Horticulture Innovation Australia

Final Report

Benchmarking international road transport regulations

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HGH Consultants

Project Number: VG13107

VG13107

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Summary

This study was designed to identify areas in which the transport cost of vegetables in Australia could be lowered through the introduction of improved regulation, facilities, and equipment or work practices. The study consisted of three components namely:

1. A benchmarking literature review of the national road transport regulatory regimes in New Zealand, Canada and the United States, Germany, United Kingdom.
2. Detailed interviews and discussions with transport operators and Industry Associations in the selected countries and in Australia.
3. Case studies to quantify the gains from selected key potential cost saving areas identified.

The Review Team investigations found no “silver bullet” solution available to the Australian vegetable industry via the adoption of overseas vehicle regulatory settings.

However, scope exists to improve productivity in the transport of vegetables within the existing regulatory framework within Australia. The areas identified where reform could quickly be pursued schemes included:

- A greater use of higher performance trucks such as B-Doubles, B Triples, Super B Doubles and A Doubles and/or improved use and design of existing trucks.
- Pursuing greater access to higher mass on vehicles transporting vegetables either through:
    - expansion of the higher mass limits network for eligible vehicles; and/or
    - improving access for high performance trucks at the start and end of journeys (so called “first and last mile” access issues); and/or
    - the introduction of incremental pricing for vehicles with heavy loads.
- Adopting more flexible fatigue management regimes for truck drivers involved in vegetable transport.
- Development of a “vegetables road network” that would combine the top five to ten key vegetable road transport networks. High Performance vehicles such as an A Double should be able to operate on this network.

Broader and more complex reform areas identified that could be considered by the vegetable and horticulture sector collectively included:

- Addressing the unnecessarily high costs of road transport in Australia imposed through broader policy objectives such as Australian Design Rule requirements, higher fuel and registration fees, higher wages and more stringent occupational health and safety regulations.
- Reducing the duplication of quality assurance requirements across organisations receiving vegetables.
- Highlighting the benefits of having flexible axle mass limits within existing gross vehicle mass (GVM) (moving weight across axle groups can greatly assist in optimising loading.
- Pursuing the opportunity to provide GVM allowances to remove conservative loading practices which are aimed at avoiding sanctions rather than optimising efficiency.

- Specific grower or vegetable sector initiatives that could lower transport costs for example:
    - Assessing key supply chain improvement options covered by this Report and other HIA projects (such as VG13084).
    - Improving understanding across the vegetable sector of road transport policy, legislation and regulation to assist in taking advantage of current productivity schemes.

Four (4) case studies were undertaken to assist in the creation of a body of empirical evidence that could support the need for regulatory reform in the road transport of vegetables. The case study results suggest that the identified improvements could significantly lower the cost of transporting vegetables. For example:

- Introduction of high performance vehicles to transport vegetables (case study 1); **approximately 20 per cent productivity gain.**

- Access to increased mass via incremental pricing for heavier loads of vegetables (case study 2) – **approximately 10 per cent productivity gain**.

- Greater access to advanced fatigue management regime on trucks transporting vegetables (case study 3) – **approximately 5 per cent productivity gain compared to operations under standard hours.**

- Removal of duplication in quality assurance schemes (case study 6) – **small productivity gain (less than 1 per cent).**

In overview, the study found that productivity initiatives have been introduced in Australia over the last 20 years which were the equal or better than those in place in many of the benchmark countries and that these offered potential benefits to the vegetable sector. In particular major transport cost savings to the vegetable sector have been generated from the wide spread use of B-Doubles, greater use of flexible working hours to accommodate the unique challenges faced in Australia and access to higher vehicle mass.

Whilst these gains are commendable, it is clear from the results generated by this study that there is still significant scope to further reduce the cost of transporting vegetables through more intensive use of existing productivity enhancing schemes available to road transport operators in Australia.

Therefore, the future success for the vegetable industry in positively influencing road transport regulation outcomes in Australia which in turn has benefits for growers, commences with the premise that a greater investment in advocacy and consultation is essential to “unlock” benefits as has been achieved through the introduction of productivity enhancing road transport schemes in the grains and livestock sectors.

The investment and engagement strategy needs to focus on developing reliable and consistent interactions with all parties involved including National, State and Local Government and Transport Regulators to raise awareness of vegetable and most probably Horticulture industry transport unique needs and to instigate programs to address these in a measurable way that reduces costs.

Keywords

Truck weight and trailer length

Truck height and width

Average weight per axle

Driving/working hours

Safety Outcomes

Road transport regulations

Cost of road transport business operation

Accreditation and quality control regimes

Choice of transport modes

‘Silver Bullet’

Productivity gains

B-Double networks

Existing regulatory schemes

Longer trailers

Australia has advantages

Positively influencing road transport regulation

Advocacy and consultation

Credible and consistent interactions

National, State and Local Government Regulators

Introduction

Constraints imposed by rules and legislation governing the road transport industry have the potential to severely impact the efficiency of the horticulture sector supply chain and thereby reduce the international competiveness of the vegetable industry in Australia. By developing a better understanding of Australian road transport laws that impact the sector and benchmarking these against those in similar developed economies (New Zealand, Canada and the United States, Germany, United Kingdom), the goal of this project was to identify options and strategies to address industry concerns in regard to how these laws inhibit the proper transportation of perishables.

This report includes the results of the benchmarking literature review and subsequent discussions with transport operators and Industry Associations in the selected countries and Australia covering regulation in the following areas:

1. Truck mass and dimensions
2. Performance Based Standards
3. Driving hours and fatigue management
4. Chain of Responsibility laws – the supply chain responsibilities
5. Penalties for non-compliance
6. Existing concession for horticulture and other "time sensitive" freight sectors
7. Safety Outcomes

The Report also includes the results of the four (out of six possible) case studies undertaken to quantify the gains from selected key potential cost saving areas identified in the benchmarking process. These include:

Case Study 1 Introduction of high performance vehicles to transport vegetables

Case Study 2 Access to increased mass via incremental pricing for heavier loads of vegetables

Case Study 3 Access to advanced fatigue management regime on trucks transporting vegetables

Case Study 6 Duplication of quality assurance requirements across organisation's receiving vegetables

The diversity of the Australian vegetable industry, consisting of approximately 100 commodities with a combined gross value of production (GVP) of about $3 billion (2011-12), presents a range of unique transport related opportunities and challenges for the industry.

Specifically, the vegetable industry made the observation that road transport issues and legislation are affecting the industry, in particular:

- Legislation surrounding maximum driving times and rest breaks are inhibiting the proper transportation of perishables.

- Rules and legislation are becoming prohibitive and the industry has had little say in the formation of rules that affect them.
- It was noted that there may be scope for legislation that is unreasonably affecting transporters of perishable loads to be amended.

Discussions in July 2014 with HIA, AusVeg and a Growers representative added further detail to the issues outlined above including:

- Transport is a large component of growers' costs and that growers are predominantly price takers.
- There is concern amongst growers that road freight "red tape" is increasingly imposing more rigorous conditions on movement of produce into time sensitive markets.
- There are significant commercial penalties incurred if produce is not delivered in accordance with market timeslots.
- Costs of production are increasing as the extent of road freight regulation increases on transporters. There is a desire to raise regulatory issues with governments where increased regulation imposes additional cost for little benefit.
- This process will be assisted by having international examples of more favourable regulations and productivity schemes on the proviso that associated safety outcomes are considered acceptable.
- Weight is not generally an issue, most loading issues are volume related (700 kilos a pallet for beans compared to carrots which are 1.2t. a pallet).
- A concern that enforcement levels are increasing without flexibility and that this is getting worse and that penalties can be very high.

Methodology

The Review Team has taken a broad approach to the project in order to provide Horticulture Australia(HAL) and vegetable growers with a realistic overview of regulatory options available to improve road transport efficiency in that sector. This approach included:

- A benchmarking literature review to identify any beneficial road transport regulations used in the selected countries that could be transferred into the Australian context. Countries included in the benchmarking were New Zealand, Canada and the United States, Germany, United Kingdom.

- Detailed discussions with transport operators and Industry Associations in the selected countries to ground test the benchmarking findings and to discuss the reality view of how actually road transport operates there and the predominant vehicle used to undertake the vegetable transport task.

- Detailed discussions with local transport operators, who undertake work in the Australian vegetable growing sector, to identify current operating practices and also possible initiatives the sector could pursue to improve transport outcomes. This includes the development of specific Case Studies to model the benefits from the use of more productive and safer trucks.

Outputs

The following reports and case studies were produced as part of this study.

Report 1	**Benchmarking international road transport regulations** This report focusses on a benchmarking literature review of the road transport regulatory regimes at a national level in the economies of New Zealand, Canada and the United States, Germany, United Kingdom as they relate to the road transport of fresh vegetables.
Report 2	**Advocacy and Consultation** Report Two (2) in HIA Project VG13107 outlines options and possible strategies to give effect to the findings and recommendations included in Report One (1) to improve the productivity, safety and efficiency of road transport in the horticulture sector in the short, medium and long term.
Case Study 1	Introduction of high performance vehicles to transport vegetables
Case Study 2	Access to increased mass via incremental pricing for heavier loads of vegetables
Case Study 3	Greater access to advanced fatigue management regime on trucks transporting vegetables
Case Study 6	Removal of duplication of quality assurance requirements across organisation's receiving vegetables

Outcomes

Report One (1) in HIA Project VG13107 contains ***SIX*** key findings and recommendations from the benchmarking literature review that show:

1. The cost of road transport business operation in Australia appears higher compared to the US and Canada, for example in areas such as equipment manufacture. Some of this is perceived to be due to the higher costs imposed through Australian Design Rule requirements, higher fuel and registration fees, higher wages and more stringent occupational health and safety regulations.

2. There are multiple accreditation and quality control regimes in place in Australia for the road transport industry. These often differ between produce clients (major supermarket chains), markets and governments which in turn is increasing the cost of road transport. These requirements don't appear to be in place to such a large degree in the selected countries.

3. Australian industries have less choice of transport modes compared to many of the selected countries due to the lack of alternative options to road transport. Australia uses three times more road freight, measured in tonne kilometres, per dollar of GDP than the average OECD nation. This is due to a combination of our geographic size and population density, leading to the need for manufacturing and primary producers to use significantly greater amounts of road freight than their global competitors.

4. While there is no 'silver bullet' that could produce very immediate productivity gains, there is substantial scope for vegetable growers to pursue productivity gains from improvements to the Australian road transport regulatory framework particularly in relation to

    - Increasing the focus on improving key B-Double networks that service vegetable growing areas including access in first and last mile operations to match improving federal and state road access. This will allow regional industries like the vegetable growing sector (which have less opportunity to use such trucks from source) to remove a cost from their operations by removing the double handing caused by perceived local problems with granting B-Double access.

    - Greater use of existing regulatory schemes in Australia which in the main appear to compare favourably with the selected countries (where schemes exist in those countries), noting that anecdotal evidence suggests these schemes are not as well patronised as they could be due to excessively high cost and perceived unnecessarily high regulatory and compliance and risk management requirements.

    - These schemes include:

    - Higher mass limits (HML).
    - Improved truck length and mass through the Performance Based Standards (PBS) process.
    - More flexible driving hours through the Advanced Fatigue Management (AFM) Scheme.

- Pursuing the use of longer trailers than those currently allowed general access in Australia as is the case in the US and Canada may be a productive option. In the vegetable growing sector, trucks are usually volume rather than weight constrained, for example:

    - 53ft (16.154m) two axle (or tandem) trailers working at 39.916t. The reduction of one axle set compared to the Australian equivalent truck reduces equipment costs, improves fuel efficiency and reduces maintenance costs.
    - 53ft three axle (or tridem) trailers working at 48.987t which provides approximately 10% productivity increase to a similar truck in Australia.

- Obtaining higher and more flexible individual axle weights to assist with load configuration in what can be a difficult loading environment.

- Restricted access combinations operating in Canada (B-trains) that have a higher total mass than Australian equivalents. Note: Further research is required to understand the extent of the restricted access that would appear to be more extensive than for B-Doubles in Australia.

5. Australia has advantages over many of the selected countries in specific areas which to some degree reduce some of the disadvantages outlined above including:

    - The use of the B-Double for approximately 70% of long distance road transport provides Australia with an unmatched productivity advantage compared to the five and six axle articulated trucks (8 axle rigid in NZ) in the selected countries. While the B-Double is a restricted access truck, it can operate on the majority of the national and state road network. There continues to be many last mile access restraints that need to be resolved with local road owners.

