondinin Road (to Albany Highway) and Brookton Highway.

Containerised hay is transported from these sites by road, either direct to Fremantle Inner Harbour, or to Forrestfield where the containers are loaded onto rail through to the North Quay Rail Terminal.

Under the current arrangement with the operator of the North Quay Rail Terminal at the Fremantle Inner Harbour, a subsidy is paid per twenty-foot container using the rail service. Containerised hay exports experienced the highest growth of all Fremantle Port Authority's export commodities in 2017-18, and was Fremantle Port's principal export container commodity during this time.

Given there is currently no facility to transfer containerised hay from road to rail in regional areas, the opportunity to utilise the rail network is forgone.

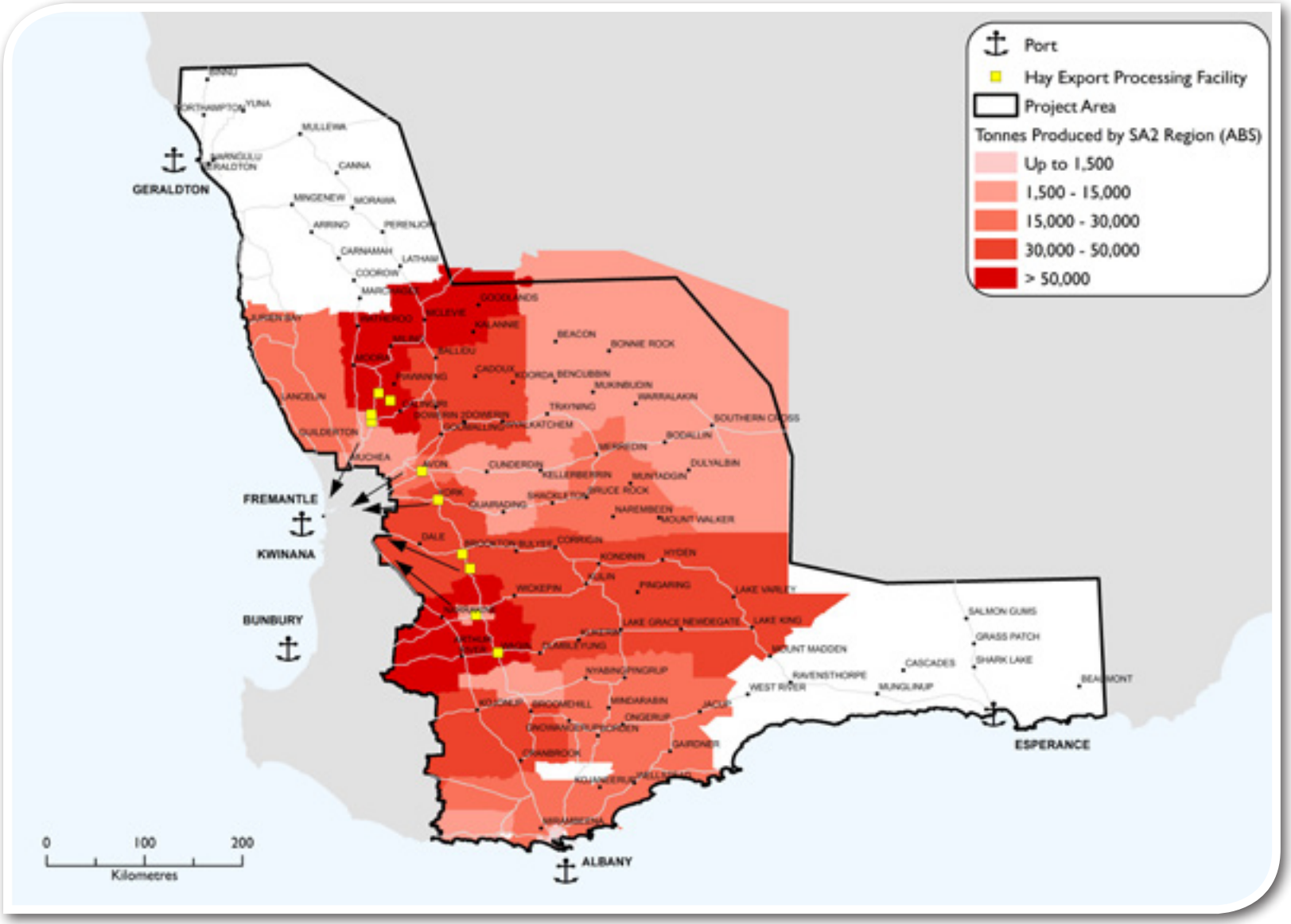
Hay is a lower density commodity, and is routinely packed into forty-foot containers. With the exception of Great Northern Highway and Forrest Highway, access routes into the Perth metropolitan area are limited to a 27.5 metre heavy vehicle combination (RAV 4). Since a RAV 4 combination can accommodate one forty-foot container and one twenty-foot container, but not two forty-foot containers, it is not an efficient combination for the movement of hay. To avoid the need to break up combinations outside the metro area, some transport operators utilise 30 metre Performance Based Standards (PBS) vehicles.