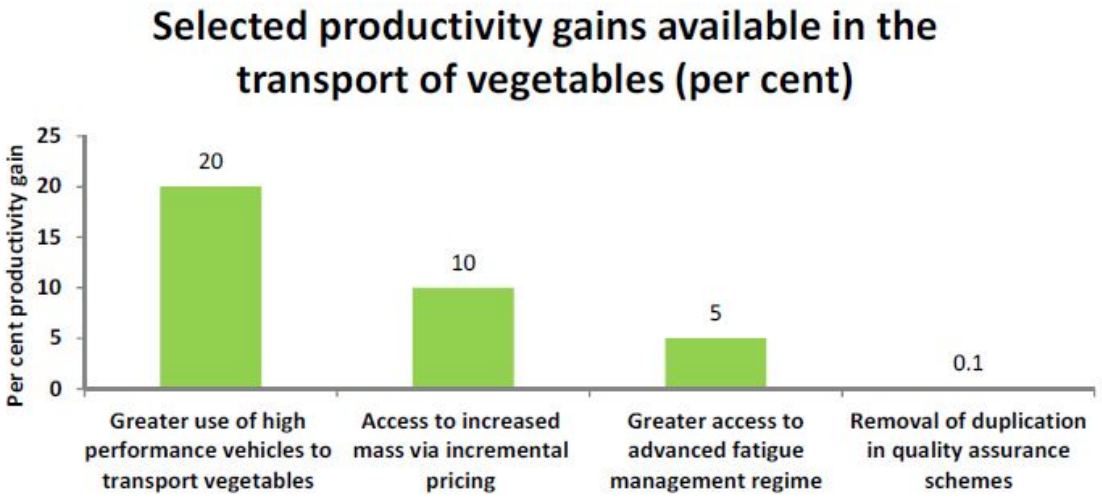
    - Driving/working hour's regulations that recognise the vast distance challenges involved in moving freight in Australia and have advantages compared to the selected countries.

6. Australia has broadly similar safety outcomes compared to the majority of the selected countries which means there should be no impediment to pursuing greater productivity outcomes. This is further outlined in Section 11. Most of the selected countries indicate a continuous decline in road fatalities involving trucks over the last 20 years despite an increasing freight task.

It is equally clear that scope exists to pursue existing and possible new regulatory initiatives that could benefit the vegetable sector based on identifying and utilising the unique characteristics involved. This includes taking advantage of the existing regulatory framework in Australia including specific productivity schemes already in place.

The potential productivity gains from the key findings and recommendations are supported

by Case Studies 1 – 4 with the possible productivity gains outlined in the table below.



Report Two (2) in HIA Project VG13107 outlines options and possible strategies to give effect to the findings and recommendations included in Report One (1) to improve the productivity, safety and efficiency of road transport in the horticulture sector in the short, medium and long term.

From greater professional engagement in advocacy and consultation (Point 1 below) comes the potential for growing influence in the subsequent areas:

1. Advocacy and Consultation
2. Policy, Legislation and Regulation
3. Productivity Schemes and Improvements
4. Education and Awareness

The major recommendations of each category are briefly outlined below and are further informed by the Case Studies.

1. Advocacy and Consultation

a. Assess current advocacy approaches used by the vegetable sector to influence road transport policy, legislation and regulation in Australia.
b. Examine approaches taken by other regional sectors (livestock and grain for example) to obtain concessional road transport schemes that benefit growers;
c. Develop an Advocacy and Consultation Strategy for use with relevant Federal and State Ministers, Senior Officials and Local Government (in key regional and metropolitan areas) – aligned to key decision making forums of government.
d. Implement the agreed Advocacy and Consultation Strategy with those Government Agencies that develop policy, legislation and regulation in areas that would most benefit the vegetable sector.
e. Engage with the National Heavy Vehicle Regulator including through the proposed Agriculture Industry Advisory Group (IAG) to profile unique vegetable sector challenges.

2. Policy, Legislation and Regulation

a. Develop a prioritised suite of beneficial changes to existing road transport policy, legislation and regulation that would assist the vegetable sector – with estimated productivity, safety and efficiency benefits (as exampled through the Case Studies).
b. Identify and undertake further Case Studies and Economic Modelling as appropriate that will build on work done to date and support future changes sought.
c. Consider where new policy, legislation or regulation could be introduced to benefit vegetable growers.

3. Productivity Schemes and Improvements

a. Assess key supply chain improvements that can be pursued drawing on these Reports and relevant work of other HIA projects such as VG13084.
b. Identify potential productivity schemes for (but not limited to) driving hours and vehicles that will improve vegetable transport productivity, efficiency and safety.
c. Develop technically competent templates to form the basis of specialist productivity scheme/s for the road transport of vegetable products at critical periods. This should include a vegetable sector AFM template development initiative.
d. Identify key vehicle access constraints on key vegetable transport networks. This will include infrastructure issues where readily identified.
e. Undertake further work in consultation with relevant State and Local Governments to trial some test projects that deliver perceived benefits.

4. Education and Awareness

a. Assess current understanding in Vegetable sector of road transport policy, legislation and regulation in Australia and how it impacts the sector.
b. Undertake an Education and Awareness Program to increase the understanding of growers thereby facilitating future support and understanding of beneficial changes to policy, legislation, regulation and productivity opportunities in road transport.

Evaluation and Discussion

The Review Team identified anecdotal evidence that suggests supply chain parties such as shippers/producers across the world have benefited for the last 40 years from road transport productivity gains. In Australia this is best exhibited with the change from the six axle articulated truck to the B-Double of today.

Trucks including higher capacity trucks, are capable of achieving higher productivity with reduced infrastructure wear, improved environmental and safety outcomes that serve the objectives of the broad community.

However, the Australian experience shared to varying degrees with the selected countries is that Governments are very much influenced by the public at large which does not view trucks favourably. The public especially does not like the concept of larger or heavier trucks on the road network with other road users despite the fact these higher productivity trucks are safer and more efficient (i.e. can reduce the overall number of trucks on the road). This forms an important part of the political considerations involved with changes to regulation.

This is further complicated by the destinations for much vegetable produce being in urban areas with increasing congestion, environmental issues and an ever decreasing awareness of where produce actually comes from i.e. no natural empathy for the delivery task.

Where productivity improvements are permitted, it often comes with far greater regulatory compliance and risk management requirements (e.g. PBS, AFM outlined in Report 1, Section 5).

The Review Team also believes gains can be made via non-road transport supply chain efficiencies to complement existing and also where possible, pursue additional road transport gains.

In 2014, Australia introduced a National Heavy Vehicle Regulator (NHVR) in an attempt to better coordinate the request and granting of access to the national, state and local road network thereby seeking avoiding the need to negotiate such access with multiple jurisdictions. The NHVR will also administer the productivity schemes mentioned above and seek to achieve greater consistency in road transport regulation overall.

Other key “observations” that the Review Team has identified that may be considered in the context of seeking better road transport outcomes for the Australian vegetable industry are outlined below:

- Supply chain reform may offer additional opportunities for efficiency reform in what is a difficult sector to “do road transport” given:
    - Small producers and small volumes per farm meaning consolidation (double handling) required with high productivity vehicles unable to “load and deliver”.

- Difficult first and last mile access issues for high productivity vehicles where they could be used from farm to market.

- Alleged inefficient market practices that lead to double/triple handling of produce.

- Retailers practices of mixing loads, branding boxes and not holding stock in store all cause inefficiencies.

- Based on anecdotal reports, producers appear to be under extreme pressure on a number of fronts:

    - Retail Chains are said to have ever increasing control over market with practices such as alleged over-ordering occurring.

    - A lot of consolidation over last 10-15 years, with smaller producers unable to deliver required efficiencies in order to remain competitive.

    - Some producers are dealing directly with chains and no longer using agents.

    - Agents are not seen to be adding value in many instances.

    - Traditional market selling is becoming like cross docking, with the markets also selling to chains.

    - Previous “spike” revenues (peak pricing) being evened out by chains i.e. income peaks that producers used to receive when product shortages occurred are being reduced and removed.

    - Wages and transport are high cost elements that producers feel they may have some ability to influence.

- Based on anecdotal reports from transporters, getting produce “road transport ready” is sometimes problematic:

    - Late picking impacts the ability of transporters to “hit” markets by curfews. Producer knowledge of the transport task, particularly involving long haul, associated regulations and requirements is said to be quite variable.

    - Temperature control at pick up is sometimes lacking, meaning there is potential for not achieving chain stores temperature range and loads being rejected.

    - Rejected loads are harder to on-sell as chain stores are now branding packaging so hard to on-sell to markets.

    - Growers don’t necessarily work well together in pursuing their common interests for example, transport operators are sometimes unable to pick up the same product from numerous producers as they would be able to identify where competitors are sending product (through labelling) i.e. perceived commercial sensitivity.

- Chain store inability/unwillingness to take a full load of one product (except for example bananas) means consolidation and mixed loads increase transport costs and complexity of temperature control in turn increasing chance of rejection.

- There are seasonal complexities experienced by transporters including periods of very high demand followed by reduced demand that impacts on the commercial viability of having specialised equipment.

Recommendations

Pursue greater professional engagement in advocacy and consultation (Point 1 below) and the subsequent areas:

1. Advocacy and Consultation
2. Policy, Legislation and Regulation
3. Productivity Schemes and Improvements
4. Education and Awareness

The major recommendations of each category are briefly outlined below and are further informed by the Case Studies.

1. Advocacy and Consultation

a. Assess current advocacy approaches used by the vegetable sector to influence road transport policy, legislation and regulation in Australia.
b. Examine approaches taken by other regional sectors (livestock and grain for example) to obtain concessional road transport schemes that benefit growers;
c. Develop an Advocacy and Consultation Strategy for use with relevant Federal and State Ministers, Senior Officials and Local Government (in key regional and metropolitan areas) – aligned to key decision making forums of government.
d. Implement the agreed Advocacy and Consultation Strategy with those Government Agencies that develop policy, legislation and regulation in areas that would most benefit the vegetable sector;
e. Engage with the National Heavy Vehicle Regulator including through the proposed Agriculture Industry Advisory Group (IAG) to profile unique vegetable sector challenges.

2. Policy, Legislation and Regulation

a. Develop a prioritised suite of beneficial changes to existing road transport policy, legislation and regulation that would assist the vegetable sector – with estimated productivity, safety and efficiency benefits (as exampled through the Case Studies). This would include initiatives such as:
    - Improving B-Double access and use of higher mass limits.
    - Pursuing route assessment and then trials of higher productivity vehicles for example, A-Doubles into the Brisbane and Sydney markets.
b. Identify and undertake further Case Studies and Economic Modelling as appropriate that will build on work done to date and support future changes sought with possible projects including:
    - Optimum trailer length for vegetable transport.
    - more flexible mass allowance for loads with variable specific gravity (to minimise under loading).
c. Consider where new policy, legislation or regulation could be introduced to benefit vegetable growers.

4. Productivity Schemes and Improvements

a. Assess key supply chain improvements that can be pursued drawing on these Reports and relevant work of other HIA projects such as VG13084.
b. Identify potential productivity schemes for (but not limited to) driving hours and vehicles that will improve vegetable transport productivity, efficiency and safety.
c. Develop technically competent templates to form the basis of specialist productivity scheme/s for the road transport of vegetable products at critical periods. This should include a vegetable sector AFM template development initiative.
d. Identify vehicle access constraints on key vegetable transport networks with a view to clearly articulating the networks and constraints that need to be removed to improve efficiency. This will include infrastructure issues where readily identified.
e. Undertake further work in consultation with relevant State and Local Governments to trial some test projects that deliver perceived benefits.

4. Education and Awareness

a. Assess current understanding in Vegetable sector of road transport policy, legislation and regulation in Australia and how it impacts the sector.
b. Undertake an Education and Awareness Program to increase the understanding of growers thereby facilitating future support and understanding of beneficial changes to policy, legislation, regulation and productivity opportunities in road transport.

Scientific Refereed Publications

N/A

Intellectual Property/Commercialisation

No commercial IP generated.

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- www.tc.gc.ca

Australia
- www.nhvr.gov.au/resources
- www.nhvr.gov.au/law-policies/penalties-and-infringements

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Australia

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Kurt Hermann	Design Team Coordinator, AusVeg
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Canada/USA

Dan Einwechter	CEO and Chairman, Challenger Transportation
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Appendices

Report 1	**Benchmarking international road transport regulations** This report focuses on a benchmarking literature review of the road transport regulatory regimes at a national level in New Zealand, Canada and the United States, Germany, United Kingdom as they relate to the road transport of fresh vegetables.
Report 2	**Advocacy and Consultation** Report Two (2) outlines options and possible strategies to give effect to the findings and recommendations included in Report One (1) to improve the productivity, safety and efficiency of road transport in the horticulture sector in the short, medium and long term.
Case Study 1	Introduction of high performance vehicles to transport vegetables
Case Study 2	Access to increased mass via incremental pricing for heavier loads of vegetables
Case Study 3	Access to advanced fatigue management regime on trucks transporting vegetables
Case Study 4	Duplication of quality assurance requirements across organisations receiving vegetables

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Benchmarking international road transport regulations

Benchmarking Literature Review

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1. SCOPE OF BENCHMARKING LITERATURE REVIEW

This report focusses on a benchmarking literature review of the road transport regulatory regimes at a national level in the UK, Germany, New Zealand (NZ), Canada and the United States of America (US) as they relate to the road transport of fresh vegetables.

The literature review is presented in a summarised form for ease of reference and examples of supporting research with additional detail is appended to the report.

The literature review generally covers regulation in the following areas:

1. Truck mass and dimensions
2. Performance Based Standards
3. Driving hours and fatigue management
4. Chain of Responsibility laws – the supply chain responsibilities
5. Penalties for non-compliance
6. Existing concession for horticulture and other “time sensitive” freight sectors
7. Safety Outcomes

The report and website references are detailed in Appendix A.

2. EXECUTIVE SUMMARY – MAIN FINDINGS

The benchmarking task

The benchmarking literature review was conducted at a national level for the selected countries. There may be localised variations to truck mass and dimensions in the selected countries that have not been identified given that regulatory control of the overall road network often involves other levels of government. It is noted that discussions with a transport operator and Industry Association in Canada did not identify significant levels of localised variations.

The intent of the benchmarking review was to compare regulation of trucking operations in the selected countries with Australia in areas such as:

- ✓ Truck weight and trailer length
- ✓ Truck height and width
- ✓ Average weight per axle
- ✓ Driving/working hours
- ✓ Safety Outcomes

The approach

The Review Team has taken a broader approach that involves more than benchmarking to the project in order to provide Horticulture Australia(HAL) and vegetable growers with a realistic overview of regulatory options available to improve road transport efficiency in that sector. This approach included:

- The benchmarking literature review to identify any beneficial road transport regulations used in the selected countries that could be transferred into the Australian context.
- Detailed discussions with transport operators and Industry Associations in the selected countries to ground test the benchmarking findings and to discuss the reality view of how actually road transport operates there and the predominant vehicle used to undertake the vegetable transport task. These are outlined in Appendix C.
- Detailed discussions with local transport operators who undertake work in the Australian vegetable growing sector to identify current operating practices and also possible initiatives the sector could pursue to improve outcomes. This includes the development of specific Case Studies to model the benefits from the use of more productive and safer trucks. These are outlined in Appendix B.

Key findings

The ***SIX*** key findings from this broader approach show that:

1. The cost of road transport business operation in Australia appears higher compared to the US and Canada, for example in areas such as equipment manufacture. Some of this is perceived to be due to the higher costs imposed through Australian Design Rule requirements, higher fuel and registration fees, higher wages and more stringent occupational health and safety regulations.

2. There are multiple accreditation and quality control regimes in place in Australia for the road transport industry. These often differ between produce clients (major supermarket chains), markets and governments which in turn is increasing the cost of road transport. These requirements don't appear to be in place to such a large degree in the selected countries.

3. Australian industries have less choice of transport modes compared to many of the selected countries due to the lack of alternative options to road transport. Australia uses three times more road freight, measured in tonne kilometres, per dollar of GDP than the average OECD nation. This is due to a combination of our geographic size and population density, leading to the need for manufacturing and primary producers to use significantly greater amounts of road freight than their global competitors.

4. While there is no 'silver bullet' that could produce very immediate productivity gains, there is substantial scope for vegetable growers to pursue productivity gains from improvements to the Australian road transport regulatory framework particularly in relation to:

    - Increasing the focus on improving key B-Double networks that service vegetable growing areas including access in first and last mile operations to match improving federal and state road access. This will allow regional industries like the vegetable growing sector (which have less opportunity to use such trucks from source) to remove a cost from their operations by removing the double handing caused by perceived local problems with granting B-Double access.

    - Greater use of existing regulatory schemes in Australia which in the main appear to compare favourably with the selected countries (where schemes exist in those countries), noting that anecdotal evidence suggests these schemes are not as well patronised as they could be due to excessively high cost and perceived unnecessarily high regulatory and compliance and risk management requirements. These schemes include:

        - Higher mass limits (HML).
        - Improved truck length and mass through the Performance Based Standards (PBS) process.
        - More flexible driving hours through the Advanced Fatigue Management (AFM) Scheme.

    - Pursuing the use of longer trailers than those currently allowed general access in Australia as is the case in the US and Canada may be a productive option. In the vegetable growing sector, trucks are usually volume rather than weight constrained, for example:

        - 53ft (16.154m) two axle (or tandem) trailers working at 39.916t. The reduction of one axle set compared to the Australian equivalent truck reduces equipment costs, improves fuel efficiency and reduces maintenance costs.
        - 53ft three axle (or tridem) trailers working at 48.987t which provides approximately 10% productivity increase to a similar truck in Australia.

- Obtaining higher and more flexible individual axle weights to assist with load configuration in what can be a difficult loading environment.
- Restricted access combinations operating in Canada (B-trains) that have a higher total mass than Australian equivalents. Note: Further research is required to understand the extent of the restricted access that would appear to be more extensive than for B-Doubles in Australia.

5. Australia has advantages over many of the selected countries in specific areas which to some degree reduce some of the disadvantages outlined above including:
    - The use of the B-Double for approximately 70% of long distance road transport provides Australia with an unmatched productivity advantage compared to the five and six axle articulated trucks (8 axle rigid in NZ) in the selected countries. While the B-Double is a restricted access truck, it can operate on the majority of the national and state road network. There continues to be many last mile access restraints that need to be resolved with local road owners.
    - Driving/working hour's regulations that recognise the vast distance challenges involved in moving freight in Australia and have advantages compared to the selected countries.
6. Australia has broadly similar safety outcomes compared to the majority of the selected countries which means there should be no impediment to pursuing greater productivity outcomes. This is further outlined in Section 11. Most of the selected countries indicate a continuous decline in road fatalities involving trucks over the last 20 years despite an increasing freight task.

It should also be noted that these key findings are not specific to the transport of vegetables and relate to the road transport sector in general. These findings will be further explored in Case Studies and Report 2.

Benchmarking literature review - based on general access trucks predominantly undertaking task in selected countries

The benchmarking literature review highlighted the complexities in establishing equitable comparisons to identify possible regulatory reforms that, if implemented, would be of benefit to the Australian vegetable growing sector. Importantly, these regulatory matters need to be distinguished from operating environment differences.

The benchmarking review, supplemented by the discussions with transport operators and Industry Associations in the selected countries and Australia, indicated the truck type choice to undertake a particular task (in this case vegetable transport line or long haul) is determined by a range of factors such as access decision making, road construction practices and distance travelled to name a few.

While these factors differ across the selected countries, comparisons of the general access truck predominantly used for long distance transport provides a realistic base to assess mass and dimension regulations in the selected countries.

The general access truck predominantly used for long distance transport in the selected countries is summarised below:

- In Australia, the six axle articulated truck historically dominated prior to the introduction of the B-Double.
- In New Zealand, it is a truck and trailer (draw bar) rigid combination principally because truck size is not such a major factor due to the short distances travelled associated with road geometry challenges.
- In the US, it is a five axle articulated truck that dominates potentially due to a combination of alleged political (rail lobby) and industrial complexities.
- In the UK and Europe six axle articulated trucks dominate with different weights. Higher individual axle limits are also permitted in the UK. This is potentially due to the thicker pavements provided to cope with expansion and contraction from extreme weather conditions.

Table 1 below indicates the mass and dimension regulations in the selected countries and identifies some of the key differences compared to Australia such as:

- Longer trailers in the US and Canada.
- Higher and more flexible individual axle weights in some of the selected countries to assist with load configuration in what can be a difficult loading environment.
- Lower truck height (can restrict pallet space) and similar width restrictions in some of the selected countries.

Table 1 - Comparison of the trucks that have general or unrestricted access

	Australia	US	Canada	UK	Germany	New Zealand
Base vehicle	6 axle articulated	5 axle articulated	5 axle articulated	6 axle articulated	6 axle articulated	8 axle rigid
Gross Weight (tonnes)	42.5	36.287	39.916	44	40	44
Trailer length (metres) *	14.63	16.15	16.15	13.6	13.6	12
Height (metres)	4.3	4.15	4.15	4.3 **	4	4.25
Width (metres)	2.5	2.6	2.6	2.55	2.5	2.5
Average weight per axle (tonnes)	7.08	7.25	7.98	7.33	6.66	5.5

Note:

* Trailer length largely determines the number of pallets able to be carried

** Livestock and car carriers 4.6m

*** Trailer height in UK unlimited. Industry advice indicates 4.25 – 4.3m used due to bridge heights

Driving / Working hours (non-truck regulations) are easier to compare

Comparisons of non-truck regulations such as driving/working hours are less complex than truck mass and dimensions and enable clearer analysis and findings.

Table 2 below indicates that Australia has driving/working hour's regulations that recognise the vast distance challenges involved in moving freight in Australia and have advantages compared to the selected countries in terms of:

- Longer daily and weekly driving hour limits.
- Shorter continuous rest period requirements.

Further, there are additional regulatory requirements in some of the selected countries that Australia does not have, including that trucks operating in Europe must be fitted with tachographs to record driving/working hours. This also applies to UK trucks operating in Europe at any time. The UK and US also have varying forms of operator licensing schemes.

Table 2 – Comparison of Driving / Working Hours

	Australia @	US	Canada	UK	Germany	NZ
Continuous rest period	7	10	8	11	11	10
Driving time	14	11	13	10	10	13
On duty time	14	14	14	13	14.25	13
Time between 2 rest periods	17	14	16	15	15	n/a
Weekly driving limit	72	60	70	56	56	70
Weekly working limit	72	60	70	60	60	70

No obvious sector specific regulatory concessions for vegetable transport across selected countries

The broader approach taken and the benchmarking literature review found no examples of road transport schemes or concessional approaches in Australia and the selected countries that are specific to the vegetable growing sector.

Where schemes or concessional approaches do exist for the transport sector more generally, anecdotal evidence suggests these schemes are not well patronised due to excessively high cost, compliance and risk management requirements. This means very few transport operators see a commercial benefit in pursuing them, thus they are rarely utilised.

It should be noted that other Australian agricultural sectors (e.g. livestock and grain) have obtained productivity gains and sector specific schemes by campaigning and winning concessions based on their perceived different operating needs. These are outlined in Section 9 below.

Broader observations by Review Team

Other key "observations" that the Review Team has identified that may be considered in the context of seeking better road transport outcomes for the Australian vegetable industry are outlined below:

- Supply chain reform may offer additional opportunities for efficiency reform in what is a difficult sector to "do road transport" given:
  - Small producers and small volumes per farm meaning consolidation (double handling) required with high productivity vehicles unable to "load and deliver".
  - Difficult first and last mile access issues for high productivity vehicles where they could be used from farm to market.
  - Alleged inefficient market practices that lead to double/triple handling of produce.
  - Retailers practices of mixing loads, branding boxes and not holding stock in store all cause inefficiencies.
- Based on anecdotal reports, producers appear to be under extreme pressure on a number of fronts:
  - Retail Chains are said to have ever increasing control over market with practices such as alleged over-ordering occurring.
  - A lot of consolidation over last 10-15 years, with smaller producers unable to deliver required efficiencies in order to remain competitive.
  - Some producers are dealing directly with chains and no longer using agents
  - Agents are not seen to be adding value in many instances.
  - Traditional market selling is becoming like cross docking, with the markets also selling to chains.
  - Previous "spike" revenues (peak pricing) being evened out by chains i.e. income peaks that producers used to receive when product shortages occurred are being reduced and removed.
  - Wages and transport are high cost elements that producers feel they may have some ability to influence.
- Based on anecdotal reports from transporters, getting produce "road transport ready" is sometimes problematic:
  - Late picking impacts the ability of transporters to "hit" markets by curfews. Producer knowledge of the transport task, particularly involving long haul, associated regulations and requirements is said to be quite variable.
  - Temperature control at pick up is sometimes lacking, meaning there is potential for not achieving chain stores temperature range and loads being rejected.
  - Rejected loads are harder to on-sell as chain stores are now branding packaging so hard to on-sell to markets.

- Growers don't necessarily work well together in pursuing their common interests for example, transport operators are sometimes unable to pick up the same product from numerous producers as they would be able to identify where competitors are sending product (through labelling) i.e. perceived commercial sensitivity.
- Chain store inability/unwillingness to take a full load of one product (except for example bananas) means consolidation and mixed loads increase transport costs and complexity of temperature control in turn increasing chance of rejection.
- There are seasonal complexities experienced by transporters including periods of very high demand followed by reduced demand that impacts on the commercial viability of having specialised equipment.

40 years of reform now making road transport productivity harder to obtain

Anecdotal evidence suggests supply chain parties such as shippers/producers across the world have benefited for the last 40 years from road transport productivity gains. In Australia this is best exhibited with the change from the six axle articulated truck to the B-Double of today.

Trucks including higher capacity trucks, are capable of achieving higher productivity with reduced infrastructure wear, improved environmental and safety outcomes that serve the objectives of the broad community. However, the Australian experience shared to varying degrees with the selected countries is that Governments are very much influenced by the public at large which does not view trucks favourably. The public especially does not like the concept of larger or heavier trucks on the road network with other road users despite the fact these higher productivity trucks are safer and more efficient (i.e. can reduce the overall number of trucks on the road). This forms an important part of the political considerations involved with changes to regulation.

This is further complicated by the destinations for much vegetable produce being in urban areas with increasing congestion, environmental issues and an ever decreasing awareness of where produce actually comes from i.e. no natural empathy for the delivery task.

Where productivity improvements are permitted, it often comes with far greater regulatory compliance and risk management requirements (e.g. PBS, AFM outlined in Section 5 below).