Key point:

Increasing volumes of containerised hay are being exported through Fremantle Inner Harbour. There is currently no regional rail loading facility for hay, resulting in containerised hay being transported into the Perth metropolitan area by road.

17 Department of Primary Industries and Regional Development, Western Australian Oat Industry, https://www.agric.wa.gov.au/hay-production/western-australian-oat-industry
18 The West Australian, Processing Gives WA an Edge in Oat Market, 20 February 2017.
19 Australian Bureau of Statistics, Value of Agricultural Commodities Produced Australia 2015-16, 2017.

PROJECT AREA - HAY PRODUCTION LEVELS



ROAD AND RAIL NETWORKS

Rail is the most efficient and productive means of transporting large volumes of homogeneous goods, such as grain, over large distances. Where active rail infrastructure exists, this has been prioritised as the first option for transporting grain to port.

The freight rail network covering the Project Area is primarily used for the transportation of grain from CBH receival points, through to the ports of Fremantle, Geraldton, Albany and Esperance for export. The network is owned by the State Government and leased to Arc Infrastructure until 2049.

Higher quality Tier 1 rail lines constructed with concrete and steel sleepers, heavy rail and metal ballast can accommodate axle loadings of up to 24 tonnes. The combination of timber sleepers, light weight rail and gravel ballast on the Tier 2 and Tier 3 networks limits axle loading to 16 tonnes. Improving axle loadings enables longer, heavier trains to operate, improving rail efficiency.

Future investment in the rail network will focus on improving efficiency of the existing lines, creating facilities that allow efficient access to the network and supporting road infrastructure that feeds into these strategic hubs.

Where there is no active rail infrastructure near freight sites of origin, more efficient means of transporting the freight on road will be considered.

A Restricted Access Vehicle (RAV) can access the road network in accordance with prescribed vehicle dimensions and allowable mass limits. These are mapped as RAV Networks, from a RAV 1 (maximum 20 metres in length or 50 tonne allowable mass limit) through to a RAV 10 (maximum 53.5 metres in length or 147.5 tonne allowable mass limit).[20]

On selected RAV networks, operators may seek higher mass limits through the Accredited Mass Management Scheme (AMMS), which is a concessional loading scheme allowing operators to carry heavier loads than on the standard RAV network, following the completion of an additional mass management module under the WA Heavy Vehicle Accreditation (WAHVA) scheme. The AMMS allows for three different concessional mass levels (AMMS 1, AMMS 2 and AMMS 3). Specific road networks have been identified by Main Roads for these heavier loads. AMMS is often adopted for denser commodities (such as grain), which are typically restricted by the prescribed mass limits on standard RAV networks before the vehicle dimension limits are reached.

The Performance Based Standards (PBS) scheme was developed to enable innovative heavy vehicles to be assessed on performance, rather than prescriptive limits. Under this scheme, vehicles may operate with greater access than their vehicle dimensions would otherwise allow due to considerably higher vehicle performance making its operations more efficient than equivalent RAV combinations on the network. PBS vehicles operate under permit, on specific routes, and are individually assessed.[21] PBS vehicles are specifically designed to achieve improved safety outcomes. These vehicles are certified and permitted as specific combination configurations, which cannot be altered without separate approval.

Consideration needs to be given to community expectations and the provision of sufficient overtaking opportunities on designated routes.

20 Main Roads Western Australia, Prime Mover Trailer; Roads and Conditions, https://www.mainroads.wa.gov.au/UsingRoads/HVS/Permits/notices/Pages/pmtc.aspx
21 Main Roads Western Australia, Performance Based Standards Benefits, August 2017.
22 Main Roads Western Australia, Performance Based Standards Benefits, August 2017.