The Review Team also believes gains can be made via non-road transport supply chain efficiencies to complement existing and also where possible, pursue additional road transport gains.

In 2014, Australia introduced a National Heavy Vehicle Regulator (NHVR) in an attempt to better coordinate the request and granting of access to the national, state and local road network thereby seeking avoiding the need to negotiate such access with multiple jurisdictions. The NHVR will also administer the productivity schemes mentioned above and seek to achieve greater consistency in road transport regulation overall.

3. BACKGROUND

The diversity of the Australian vegetable industry, consisting of approximately 100 commodities with a combined gross value of production (GVP) of about $3 billion (2011-12), presents a range of unique opportunities and challenges to the industry.

The vegetable industry has made the observation that road transport issues and legislation are affecting the industry, in particular:

- Legislation surrounding maximum driving times and rest breaks are inhibiting the proper transportation of perishables.
- Rules and legislation are becoming prohibitive and the industry has had little say in the formation of rules that affect them.
- It was noted that there may be scope for legislation that is unreasonably affecting transporters of perishable loads to be amended.

HAL Project Number VG 13107, requires a study benchmarking and comparing the regulations on truck drivers (including but not limited to length of driving, time, load limits, state legislation and associated penalties). This includes the rationale behind the regulations in a range of similar developed economies, such as Europe (UK and Germany), NZ, Canada and the US to assist Industry to develop strategies to address the aforementioned transport issues.

Discussions on 15 July 2014 with HAL, AusVeg and a Growers representative have added further detail to the issues outlined above including:

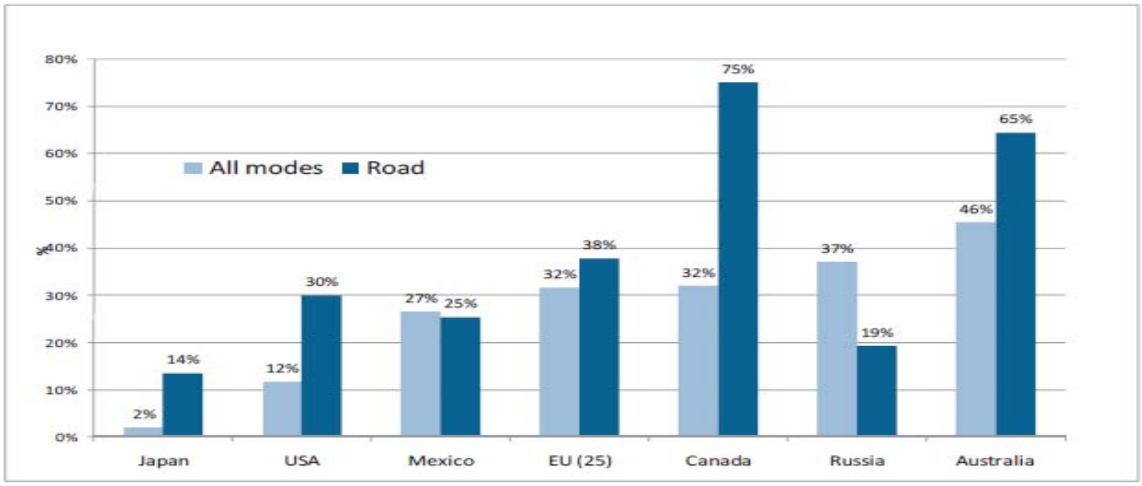
- Transport is a large component of growers' costs and that growers are predominantly price takers.
- There is concern amongst growers that road freight "red tape" is increasing imposing more rigorous conditions on movement of produce into time sensitive markets.
- There are significant commercial penalties incurred if produce is not delivered in accordance with market timeslot.
- Costs of production are increasing as the extent of road freight regulation increases on transporters. There is a desire to raise regulatory issues with governments where increased regulation imposes additional cost for little benefit.
- This process will be assisted by having international examples of more favourable regulations and productivity schemes on the proviso that associated safety outcomes are considered acceptable.
- Weight is not generally an issue, most loading issues are volume related (700 kilos a pallet for beans compared to carrots which are 1.2t. a pallet). *It should be noted that this understanding will be further explored via the Case Studies.*

- A concern that enforcement levels are increasing without flexibility and that is getting worse and that penalties can be very high.

The broader international context to the issues identified above has been generally strong growth in the road freight transport task in recent decades. This has been accompanied with changes in regulatory regimes accompanied by more active compliance and enforcement approaches, and community expectations for increased road safety and environmental outcomes in most countries.

For most countries, growth in road freight transport has exceeded overall growth in surface transport (Figure 1), with Russia and Mexico the major exceptions. In addition, Australia uses three times more road freight, measured in tonne kilometres, per dollar of GDP than the average OECD nations. This is due to a combination of our geographic size and population density, leading to the need for manufacturing and primary producers to use significantly greater amounts of road freight than their global competitors.

Figure 1. Volume (ton-miles) growth in % for domestic freight transport by road and for all modes between 1995 and 2005*



4. VEHICLE MASS AND DIMENSIONS

Overview

In all of the selected countries including Australia, truck mass and dimension regulation is complex, highly technical, and has multiple close linkages with infrastructure design and maintenance, road safety, road capacity, environmental and community considerations.

The Australian experience shared to varying degrees with the selected countries is that Governments are very much influenced by the public at large which does not view trucks favourably. The public especially does not like the concept of a larger or heavier trucks on the road network with other road users despite the fact these higher productivity trucks are safer and more efficient (i.e. take trucks off the road). This forms an important part of the political considerations involved with changes to regulation.

Australia and the selected countries regulate truck weights and dimensions through extensive prescriptive requirements, i.e. by direct statement of maxima and/or minima. In the selected countries with a Federal government system, states/provinces often set the regulation of weights and dimensions with federal regulations providing nationwide road network access for trucks of standard weights and dimensions.

In addition to the general access truck predominantly used for long distance transport in the selected countries as indicated in Table 2 of the Executive Summary above, all of the selected countries have higher capacity trucks that have restricted access to the road network and are known as:

- Longer and/or Heavier Vehicles (LHVs) in Europe.
- Long Combination Vehicles (LCV) and comprise Rocky Mountain Doubles and Turnpike Doubles in the US.
- Long Combination Vehicles (LCV) in Canada.
- Higher Productivity Vehicles (HPV) in Australia.

These restricted access trucks generally operate under permit or notice schemes in Australia and the selected countries that are controlled at various levels of government.

Additional information is provided below for the selected countries to give further context to the road transport regulatory frameworks that are currently in place.

UK and Germany - European Union (EU)

Most long distance transport in the UK is done by trucks that are 6 axle combinations, 3 axle tractor unit plus 3 axle semi-trailer (known as a ‘triaxle trailer’) and runs at 44t GVW (gross vehicle weight). These require ‘road-friendly‘ suspension systems, usually air rather than steel. Trucks that are 5 axle combinations, 2 axle tractor unit plus 3 axle semi-trailer (known as a ‘triaxle trailer’) are limited to 40t.

In Europe for some time, trucks that are 2 axle tractor unit plus 3 axle semi-trailer (known as a 'triaxle trailer') at 40t has been the norm and the only 44t operations allowed were for limited distance (150km) to/from ports or rail freight terminals (known as 'combined transport') where two modes or more are used. However, more EU member states are moving to 44t for general transport operations. Germany continues to operate at 40t GVW except for journeys to/from ports as described above.

Many European countries (including France, Austria, Germany, Belgium, Italy, Poland, Portugal, Switzerland, Czech Republic, Slovak Republic and Slovenia) do not permit the operation of some trucks on weekends or public holidays. In some cases (e.g. Austria) reduced speed limits apply to trucks operated at night.

In Denmark, national legislation has authorised municipalities to establish environmental zones. Trucks and buses are only permitted into these zones if they have either an engine meeting the Euro III standard, or are fitted with an approved particulate filter. Central areas of Copenhagen city have been established as environmental zones.

The utility rate (in Europe) for volume is about 80% and for weight about 60%. This often leads to the suggestion that truck length should be increased and some European operators have suggested that the maximum length of a semitrailer should be increased from 13.60m to 15.00m. Such a longer semitrailer unit with a gross vehicle weight (GVW) of 40t and a total length of 17.80m a loading volume of 110 m^3 and a storage capacity of EUR 37 pallets runs under special permit in Germany.

Special high volume vehicles with a capacity of up to 125 m^3 are available on the market in Europe without exceeding the maximum dimensions. Typically, these are truck-trailer combinations with a low frame obtained by using tyres with very small diameters and so-called "low coupled" trailers to reduce the space between truck and trailer.

Volume capacity in Europe can also be increased by replacing standard rigid semi-trailer axles with independent suspension at each wheel of the semitrailer. The volume for cargo is increased by 63% from standard Euro 33 pallets to Euro 54 pallets.

US

For many reasons, possibly including the political environment, it appears that general access trucks most commonly used for long distance transport in the US do not have the range of productivity outcomes available in Australia and Canada arising from the following factors:

- Influence of a strong rail sector and associated lobbying efforts.
- Little motivation to utilise more axles to obtain higher weights.
- Anecdotal evidence suggests the large transport companies which own substantial assets fear the business impacts of the massive re-equipment program required to achieve higher productivity.
- Cheaper fuel and equipment costs in the US mean a compelling case and impetus for such a move has not yet occurred.
- Less flexible working hours.

Overall, trucks using the Interstate Highway System in the US are governed by Federal weights and dimensions requirements, whilst trucks on other roads are subject to State regulations. Federal regulations permit a maximum mass of 9.1t on single axles, 14.5t for tandem axles and GVM of 36.287t.

National truck size standards apply on the National Network of highways. This network includes:

- The Interstate Highway System.
- Highways, formerly classified as Primary System routes, capable of safely handling larger commercial motor vehicles, as certified by states to FHWA.

The same light freight moves in 5-axle tractor-semitrailers in the US as in Canada, at the same gross weights. The 5-axle tractor-semitrailer also moves medium and heavy freight, both locally and between states, usually at a gross weight close to 36.287t.

Medium and heavy freight also moves locally in diverse configurations that operate under grandfather or LCV rights, principally within one state, or possibly by permit into neighbouring states.

Canada

Overall, Canada has many similar distance and population challenges to Australia. As indicated above Canada appears to have productivity advantages compared to Australia for general access trucks most commonly used for long distance transport.

Having said that, these gains are sometime “lost” due to the large amount of north-south trade with the US. The difficulties in operating under two regulatory systems means many Canadian operators chose to operate under the US (and less friendly) system in both countries.

At a national level the Canadian federal government has no truck size and weight regulations. Each province sets its own truck size and weight regulations, and they apply to all roads within the province, except where road or bridge condition may require a restriction.

In order to improve harmonisation, truck size and weight regulations in Canada are now founded on the “Federal-Provincial-Territorial Memorandum of Understanding on Interprovincial Weights and Dimensions,” (MoU). This is similar to the harmonisation processes undertaken in Australia through the National Transport Commission (NTC) and the NHVR.

Longer combination vehicles (LCVs) in Canada tend to be longer and heavier than those found in the US. Turnpike Double LCVs are allowed by special permit in Alberta, Saskatchewan, Manitoba, Ontario, Québec, New Brunswick, and Nova Scotia. Rocky Mountain doubles are allowed by special permit in Alberta, Saskatchewan, Manitoba, and Québec. Triples are allowed by special permit in Alberta and Saskatchewan.

A wide variety of specialized equipment is allowed by special permit in Alberta to support the oil and gas industries. Saskatchewan allows a number of larger and heavier truck configurations by special permit, including the innovative program described below.

Australia

In Australia, mass and dimensions of trucks are controlled by the Heavy Vehicle National Law (HVNL) with some grandfathering of mass and dimensions regulations of state and territory governments. The process of establishing the Heavy Vehicle National Law has led to a high degree of uniformity in mass and dimensions, especially for trucks of up to around 46t GVM. The national heavy vehicle mass and dimension limits are detailed in Appendix D.

The use of the B-Double for approximately 70% of long distance road transport provides Australia with an unmatched productivity advantage compared to the five and six axle articulated trucks (8 axle rigid in NZ) in the selected countries. The mass and dimensions for a B-Double is a tractor and two B-coupled trailers (9 axles), 68t (operating under HML), 25m (26m available for eligible vehicles).

While the B-Double is a restricted access truck it can operate on much of the national and state road network. There continues to be many last mile access restraints that need to be resolved with local road owners.

Over-dimensional vehicles

There are no EU regulations for over-size transports. The carrier undertaking such transports must apply for permission with the relevant authorities in the countries in question. Most countries have some form of permit system for the operation of oversize or over-mass vehicles.

In federal systems (e.g. UK, Germany, US, Canada, NZ and Australia) there may be regional inconsistencies in weights, dimensions, or operating conditions for these vehicles.

Permit conditions may include a requirement that over-dimensional vehicles be accompanied by pilot vehicles and in some instances by Police escort.

5. PERFORMANCE BASED STANDARDS AND HIGHER CAPACITY TRUCKS

Performance Based Standards (PBS)

As indicated above, Australia and the selected countries regulate truck weights and dimensions through extensive prescriptive requirements i.e. by direct statement of maxima and/or minima. With prescriptive measures, transport operators have little flexibility in determining how the objectives underlying regulations are to be met and innovation in vehicle design is constrained.

Performance based regulation can be used to either replace or supplement prescriptive standards for truck weights and dimensions. This form of regulation has been adopted in other sectors, such as occupational health and safety and food standards, and is now well established as the approach preferred for effective and efficient regulation.

Trucks including higher capacity trucks, are capable of achieving higher productivity through performance based regulation with reduced infrastructure wear, improved environmental and safety outcomes that serve the objectives of the broad community.

The Australian experience shared to varying degrees with the selected countries is that Governments are very much influenced by the public at large which does not view trucks favourably. The public especially does not like the concept of larger or heavier trucks on the road network with other road users despite the fact these higher productivity trucks are safer and more efficient (i.e. can reduce the overall number of trucks on the road). This forms an important part of the political considerations involved with changes to regulation.

Performance based standards for truck safety were first introduced by the Canadian Heavy Vehicle Weights and Dimensions Study in 1986 and were used to develop a set of trucks considered most appropriate for use in inter-provincial operation.

Australia has further refined PBS and is acknowledged as the leader in the implementation of PBS. However, anecdotal evidence suggests this scheme has to date not been well patronised due to excessively high cost, compliance and risk management requirements of gaining approval. Whilst this is slowly changing within the new National Heavy Vehicle Regulator context, the reality is that approvals are sometimes complex and time consuming.

The PBS scheme examines the actual performance of the truck on the road, rather than the approximation of a trucks behaviour through the enforcement of prescriptive standards. PBS allows for trucks to be physically tested or simulated, with the performance of the trucks compared to the performance levels for each standard to determine the hierarchy of the road that the vehicle may safely travel upon.

In Australia, the PBS scheme uses 16 safety standards and 4 infrastructure standards to assess non-standard vehicles. Five safety measures were selected as well as the load transfer ratio (LTR) which is a well-established international PBS measure.

Higher Capacity Trucks

All of the selected countries have higher capacity trucks that have restricted access to the road network and are known as:

- Longer and/or Heavier Vehicles (LHVs) in Europe.
- Long Combination Vehicles (LCV) and comprise Rocky Mountain Doubles and Turnpike Doubles in the US.
- Long Combination Vehicles (LCV) in Canada.
- Higher Productivity Vehicles (HPV) in Australia.

Additional information is provided below for the selected countries to give further context to the use of higher capacity trucks.

UK and Germany - Europe (EU)

Higher capacity trucks are generally referred to in Europe as Longer and/or Heavier Vehicles (LHVs). The most common examples of LHV in Europe are combinations of standard trucks and trailers known as the European Modular System, i.e. as combinations of tractors and trailers with standardised load spaces. They consist of trucks of up to 25.25m in length and up to 60t GVM. These trucks are used in Sweden (since 1972), Finland and Norway (not a Member of the EU) and under trial conditions in Belgium, Denmark, Germany and the Netherlands.

US

Similarly to Canada, in the US, higher capacity trucks are referred to as Long Combination Vehicles and comprise Rocky Mountain Doubles and Turnpike Doubles. LCVs were first used in the United States during the late 1950s with the introduction of tandem trailers on limited routes. The Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) effectively froze the LCV network as of 1 June 1991. At that time 21 states allowed the use of at least one form of LCV. In 2009, LCVs were allowed in certain states but not on interstate network.

Canada

Higher capacity trucks are referred to in Canada as Long Combination Vehicles. They consist of a tractor and two or three trailers or semi-trailers where the length of the combination exceeds the normal limit of 25m specified by provincial truck size regulatory schemes.

The three types of LCV are Rocky Mountain Doubles (RMDs), Turnpike Doubles (TPDs) and Triple Trailer combinations (triples). Depending on the type of LCV, gross masses between 53.5 and 62.5t and lengths of up to 38m are permitted. LCVs allow increased cubic capacity but do not allow additional gross or axle mass relative to standard configurations.

Long Combination Vehicles (LCVs) are operated under permit in certain Provinces (Alberta, Saskatchewan, Manitoba and Quebec). In addition, a pilot study of LCVs has recently been initiated in Ontario. LCVs are generally restricted to travel on four lane highways.

Australia

In Australia, higher capacity trucks are referred to as higher productivity vehicles and include B-Doubles (at 25/26m in length and up to 68t GVM), B-Triples and road trains. Double and triple road trains (up to 53.5m and 125t) have been widely used in remote areas for many years.

In urban areas and more populous areas, the road freight task is undertaken primarily by tractor-semitrailers and B-Doubles. Prime movers with four trailers, with various forms of coupling, are used in some applications in remote areas.

Overall, many transport operators prefer the super B-Double over B-triples as the individual units are far more easily used when not in this operating format. State governments in the main are still very cautious about the operation of these trucks in anything but small scale specific tasks with limited access to the road network.

6. DRIVING/WORKING HOURS

Driver fatigue is a significant factor in approximately 15% - 20% of commercial road transport crashes with road safety experts acknowledging that this covers fatigue in both truck and car drivers. Nevertheless and despite improving fatality rates, trucks are characterised as being at fault.

This characterisation along with changing social views on acceptable working hours has seen government's word wide adopt stricter regulations concerning driving and working hours of truck drivers.

Restrictions on driving and working hours are applied in most countries. Regulation applied through labour law or social legislation (EU, South Africa, Mexico, Russia) generally results in more restrictive working hours than regulation applied through transport safety law (Canada, NZ, Australia).

Driving and working hour requirements apply to drivers of trucks of above 3.5t GVM in Europe, 4.5t in the US, Canada and NZ and 12t in Australia. Canada and the US have different Driving and Working hour regimes and no mutual recognition.

Driving and working hour restrictions can have complex interactions of daily and weekly restrictions and, in some cases, the availability of different options.

The benchmarking literature review identified advanced fatigue management schemes in Australia and NZ only. These schemes can be used to greater flexibility in work schedules that better suit operations and business needs. Anecdotal evidence suggests these schemes are not well patronised due to excessively high cost, compliance and risk management requirements. Each scheme is briefly outlined below.

Table 2 in the Executive summary indicates that Australia has driving/working hour regulations that recognise the vast distance challenges involved in moving freight in Australia and have advantages compared to the selected countries in terms of:

- Longer daily and weekly driving hour limits.
- Shorter continuous rest period requirements.

Further, there are additional regulatory requirements in some of the selected countries that Australia does not have, including that trucks operating in Europe must be fitted with tachographs to record driving/working hours. This also applies to UK trucks operating in Europe at any time. The UK and US also have varying forms of operator licensing schemes.

Advanced Fatigue Management (AFM) in Australia

In addition to BFM, the NHVR has developed AFM accreditation that brings a risk management approach to managing heavy vehicle driver fatigue. Rather than prescribing work and rest hours, AFM potentially will offer the flexibility to propose your own hours as long as the potential risks of those hours are offset by sleep, rest and other management practices in a compliant fatigue management system.

This scheme will replace a previous attempt at introducing AFM which saw very little take up due to the complexities involved (14-20 companies only across Australia). The key question remains as to whether the new AFM will provide more flexibility in an easy to take up manner for those operations that would benefit. Nolan's Transport did gain accreditation under the previous AFM and is considering the merits of moving to the new AFM approach.

Previously, applicants to AFM developed their application based on worst-case scenarios within pre-determined outer limits. The Risk Classification System (RCS) approach to AFM is based on identifying high risk potentials in proposed hours and mitigating those risk potentials across seven key fatigue management principles.

The RCS is based on fatigue science and research and enables operators to submit work schedules with higher risk potential elements (such as longer or more frequent shifts) that are mitigated by offsetting potential elements and countermeasures (for example, increased work related breaks).

The system helps to assess the levels of fatigue risk associated with combinations of work, rest and sleep. The RCS includes a risk matrix tool that will is used by the NHVR when assessing an AFM application and will provide greater transparency on application decisions.

Maximum Driving/working Hours under AFM

The fatigue experts engaged by the NHVR considered the issue of an outer limit and concluded that a 17 hour driving/work opportunity was an appropriate upper limit. This limit was determined based on consideration of the research and of current limits which have been applied in Australia. There is no safe outer limit under which no fatigue risk can be assured – rather it is the combination of factors in an overall risk environment and as the length of work opportunity increases so too does the need for mitigating risk management. Examples of mitigations would be ensuring drivers are rested before and after long work opportunities and planning long work opportunities around day work rather than night work which involves greater fatigue.

It was determined that an outer limit of 17 hours' work opportunity with a minimum of 1.5 hours rest breaks in this period, is the outer limit that will apply in the assessment of AFM applications under the HVNL. This results in a maximum of 15.5 hours driving time/work which is similar to the outer limit in Western Australia, 30 minutes more than previously allowed in NSW and Vic and 30 minutes less than previously allowed in South Australia and Queensland.

NZ

NZ has an advanced fatigue management scheme (AFMS) that is risk management based similar to AFM in Australia. Once approved it allows a licensed transport operator to manage driving/working and rest time in a way that addresses the specific needs of their business while ensuring driver fatigue is proactively managed.

An AFMS may be approved to permit variations to allowable rest breaks, extension of a cumulative work day or cumulative work period.

There are two broad types of AFMS:

1. AFMS 1 allows an operator to vary the rest time hours of drivers working for them.

2. AFMS 2 allows an operator to extend the maximum number of work time hours in a cumulative work day to a maximum of 15, but not to exceed the maximum number of hours worked in a cumulative work period (70).

Conditions apply to the operation of either type of AFMS and there are considerable requirements on the transport operators to manage risk. Discussions with the NZ Road Transport Forum indicate that this has meant that there has been very little take up of the concept in reality.

7. CHAIN OF RESPONSIBILITY AND COMPLIANCE AND ENFORCEMENT

Chain of Responsibility

It is clear that supply chain parties such as shippers/producers across the world are under greater scrutiny by governments to operate within regulations and have responsibilities for the achievement of improved compliance. It is becoming increasingly difficult for all supply chain parties to operate outside the law.

While the approaches taken to achieve these requirements varies throughout the selected countries there are consistent themes about the changing environment such as:

- A lot of anecdotal evidence of past practices where transport operators did business outside the regulations and shippers/producers benefited.
- Some continuing anecdotal evidence that not for profit truck owners (farmers etc.) still operate outside road transport law because of low enforcement capability but are increasingly worried about the ramifications if an incident occurs.
- Receivers are also increasingly worried about "managing loads" delivered illegally.
- It would appear these practices are diminishing with increased enforcement capability often the result of greater transparency and ability to monitor vehicles and drivers.
- This is accompanied by a reduced driver willingness to work extremely long hours and speed.
- Smaller transport companies are being taken over by larger companies with increased compliance awareness and "good citizen" objectives.

In general, existing truck legislation in the EU and US imposes liability for breaches of the road transport requirements only on drivers and/or operators and owners of trucks. The role played by other parties in the supply chain is usually not directly addressed in transport regulation, other than by way of offences which are indirect (e.g. 'cause or permit' and 'aid or abet'). Hence existing road transport legislation in the EU and US tends to have limited deterrent effect on those other parties many of whom may have a significant bearing on the activities that affect compliance with the road laws.

However, US has operator licencing (registration of companies) and publicly available safety performance reporting including ratings. The UK also has operator licencing. In addition, in a civil litigation in the US, a freight broker was held to be negligent following a fatal crash involving two trucks (US District Court for the Western District of Virginia, Roanoke Division; documents 147 and 155, 2008). The court found that the broker had a duty to investigate the fitness of the transport operator prior to engaging it to carry a load on a public highway. It was argued that the publicly available FMCSA safety ratings could have been used to assess the fitness of the transport operator. This could be seen as a civil law equivalent of the chain of responsibility approach.

In contrast, Australia and NZ both have 'chain of responsibility' legislation within transport legislation which extends legal liability for compliance to all parties who exercise some degree of control over on-road outcomes including vegetable producers.

The chain of responsibility principle is:

... all who have control, whether direct or indirect, over a transport operation bear responsibility for conduct which affects compliance and should be made accountable for failure to discharge that responsibility.

According to the principle, the consigner who demands that trips be completed in unreasonable timeframes can potentially be held legally accountable for fatigue and speed-related violations, as can the operator of the poorly managed wholesale distribution centre, the person who understates the weight of an inter-modal freight container, the company director who allows short cuts to be taken with vehicle maintenance and the receiving depot that knowingly rewards overloading by paying for weight delivered in excess of legal payloads.

Australian truck regulation identifies relevant parties for each offence type (e.g. consignors, loaders, freight forwarders, customers) and holds them jointly responsible for a road transport offence.

The chain of responsibility principle can be given effect either:

- By a requirement for responsible parties to put into effect processes to ensure high levels of compliance.

- Or through 'reverse onus', *i.e.* holding all parties in the chain responsible for any noncompliant behaviour and allowing, as a defence, the demonstration that 'reasonable steps' had been taken to prevent the breach. Reasonable steps are determined by a court, assisted by available codes, guidelines and best practices.