Figure 5: One Tri-Drive 3 (truck with two trailers) would need make 128 trips to carry 9,311 tonnes, the amount that a proposed 120 wagon grain train can carry in one trip.

PART TWO: CHALLENGES AND RESPONSES

Ten key challenges have been identified in this Strategy. These require a clear response to provide the agricultural industry, impacted local governments, communities and infrastructure managers the certainty required for planning and investment.

The 10 key challenges identified are:

1. **Regional areas have a long history of road safety issues**
2. **Larger harvests are creating a greater freight task**
3. **Demand for heavy vehicle access is increasing**
4. **Road and rail infrastructure is deficient in some areas**
5. **Road access requirements are complex**
6. **Global competition for agricultural produce is increasing**
7. **Deficiencies exist in infrastructure funding systems**
8. **Limited data availability**
9. **Community and environmental impacts**
10. **Limited transport options exist for some supply chains.**

There are five key methods for improving the agricultural transport supply chain to respond to the 10 key challenges to achieve the Strategy objectives;

- **Improve rail** – infrastructure improvements, such as rail siding investments and/or rail line upgrades (subject to an assessment of local road interactions), will improve the capability of the rail network by enabling longer trains to carry heavier loads.
- **Establish intermodal terminals** – establishing new facilities to transfer freight from road to rail facilitates economies of scale for rail and removes heavy vehicles from roads within urban and regional centres.
- **Undertake targeted road network investment** – infrastructure improvements to both State and local roads will remove some risks associated with road safety, extend the life of the assets, and enable the consideration of larger vehicle combinations.
- **Increase heavy vehicle access** – facilitating larger and heavier vehicle combinations at a consistent standard from origin to destination, where the infrastructure can support them, will reduce the total number of heavy vehicle movements required for the freight task and move freight in a safer, more productive manner.
- **Regulatory efficiency** – non-infrastructure improvements to the transport supply chain can help to reduce costs, reduce approval times and improve transparency.

Photo credit: CBH Group

PART TWO: CHALLENGES AND RESPONSES

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Challenge	**Regional areas have a long history of road safety issues** Local roads are degrading due to age and wear. The increasing prevalence of heavy vehicles accelerates the degradation of road surfaces, presenting an indirect contribution to road safety risk. Interactions between increasing numbers of larger heavy vehicle combinations and passenger traffic can be better managed.	**Larger harvests are creating a greater freight task** The amount of grain harvested for each hectare of productive land continues to grow due to improvements in agronomic practices and grain resilience. Higher volumes require a greater transport task, both from farm gate to receival site and receival site to port.	**Demand for heavy vehicle access is increasing** Heavy vehicle combinations have increased substantially in number, dimensions and mass over the previous decade; however, the physical road network has not kept pace. Inconsistent heavy vehicle access creates inefficiencies in the farm to port supply chain. Ongoing changes in farm structure will result in larger farm operations needing to move greater volumes of freight quickly and efficiently.	**Road and rail infrastructure is deficient in some areas** Due to high levels of use and ageing infrastructure, many regional roads and bridges require maintenance or improvements which cannot be funded solely by local governments. Efficiency of the rail network is reduced in some locations due to speed and weather restrictions.
Response	**Targeted road network investment** Continuation of existing programs to improve road safety will reduce the risk of road crashes. **Rail improvements** Transferring freight from road to rail can reduce the number of interactions between different vehicle types and reduce wear and tear on local roads. Rail use can be incentivised through rail siding extensions and rail line upgrades. **Establish intermodal terminals** Provides additional opportunities for rail freight, reducing the number of trucks on the road network.	**Infrastructure improvements:** • Rail improvements • Establish intermodal terminals • Targeted road network investment • Increase heavy vehicle access	**Targeted road network investment** Determination of a Secondary Road Freight Network will identify opportunities and projects to improve access. Road upgrades will ensure that freight routes are built to accommodate modern heavy vehicles. **Increase heavy vehicle access** Subject to a thorough assessment of road geometry and condition, access for larger vehicles (especially Performance Based Standards) will be considered, improving freight efficiency and reducing the total number of vehicles on the road for a given freight task. Main Roads will continue to monitor pavement condition over time to ensure roads remain fit for purpose.	**Targeted road network investment** Prioritised investment in sections of the Secondary Road Freight Network, and the State road network, will improve the condition of freight routes generally. Road networks in future will be built to a higher standard, reflecting increased truck size. **Rail improvements** Ensuring an adequate standard for the rail freight network, unimpeded by operating conditions will improve efficiency and reliability of the network. Encouraging more freight onto rail will reduce ongoing maintenance requirements on the road network.

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Challenge	**Road access requirements are complex** A series of approval processes is required for different heavy vehicle combinations or agricultural vehicles. A transport operator may need to manage and comply with any of the following: Accreditation, licensing, permitting, Accredited Mass Management Scheme, Harvest Mass Management Scheme, Concessional Livestock Loading Scheme and pilot requirements for agricultural vehicles.	**Global competitiveness is increasing** Western Australian grain is sold into more than 30 countries around the world, however global competitors are increasing supply to these markets. Hay, live sheep and cattle exports, meat products and wool are sold to many international markets. Agricultural freight is time critical and export competitiveness relies on the ability to move large quantities of product quickly and with minimal cost.	**Deficiencies exist in infrastructure funding systems** Local governments spend a significant proportion of their budget on road maintenance, at times to accommodate freight tasks that neither originate nor terminate within their boundary. This model for funding and using roads is unsustainable. Many regional rail lines are utilised only for grain transport, and have marginal cost recovery.
Response	**Regulatory efficiency** The Western Australian Heavy Vehicle Accreditation Scheme is under review; however, other fees and charges, licensing, permitting, and access processes and objectives should be reviewed and opportunities to consolidate or amend investigated. Contributing to the rationalisation of the WA heavy vehicle regulatory environment, recommendations from the Western Australian Heavy Vehicle Accreditation Scheme review will be actioned, an online heavy vehicle portal will be developed and in-field technology for on-road enforcement will be introduced.	**All proposed responses below will improve productivity:** • Rail improvements • Intermodal terminals • Targeted road network investment • Increased heavy vehicle access • Regulatory efficiency	**Regulatory efficiency** Heavy Vehicle Road Reform (HVRR) will address road charging at a national level by providing a means of cost recovery and encouraging mode neutrality, this will take some time to take effect. Western Australia's participation in national initiatives such as HVRR and the National Freight and Supply Chain Strategy will help to identify strategic freight infrastructure and establish fair charging mechanisms. The review of the WA Rail Access Regime will also provide guidance for appropriate access pricing on the rail network. **Targeted road network investment** This will assist local governments to restore deteriorated assets, while improving funding arrangements for the future. The newly established Infrastructure WA will provide new avenues for defining strategic assets and advocating for Western Australia at the federal level. **Increased heavy vehicle access** Clarifying the Secondary Road Freight Network will allow nomination of freight routes for certain levels of RAV access, reducing impact on other local roads. **Establish intermodal terminals and improve rail** This will provide opportunities to transport new commodities on rail, allowing cost recovery to be spread over a greater pool of users.

PART TWO: CHALLENGES AND RESPONSES

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Challenge	**Limited data availability** There is limited data available on the movement of heavy vehicles between different components of the supply chain, except where this is captured by a marketer/operator. This makes it complex to identify agricultural freight routes and target investment accordingly. The number of vehicles in each RAV class operating in Western Australia is unknown and there is limited technical information available on agricultural vehicles.	**Community and environmental impacts** In populated areas, road and rail freight movements can impact on the community. These negative impacts may include congestion, noise, amenity, perceptions of poor safety or exhaust emissions. Building safer roads can impact high-value native vegetation. There are growing calls from the community to increase the amount of freight on rail.	**Limited transport options exist for some supply chains** The regional rail network has been built around the grain supply chain, and as such, grain is the only commodity transported on most lines. Containerised hay can only be loaded onto rail in Forrestfield as there are no notable container facilities outside the metropolitan area and no dedicated container loading berths in regional ports.
Response	**Regulatory efficiency** Improving licensing, registration and permit processes to collect more useful data, and establishing systems to aggregate and analyse it will provide the State Government the information required to more effectively target investment and reform. This initiative will focus on using improved telecommunications and other technology to improve decision making while reducing administrative burden.	**Regulatory efficiency** Improved planning and regulatory processes, including application of the newly revised State Planning Policy 5.4 and the clearing provisions under the *Environmental Protection Act 1986* will ensure community and environmental impacts of freight movement are quantified and minimised. State and local governments can partner with industry to work together and minimise the disruption associated with freight traffic and address community concerns. **Establish intermodal terminals and improve rail** Improving the quality of the rail network and availability of loading infrastructure will incentivise the use of rail for a variety of supply chains.	**Rail improvements** Consider opportunities to diversify the volumes and number of commodities that can be transported by rail (i.e. fertiliser or hay), and make necessary accommodations. **Intermodal terminals** Providing regional container loading facilities can open up new rail supply chains and reduce heavy vehicle movements in populated areas.