Chain of responsibility is seen as a means of encouraging or requiring transport operators to take a systematic approach to management systems in order to achieve high levels of road safety. NSW has led the way in the evolution of this concept but most early work has focused on transport company operators and drivers with little action up the chain except in one case involving GrainCorp.

Compliance and Enforcement

Transport operators in the selected countries appear to have similar concerns to those in Australia that enforcement levels are increasing without flexibility and that the operating environment is getting worse and that penalties can be very high. The benchmarking literature review identified that many of the selected countries are developing new approaches to compliance, aided by new and emerging technologies and attitudes.

These approaches include:

- Operator licencing and safety ratings.
- Extending responsibility for on-road outcomes to all parties with control over those outcomes, direct or indirect (e.g. supply chain parties such as operator, shipper, and receiver) via transport law and/or other regulation.
- Application of more effective compliance monitoring technologies, including weigh-in-motion, speed detection and on board recording devices. Wherever possible these are used to assess compliance at traffic speed, thus reducing the imposition on compliant operators.
- Assessing compliance through the audit of data collected by systems, such as those above, maintained either by operators or by third party service providers.
- Providing compliance mechanisms which can monitor conditions for differentiated network access such as the Australian Intelligent Access Programme (IAP).
- Measuring and monitoring in order to provide information to the community and the industry on compliance levels and to enforcement agencies and policy makers on tactics and policy needs.

Truck enforcement is usually undertaken at state/provincial level in federal systems (Australia, US and Canada) and at national level in other countries, including member countries of the EU. Police have powers for on-road enforcement of trucks, but in many cases dedicated truck inspectorates have been established. The enforcement effort includes coverage of vehicle condition, driver licence and registration status, speed, hours of service, route restrictions and vehicle mass and dimensions.

Traditional regulatory responses to road transport breaches have been oriented towards enforcement rather than compliance, tending to be overly reliant on the physical detection and prosecution of offenders and on increasing the level of monetary penalties. As well, the driver and vehicle owner have been the ‘soft’, and usually the only, targets of truck enforcement policies.

Many of the selected countries and Australia use accreditation with the aim of improving outcomes by requiring a systematic approach to an issue (e.g. safety) in return for a regulatory privilege or in return for increased commercial attractiveness or credibility. Accreditation generally requires transport operators to develop more proactive safety and compliance systems.

Table 3 below provides a high level comparison of the overall compliance regimes of the US and Australia. While the US has historically better safety outcomes per 100 million kilometres travelled as per Table 4 below, this has not been definitively linked to the differences in compliance regimes.

Table 3 - Comparisons of Heavy Vehicle Compliance between US and Australia

	USA	Australia
Commercial driver licence	Yes	Yes
Pre-employment screening information for companies	Yes	No
Registration of HV	Yes	Yes
Registration of Companies	Yes	No
Compulsory Regulatory Audit	Yes	No, except for WAHVAS[1]
Safety performance reporting	Yes – CSA[2]	No
Compulsory monitoring (telematics)	No	Under consideration
Chain of Responsibility	No	Yes
Logistics industry safety code	No	Yes, but low uptake
Alternative compliance scheme	ISO 9000 only	NHVAS & TruckSafe
Regulatory concessions	No	NHVAS Yes, TruckSafe No
Insurance incentives	Some for on-board safety systems	Some for TruckSafe
Hours of service limits	Yes	Yes
Speed limiter requirements	Under consideration	Yes
Roadside vehicle inspections	Yes	Yes
Drug and alcohol testing	Companies are required to test drivers	Companies are not specifically required to test drivers

1. The Western Australia Heavy vehicle Accreditation Scheme (WAHVAS) is a compulsory accreditation scheme for restricted access vehicles, including B-Doubles, over-dimensional vehicles and road trains

8. PENALTIES FOR NON COMPLIANCE

All of the selected countries have offence penalty regimes often featuring gradated penalties for offences in:

- Driving hours
- Vehicle mass and dimension
- Load restraint
- Vehicle safety
- Roadworthiness

Offences and their associated penalties are often administered in a combination of national and state/provincial level regimes in the selected countries.

Penalties for non-compliance with road transport law are generally higher for offences related to trucks than light vehicles, reflecting a higher degree of public risk resulting from noncompliance by trucks. Penalties range from fines to removal of the right to drive (licence suspension or cancellation) and removal of the right to operate (suspension or cancellation of the operator licence). In some cases, jail terms are provided for severe offences (*e.g.* culpable driving).

Other observable trends are for the selected countries to review the adequacy of fines and permit fees for overweight trucks. Some have increased fines and/or fees to recover more of the damage costs. At the present time, fees and fines in many of the selected countries are seen by government as too low to recover the costs of enforcement and administration.

Australia

Prior to introducing the Heavy Vehicle National Law (HVNL), each state and territory approached truck offences and penalties differently. Drivers and operators involved in interstate freight were potentially subject to different penalties for the same offence. There were also different levels of deterrence that applied to the same offences creating an uneven playing field for operators and drivers.

The introduction of the Heavy Vehicle National Law (HVNL) meant that for the first time, drivers, operators and others in the supply chain were subject to the same penalties for breaking the law, regardless of where they operate in Australia. This promotes a consistent and transparent enforcement across the country.

There are differences between the old state-based regimes and the new HVNL. In some cases, penalty levels are higher than they used to be, some are lower, and some remain the same.

The HVNL contains three different types of penalties that can apply:

- Infringeable Offences
- Court Imposed Penalties
- Demerit points

Infringeable offences

An infringeable offence is one which results in the issue of an infringement notice. The infringement notice sets out the details of an alleged offence, usually a strict liability offence. It gives the person issued the notice the option of either paying the penalty set out in the notice or electing to have the matter dealt with by a court.

The payment level for infringeable offences in the HVNL is set at 10% of the maximum court imposable penalty. This is consistent with the Australian Law Reform Commission recommendation that infringements should be set at 20% or less of the maximum court imposable fine.

Court imposed penalties

Some offences, generally the more serious ones, are not infringeable and must be dealt with by a court. The HVNL sets out the maximum penalty level that the court may apply.

Demerit points

Demerit points attach to a driver's licence. As a general rule, demerit points will continue to be managed through each state and territories' road traffic law.

There are a total of 330 offences in the HVNL – 144 are infringeable and 186 are not. Eight of the 330 offences impose demerit points.

9. EXISTING CONCESSION FOR HORTICULTURE AND OTHER "TIME SENSITIVE" FREIGHT SECTORS

As indicated in the Executive Summary above, other Australian agricultural sectors (e.g. livestock and grain) have obtained productivity gains and sector specific schemes by campaigning and winning concessions based on their perceived different operating needs. The available regulatory mechanisms are briefly outlined below.

The NHVR has a system of national notices, transitional notices and permit based schemes. There are no specific notices or permit based schemes for transport of vegetables, however, individual transport operators may be utilising some existing mechanisms where appropriate. The types of specific notices or permit based schemes for the broader agricultural sector in Australia are listed below:

- Livestock Loading Schemes
- Grain Harvest Schemes
- Records Keeping Exemptions for Driving/Working Hours
- Agricultural Machine Combination Notice 2013 (NSW)
- Lighting, braking and mudguard exemption for citrus trailers (SA)
- Lighting, Braking and Mudguard Exemption for Citrus Trailers
- Transport of Special purpose logs
- Vehicle Standards Exemption Notice for B-double rated vehicles carting sugar cane
- Vehicle Standards Exemption Type 1 Road Train engaged in transporting up to 6 round cotton modules (QLD)
- Vehicle Standards Exemption Notice for agricultural machines and cane bin trailers (QLD)
- Vehicle Standards Exemption Notice for agricultural vehicles (QLD)
- Vehicle Standards and Class 1 Dimension exemption for Rubber Tracked tractors
- Transporting Sugar Cane Exemption Notice
- Sugar Cane Trailers exemption Notice
- Agricultural Vehicles - lights and reflector exemption Notice
- Agricultural Vehicles - fitting of mudguards exemption notice
- Baled Agricultural Commodities Exemption Notice
- Transport of large rectangular baled hay (Pursuant to 5161A and S163AA of RTA 1961)
- Transport of Agricultural Vehicles Carried as a load
- Agricultural Machine Combination Notice 2013

10. SAFETY OUTCOMES

Most of the selected countries have experienced a continuous decline in road fatalities involving trucks over the last 20 years despite an increasing road freight task. Australia's productivity advantages as outlined above, do not appear to have caused an abnormal safety outcome compared to the selected countries. It should be noted that safety statistics in some of the selected countries are maintained at state/provincial level and consolidated at national level in varying circumstances and points in time.

The regulation of trucks in relation to road safety focuses on managing the kinetic energy of trucks and driver vigilance. This implies particular attention to weight limits and secure loading of trucks and to speed management. Vigilance covers the regulation of working time and driving hours, as well as driver distraction and impairment related to alcohol, drugs and fitness to operate heavy vehicles.

Various factors can influence the total number of fatal crashes, including total distance travelled, changes to truck safety standards, improvements to the road infrastructure, advanced IT systems and regulations relating to truck operations. Most fatalities in fatal truck crashes are not truck occupants, so these factors are relevant not only for truck operations, but also for all road users.

Available figures from the Australian Bureau of Infrastructure Transport and Regional Economics (BITRE) on truck fatalities and fatal crashes indicate that heavy truck crashes in Australia decreased between June 2008 and June 2011 by an average of:

- 3.5% per year involving articulated trucks.
- 14.7% per cent per year involving heavy rigid trucks.

During this same period the number of kilometres travelled and the road freight task grew considerably as did the type and number of higher capacity trucks on the road network. When compared to the selected countries Australia's safety outcomes are equivalent.

Table 4 illustrates a historical trend (2001-2007) in the number of fatal truck crashes that was generally downward in the UK and Australia, with lesser change in crash numbers for the US and Canada. Kilometres travelled by trucks increased significantly in all of the selected countries.

Figure 2 illustrates a similar downward trend in NZ for casualties from truck crashes as a percentage of all road crashes since 2005.

Table 4 – Fatal Truck Crashes per 100 Million Klms Travelled

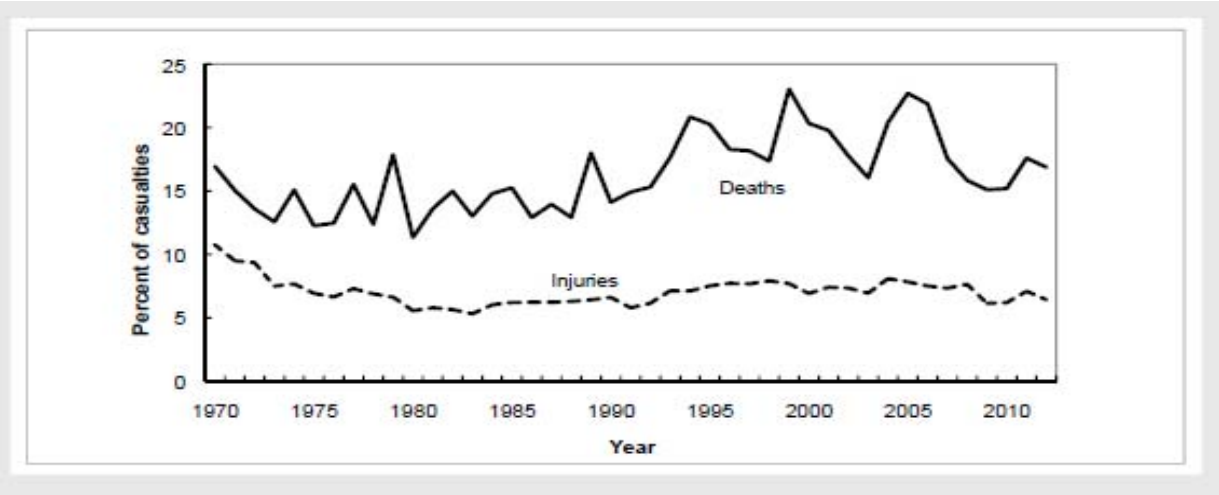
	2001	2002	2003	2004	2005	2006	2007
Australia	-	2.31	1.59	1.68	1.5	1.51	1.43
US	1.32	1.22	1.24	1.26	1.27	1.21	1.15
Canada	1.76	1.94	1.92	1.63	1.64	-	-
UK	1.92	1.73	1.7	1.44	1.52	1.33	1.34

An additional comparison to the US in terms of fatal truck crashes is in Table 5 below both indicating downward trends.