PART THREE: SCENARIO ANALYSIS

Whilst the projected trends identified in Part One have been incorporated into the challenges and responses, possible alternate futures have also been considered. These alternate futures change the projected trends, by severely impacting a particular supply chain or use of a particular infrastructure. The Department of Transport will continue to monitor these scenarios in the coming years and provide recommendations as required.

No.	Alternate future	Possible impacts	Alternate response
1	Federal Government introduces a ban on live exports	• Increased processing of sheep and cattle at abattoirs • Port-based live export facilities no longer required • Increase in refrigerated containerised freight (frozen) or cold-store air freight (chilled) • Reduction in the livestock industry	• Investigate common user cold store facilities at Perth Airport • Consider business cases to assist with development of air freight from regional airports • Consider additional interest-free loans for expansions or developments of additional abattoirs • Ensure adequate RAV access and transport infrastructure to and from abattoirs
2	Inconsistent heavy vehicle charging applied by multiple infrastructure owners	• Use of inefficient heavy vehicle combinations where access is permitted • Increased number of heavy vehicle movements • Greater environmental impacts • Reduced investment by freight industry clients	• Realign registration, accreditation and permit fees • Review funding mechanisms for local roads • Pursue a heavy vehicle charging framework for State and local roads
3	Climate change accelerates	• Decreased winter rainfall • Minor increase in average temperature • Decreased frost risk days • Harsher fire-weather climate • Increased interstate demand for WA grain • More erratic weather events	• Increase freight network resilience by upgrading floodways and ensuring the rail network is of all-weather standard

No.	Alternate future	Possible impacts	Alternate response
4	Increased demand for containerised goods	• Increased demand for container facilities (intermodal terminals, empty container parks, port loading facilities)	• Develop regional intermodal terminals • Improve road access to intermodal terminals • Ensure capacity of road and rail to Fremantle Inner Harbour • Investigate and develop container facilities at selected regional ports
5	Early uptake of autonomous heavy vehicles and locomotives	• Introduction of some autonomous heavy vehicles and locomotives to the network • Improved supply chain efficiency	• Assess capability of telecommunications infrastructure • Review permitting/licensing processes

Photo credit: ARC Infrastructure

PART FOUR: IMPLEMENTATION AND NEXT STEPS

A combination of region-specific infrastructure upgrades, along with policy and regulatory measures have been proposed in response to the challenges detailed in Part Two. These are discussed in further detail in the Appendices.

The project packages identified have been prioritised based on the identified high-level benefits and provide a foundation for the development of future business cases. The Revitalising Agricultural Region Freight Strategy projects are currently considered “emerging priorities”, and a Stage 1 submission to Infrastructure Australia will be prepared by the State Government post 2020, outlining the case for investment in State road, rail and intermodal initiatives. The State Government will work with stakeholders, including the Wheatbelt Secondary Roads Group, to ensure that applications for Federal funding are coordinated. Transport portfolio agencies will also work with the newly established Infrastructure WA to ensure key freight transport projects are embedded in the State's long-term infrastructure strategy.

The State Government may choose to further investigate projects concerning State assets, including conducting benefit-cost analysis. In the planning of infrastructure upgrades, a triple bottom line approach will be undertaken to ensure that environmental and social principles are given due consideration and relevant impacts minimised.

It is anticipated that the private sector will lead the development of business cases where private or leased infrastructure is concerned. Any business cases seeking a State Government funding contribution will be considered for funding on their merits, subject to alignment with State Government priorities.

While infrastructure project packages are being progressed over time, non-infrastructure projects and those that are non-region specific will be further developed, and discussed with key agencies and industry partners as relevant. Further consultation will be undertaken to ensure that strategic initiatives identified in this Strategy are translated into supporting policies that apply at an operational level.

ROAD
TRAIN

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