Table 5 – Australian and US fatal truck crash rates per 10,000 registered trucks

	2007	2008	2009
Australia	4.63	4.24	3.85
US	4.31	3.76	2.93

Figure 2. NZ casualties from truck crashes as a percentage of all road crashes



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- OECD (2011), Moving Freight with Better Trucks: Improving Safety, Productivity and Sustainability, OECD Publishing. http://dx.doi.org/10.1787/9789282102961-en

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International Transport Forum

- www.**internationaltransportforum**.org

OECD

- www.oecd.org

US Department of Transport

- www.dot.gov

US Federal Highways Administration

- www.fhwa.dot.gov

US Federal Motor Carriage Safety Administration

- www.fmcsa.dot.gov

US National Highway Traffic Safety Administration

- www.nhtsa.gov

New Zealand Transport Agency

- www.nzta.govt.nz

UK Department of Transport

- www.gov.uk
- https://www.gov.uk/moving-goods-by-road
- https://www.gov.uk/drivers-hours/overview
- https://www.gov.uk/drivers-hours/driving-under-both-eu-and-gb-domestic-rules

UK Freight Transport Association

- www.fta.co.uk

Germany

- http://www.transportsfriend.org/int/country-germany.html
- http://www.transportoversize.eu/en/do_i_need_a_transport_permit/germany/
- http://www.ekb-containerlogistik.com/en/regulations.php

Transport Canada

- www.tc.gc.ca

Australia

- www.nhvr.gov.au/resources
- www.nhvr.gov.au/law-policies/penalties-and-infringements

APPENDIX B – CASE STUDIES

Enhanced efficiency in the transport of vegetables: possible case studies

Introduction

To identify areas in which the transport cost of vegetables could be lowered through the introduction of improved regulation, equipment or work practices, extensive interviews were undertaken with road transport operators involved in produce transport. These interviews identified several areas where it was considered that transport costs of vegetables could be lowered. These included:

- a greater use of higher performance trucks such as B Triples, Super B Doubles and A Doubles and/or improved design of existing trucks;
- greater access to higher mass on vehicles transporting vegetables either through;
    - expansion of the higher mass limits (HML) network for eligible vehicles; and/or
    - improving access for high performance trucks at the start and end of journeys (so called “last mile” access issues); and/or
    - the introduction of incremental pricing for vehicles with heavy loads;
- more flexible fatigue management regimes for truck drivers;
- the unnecessarily high costs of road transport in Australia;
- the duplication of quality assurance requirements across organisations receiving vegetables; and
- grower initiatives that could lower transport costs.

The following sections briefly outline how the initiatives could lower transport cost of vegetables. Also outlined are possible case studies that could help identify the magnitude of the potential net benefits to vegetable growers of the initiatives identified by road transport operators

Greater use of High Performance Vehicles

Transport operators suggested that a greater reliance of higher performance trucks could improve the productivity of the transport of vegetables. This could be achieved through;

- modification of the design of existing truck configurations to achieve higher performance; and/or
- introduction of vehicles with greater capacity.

Interviews with transport operators identified improvements to existing truck configurations which could improve the productivity of transporting vegetables. These initiatives included increasing the length of trailers to accommodate an additional 2 pallets of vegetables and/or increasing the width of trailers that would be particularly important for refrigerated transport as it would enable increased insulation to be installed in trailers without reducing the capacity of trailers.

Modification of existing truck designs has the advantage that, if the modification is accepted, the vehicle could operate under general access rules. That is, the modified truck would have the same access rights to the road network that the original truck had.

High performance trucks that have the potential to increase the productivity of road transport of vegetables include longer trailers, B Triples, Super B Doubles or A Doubles. For example, a Super B Double could transport approximately 48 pallets of vegetables compared to 36 pallets transported in a B Double.

These trucks would operate under the Performance Based Standards (PBS) Scheme. Depending on the PBS level involved, the road network may need expansion to cover routes typically accessed by trucks delivering vegetables to wholesale markets or distribution centres owned by major supermarket chains.

Possible case study: Case Study 1

To identify the potential benefits associated with the use of higher performance trucks to transport vegetables, it is proposed to approach a transport operator located in the Murray Region of NSW to identify a PBS vehicle and the network of roads that could deliver increased productivity by linking major vegetable growers in the Murray region. This would also link the Murray region as a whole to major wholesale fruit and vegetable markets in eastern Australia.

Given the identification of this PBS vehicle and network we would work with the transport operator to identify the quantity of vegetables that would be produced in the Murray region in a typical growing period. The case study would then evaluate the transport savings available to vegetable growers if the typical growing period's production was transported to market using high performance vehicles compared to transport using traditional vehicles.

The case study would identify the gross productivity gain available from the use of high performance vehicles. This gross gain can then be compared to the likely cost associated with expansion of the Performance Based Standards road network that may be required to enable the transport of vegetables to markets using high performance vehicles.

Access to higher mass

Road transport operators indicated that certain vegetables had high specific gravities and that transport of these vegetables was constrained by the mass limits of vehicles rather than the volume of trailers. Examples of vegetables with high specific gravities include sweet potatoes, pumpkins and carrots.

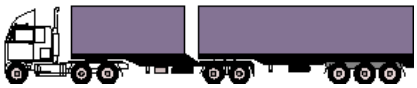
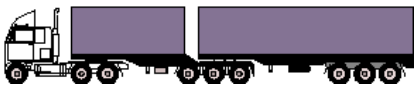
Initial calculations with a truck loading calculator confirm the proposition put by truck operators that the high specific gravity of, for example, sweet potatoes results in only 80 per cent of the volumetric capacity of the truck being utilised if mass limits are adhered to.

Heavy vehicles operate under 3 regimes of mass limits. These include:

General Mass Limits (GML) – limits prescribed in State and Territory legislation incorporating the requirements of the National Road Transport Reform (Mass and Loading) Regulations;
Concessional Mass Limits (CML) – for eligible vehicles an additional 0.5 tonnes is permitted on a tandem axle and 1 tonne on a tri-axle up to a maximum of 1 tonne for a vehicle up to 55 tonnes and a maximum of 2 tonnes for vehicles exceeding 55 tonnes; and
Higher Mass Limits (HML) – vehicles with road-friendly suspensions operating on approved routes, which are permitted up to an additional 0.5 tonnes on a tandem-axle group and up to 2.5 tonnes on a tri-axle group above GML limits.

The above mass limits regimes translate into the truck mass limits given in Table 1.

Table 1: GML, CML and HML for different vehicle types (Tonnes)

Vehicle type		GML	CML	HML
Six-axle semi-trailer		42.5	43.5	45.5
Seven-axle B-double		55.5	57.0	57.0
Eight-axle B-double		59.0	61.0	62.5
Nine-axle B-double		62.5	64.5	68.0
A Double		79	81	85

Trucks operating at HML can only operate on roads designated as part of the HML road network. Road operators interviewed indicated that the HML network is overly restrictive and this constrains the achievement of higher vehicle mass especially when vegetables with higher specific gravities are being transported. In addition, use of the HML network is restricted by the fact that some bridges located on the HML network have restricted access.

Greater access to HML would be a practical way to enable higher mass to be carried by trucks transporting vegetables. This could be achieved through;

- increased take up of HML by operators transporting vegetables; and/or
- expansion of roads included in the HML road network; and/or
- upgrades to bridges on the existing HML network that are currently restricting full utilisation of the HML network on some routes.

Increased mass on trucks transporting vegetables could also be achieved through so called "incremental pricing". Incremental pricing allows transport operators to carry additional mass above the relevant mass in the mass limit regime the truck is operating under by paying the owner of roads, state road agencies or local councils, for the extra wear and tear on the roads caused by the heavier loads. In 2009, the National Transport Commission initiated a study into the feasibility of introducing incremental pricing noting that such pricing was a major component of the Council of Australian Governments' road pricing reform agenda to deliver increased productivity.[1]

While incremental road pricing trials have been undertaken, to date there has been no formal introduction of incremental road pricing in any Australian jurisdiction.[2]

Possible case study: Case Study 2

To estimate the gains from incremental pricing associated with the road transport of vegetables a case study could be undertaken involving all vegetables transported by an operator in Northern Queensland during a specified period. Northern Queensland produces a large quantity of vegetables with high specific gravities e.g. sweet potatoes, pumpkins etc.

A typical weeks transport operations would be examined. The existing number of truck movements would be compared to the number of truck movements that would be required if trucks were loaded to their volumetric capacity rather than to mass limits as present.

The net benefits of loading to volumetric capacity would then be calculated by deducting from any truck transport cost savings any calculated additional road wear costs associated with volumetric loading of trucks transporting vegetables.

More flexible fatigue management regimes for truck drivers

Truck operators interviewed indicated that the production of vegetables is highly seasonal. At the height of the season, greater flexibility in driving hours could generate a significant improvement in truck utilisation leading to higher transport productivity.

Several operators indicated that more flexible driving hours are available under Advanced Fatigue Management (AFM) scheme but that entry into the AFM scheme was costly and this cost could not be justified given the seasonal nature of the vegetable transport task.

We note that the National Heavy Vehicle Regulator (NHVR) is looking at new "template" approach to AFM which will expand the opportunity for take up of AFM by reducing the costs operators face in achieving accreditation to enter the AFM program.

Possible case study: Case study 3

To estimate the potential gains available through greater working hour flexibility, an operator working under AFM would be sourced. Truck movements and vegetable produce movements under AFM would be calculated for a typical week of operations. These would then be compared to the number of truck movements that would be required to move the same quantity of vegetables without AFM i.e. under a less generous working hour regime.

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1 National Transport Commission 2009, Incremental Pricing Scheme Feasibility Paper, January

2 Juturna Consulting 2011, COAG Road Freight Incremental Pricing Trials, Prospects for a more commercial focus in road reform, report prepared for Infrastructure Australia, August.

Duplication of quality assurance requirements across organisations receiving vegetables

All line haul operators contacted indicated that quality assurance schemes differ across organisations receiving vegetables. Operators indicated that duplication of quality assurance programs led to additional costs as each quality assurance program required that operators be audited to ensure compliance with the required quality assurance scheme.

Possible case study: Case Study 4

We would work with a truck to quantify the quality assurance schemes that the operator is required to meet. We would document each scheme and work with the operator to detail the added administration cost associated with having to meet several quality assurance schemes.

APPENDIX C - DISCUSSIONS WITH REPRESENTATIVES ROAD TRANSPORT SECTOR

Discussions have been held with senior representatives of the road transport sector in Australia, US, Canada and New Zealand including:

Australia

Ron Finemore AO	Chairman, Ron Finemore Transport (RFT)
Darren Nolan	Director, Nolan's Transport
Craig Baker	General Manager Sales and Marketing, Lindsay Australia
Bernie Belacic	Work Health and Safety Manager, Ted Pickering Group
Byron de Kock	Vegetable program Implementation program, HAL
Kurt Hermann	Design Team Coordinator, AusVeg
Rob Hinrichson	Grower, Member, HAL industry Advisory Committee
Ray Hassall	Legal Counsel, NHVR

Canada / USA

Dan Einwechter	CEO and Chairman, Challenger Transportation
David Bradley	President and CEO, Canadian Trucking Alliance
Stephen Laskowski	Snr Vice President, Ontario Trucking Association
Geoffrey Wood	Vice President, Operations and Safety, Canadian Trucking Alliance

New Zealand

Kerry Arnold, Technical Manager, Road Transport Forum NZ

United Kingdom / Europe

Don Armour, Manager, international Affairs, UK Freight Transportation Association (FFA)

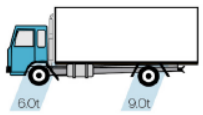
Discussion topics

- Truck mass and dimensions, Performance Based Standards, Driving hours and fatigue management.
- Existing concessions (if any) for horticulture and "time sensitive" freight sectors.
- Transport concerns and issues.
- Desired productivity improvements including changes in regulation and general industry conditions.

Content from these discussions is included in the sections above.

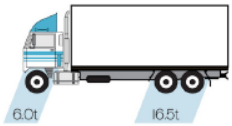
APPENDIX D – AUSTRALIAN NATIONAL TRUCK MASS AND DIMENSION LIMITS

Common 2 Axle Rigid Truck



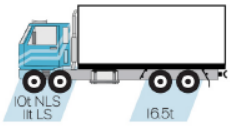
Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	12.5 metres	15.0t	6.0t*	N/A	9.0t	N/A	N/A
CML not permitted	12.5 metres	N/A	N/A	N/A	N/A	N/A	N/A
HML not permitted	12.5 metres	N/A	N/A	N/A	N/A	N/A	N/A

Common 3 Axle Rigid Truck



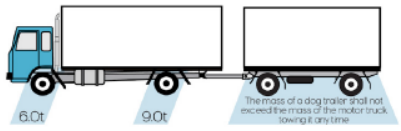
Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	12.5 metres	22.5t	6.0t*	N/A	N/A	16.5t	N/A
CML	12.5 metres	23.0t	6.0t**	N/A	N/A	17.0t	N/A
HML	12.5 metres	N/A	N/A	N/A	N/A	N/A	N/A

Common 4 Axle Twin Steer Rigid Truck



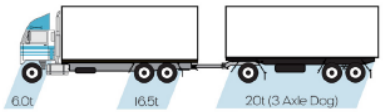
Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	12.5 metres	26.5t NLS 27.5t LS	N/A	10.0t NLS 11.0t LS	N/A	16.5t	N/A
CML	12.5 metres	27.0t NLS 28.5t LS	N/A	10.0t NLS 11.0t** LS	N/A	17.0t 17.0t	N/A
HML not permitted	12.5 metres	N/A	N/A	N/A	N/A	N/A	N/A

Common 2 Axle Rigid Truck and 2 Axle Dog Trailer



Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	19.0 metres	30.0t	6.0t*	N/A	9.0t per single axle	N/A	N/A
CML not permitted	19.0 metres	N/A	N/A	N/A	N/A	N/A	N/A
HML not permitted	19.0 metres	N/A	N/A	N/A	N/A	N/A	N/A

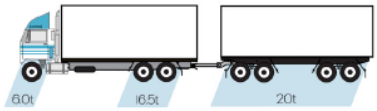
Common 3 Axle Rigid Truck and 3 Axle Dog Trailer



*The higher CCM may be allowed while opperating under Notice

Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	19.0 metres	42.5t	6.0t*	N/A	N/A	16.5t per tandem axle group	N/A
CML	19.0 metres	43.5t	6.0t**	N/A	N/A	17.0t per tandem axle group	N/A
HML not permitted	19.0 metres	N/A	N/A	N/A	N/A	N/A	N/A

Common 3 Axle Rigid Truck and 4 Axle Dog Trailer



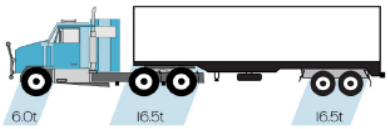
*The higher CCM may be allowed while opperating under Notice and PBS

Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	19.0 metres	42.5t	6.0t*	N/A	N/A	16.5t per tandem axle group	N/A
CML	19.0 metres	43.5t	6.0t**	N/A	N/A	17.0t per tandem axle group	N/A
HML not permitted	19.0 metres	N/A	N/A	N/A	N/A	N/A	N/A

Common 3 Axle Semitrailer

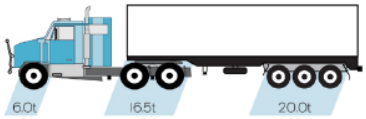
Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	19.0 metres	24.0t	6.0t*	N/A	9.0t per single axle	N/A	N/A
CML not permitted	19.0 metres	N/A	N/A	N/A	N/A	N/A	N/A
HML not permitted	19.0 metres	N/A	N/A	N/A	N/A	N/A	N/A

Common 5 Axle Semitrailer



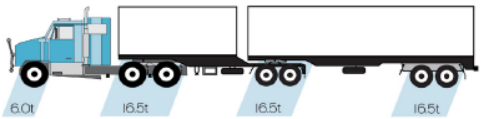
Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	19.0 metres	39.0t	6.0t*	N/A	N/A	16.5t per tandem axle group	N/A
CML	19.0 metres	40.0t	6.0t**	N/A	N/A	17.0t per tandem axle group	N/A
HML	19.0 metres	40.0t	6.0t	N/A	N/A	17.0t per tandem axle group	N/A

Common 6 Axle Semitrailer



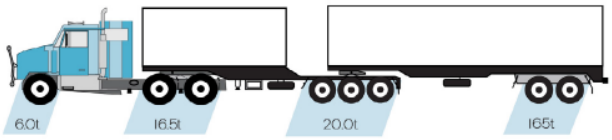
Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	19.0 metres	42.5t	6.0t*	N/A	N/A	16.5t	20.0t
CML	19.0 metres	43.5t	6.0t**	N/A	N/A	17.0t	21.0t
HML	19.0 metres	45.5t	6.0t	N/A	N/A	17.0t	22.5t

Common 7 Axle B-double



Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	19.0 metres	50.0t General access 55.5t Restricted access	6.0t*	N/A	N/A	16.5t per tandem axle group	N/A
CML	19.0 metres	57.0t	6.0t**	N/A	N/A	17.0t per tandem axle group	N/A
HML not permitted	19.0 metres	N/A	N/A	N/A	N/A	N/A	N/A

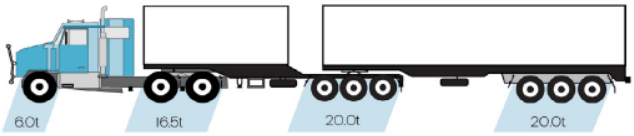
Common 8 Axle B-double



Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	23.0 metres	59.0t	6.0t*	N/A	N/A	16.5t per tandem axle group	20.0t
CML	23.0 metres	61.0t	6.0t**	N/A	N/A	17.0t per tandem axle group	21.0t
HML	23.0 metres	62.5t	6.0t	N/A	N/A	17.0t per tandem axle group	22.5t

Common 9 Axle B-double

#26m is available for eligible vehicles

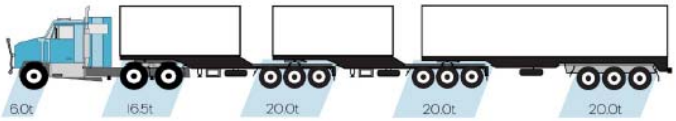


Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	25.0 metres#	62.5t	6.0t*	N/A	N/A	16.5t	20.0t per tri axle group
CML	25.0 metres#	64.5t	6.0t**	N/A	N/A	17.0t	21.0t per tri axle group
HML	25.0 metres#	68.0t	6.0t	N/A	N/A	17.0t	22.5t per tri axle group

Common Road train (Type I)

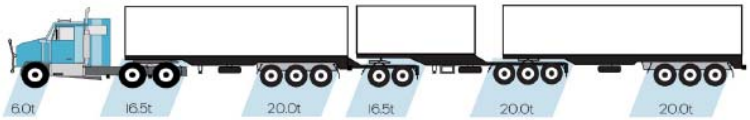
Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	36.5 metres	79.0t	6.0t* 6.0t***	N/A	N/A	16.5t per tandem axle group	20.0t per tri axle group
CML	36.5 metres	81.0t	6.0t**	N/A	N/A	17.0t per tandem axle group	21.0t per tri axle group
HML	36.5 metres	85.0t	6.0t	N/A	N/A	17.0t per tandem axle group	22.5t per tri axle group

Common B Triple Road train



Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	36.5 metres	82.5t	6.0t* 6.0t***	N/A	N/A	16.5t	20.0t per tri axle group
CML	36.5 metres	84.5t^	6.0t**	N/A	N/A	17.0t	21.0t per tri axle group
HML	36.5 metres	90.5t	6.0t	N/A	N/A	17.0t	22.5t per tri axle group

Common AB Triple Road train



Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Group (tonnes)	Single Axle (tonnes)	Tandem Axle Group (tonnes)	Triaxle Group (tonnes)
GML	36.5 metres	99.0t	6.0t* 6.0t***	N/A	N/A	16.5t	20.0t per tri axle group
CML	36.5 metres	101.0t^	6.0t**	N/A	N/A	17.0t	21.0t per tri axle group
HML	36.5 metres	107.5t	6.0t	N/A	N/A	17.0t	22.5t per tri axle group

Common Road train (Type 2)

Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Croup (tonnes)	Single Axle (tonnes)	Tandem Axle Croup (tonnes)	Triaxle Croup (tonnes)
GML	53.5 metres	115.5t	6.0t* 6.0t***	N/A	N/A	16.5t per tandem axel group	20.0t per tri axle group
CML	53.5 metres	118.5t^	6.0t**	N/A	N/A	17.0t per tandem axle group	21.0t per tri axle group
HML	53.5 metres	124.5t	6.0t	N/A	N/A	17.0t per tandem axle group	22.5t per tri axle group

Common BAB Quad Road train

Type of Mass Limits	Maximum Length (meters)	Allowable CVM/CCM (tonnes)	Single Steer Axle (tonnes)	Twin Steer Axle Croup (tonnes)	Single Axle (tonnes)	Tandem Axle Croup (tonnes)	Triaxle Croup (tonnes)
GML	53.5 metres	119.0t	6.0t* 6.0t***	N/A	N/A	16.5t per tandem axle group	20.0t per tri axle group
CML	53.5 metres	121.0t^	6.0t**	N/A	N/A	17.0t per tandem axle group	21.0t per tri axle group
HML	53.5 metres	130.0t	6.0t	N/A	N/A	17.0t per tandem axle group	22.5t per tri axle group

*Please note. The type of Road train configurations may vary between jurisdictions.

* Steer axle mass exception limits apply as an exception to GML for vehicles with a GVM of 15t or more provided they meet ADR 84 - front under-run protection systems (FUPS), a cabin that complies with UN ECE Regulation no. 29 and an engine complying with the emission control requirement contained in ADR 80/01 (Euro IV engine). These vehicles can operate at 6.5t on the steer axle

Under the Queensland Class 3 Heavy Vehicle additional concessional mass limits exemption Notice.

** Heavy vehicles may travel on roads throughout Queensland with an additional 250kg on a single front steer axle and an additional 1tonne on a twin steer front axle when operating under a CML Class 3 Notice (to be advised).

^ Heavy Vehicles may travel on roads throughout Queensland with an additional 3 tonnes above General Mass Limits, if the maximum mass permitted under GML is > 80 tonnes and an additional 4 tonnes if it is > 120 tonnes.

*** Steer axle mass limit can be increased to 6.7t for a prime mover forming part of a road train fitted with tyres of at least 375mm

HGH Consultants

Project Number: VG 13107
Benchmarking international road transport regulations

Report 2

Final Date: 9 December 2014

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TABLE OF CONTENTS

1. SCOPE OF REPORT 2

Overview

Report Two (2) in HIA Project VG13107 outlines options and possible strategies to give effect to the findings and recommendations included in Report One (1) which were designed to improve the productivity, safety and efficiency of road transport in the vegetable sector in the short, medium and long term.

This Report will broadly address these key findings in the following ***FOUR*** categories:

1. Advocacy and Consultation
2. Policy, Legislation and Regulation
3. Productivity Schemes and Improvements
4. Education and Awareness

The primary focus of this report is to identify what needs to be done to allow vegetable growers to pursue the significant road transport productivity gains from improvements within the existing Australian road transport regulatory framework (key finding number four (4) from Report 1 (see key findings below).

Report 1 contained five (5) other findings. This Report does not consider actions to address these findings because:

- Key finding one is a complex issue in terms of advancing possible solutions. The higher costs in the areas indicated are difficult to address given their broader implications to government, even in the longer term. However, they could be picked up in AUSVEG's broader advocacy activities and also used as leverage in pursuing other objectives;
- Key finding two is the subject of a current case study as an extension of this project;
- Key findings three, five and six are for information and do not require specific actions.

Further enhancement of key finding 4 is provided in the Executive Summary and body of this Report based on the case study work undertaken to date.

Key findings from Report 1

To refresh, based on a benchmarking exercise that compared Australian regulation to regulation in selected countries including Europe, Canada, United States and New Zealand, the ***SIX*** key findings from this benchmarking included in Report 1 identified that:

1. The cost of road transport business operation in Australia appears higher compared to the US and Canada, for example in areas such as equipment manufacture. Some of this is perceived to be due to the higher costs imposed through Australian Design Rule requirements, higher fuel and registration fees, higher wages and more stringent occupational health and safety regulations.

2. There are multiple accreditation and quality control regimes in place in Australia for the road transport industry. These often differ between produce clients (major

supermarket chains), markets and governments which in turn is increasing the cost of road transport. These requirements don't appear to be in place to such a large degree in the selected countries outlined above.

3. Australian industries have less choice of transport modes compared to many of the selected countries due to the lack of alternative options to road transport. Australia uses three times more road freight, measured in tonne kilometres, per dollar of GDP than the average OECD nation. This is due to a combination of our geographic size and population density, leading to the need for manufacturing and primary producers to use significantly greater amounts of road freight than their global competitors.

4. While there is no 'silver bullet' that could produce very immediate productivity gains, there is substantial scope for vegetable growers to pursue productivity gains from improvements to the Australian road transport regulatory framework particularly in relation to:

   - Increasing the focus on improving key B-Double networks that service vegetable growing areas including access in first and last mile operations to match improving federal and state road access. This will allow regional industries like the vegetable growing sector (which have less opportunity to use such trucks from source) to remove a cost from their operations by removing the double handing caused by perceived local problems with granting B-Double access.

   - Greater use of existing regulatory schemes in Australia which in the main appear to compare favourably with the selected countries (where schemes exist in those countries), noting that anecdotal evidence suggests these schemes are not as well patronised as they could be due to excessively high cost and perceived unnecessarily high regulatory and compliance and risk management requirements. These schemes include:

     - Higher mass limits (HML).
     - Improved truck length and mass through the Performance Based Standards (PBS) process.
     - More flexible driving hours through the Advanced Fatigue Management (AFM) Scheme.

   - Pursuing the use of longer trailers than those currently allowed general access in Australia as is the case in the US and Canada may be a productive option. In the vegetable growing sector, trucks are usually volume rather than weight constrained, for example:

     - 53ft (16.154m) two axle (or tandem) trailers working at 39.916t. The reduction of one axle set compared to the Australian equivalent truck reduces equipment costs, improves fuel efficiency and reduces maintenance costs.
     - 53ft three axle (or tridem) trailers working at 48.987t which provides approximately 10% productivity increase to a similar truck in Australia.

   - Obtaining higher and more flexible individual axle weights to assist with load configuration in what can be a difficult loading environment.

- Restricted access combinations operating in Canada (B-trains) that have a higher total mass than Australian equivalents. Note: Further research is required to understand the extent of the restricted access that would appear to be more extensive than for B-Doubles in Australia.

5. Australia has advantages over many of the selected countries in specific areas which to some degree reduce some of the disadvantages outlined above including:

    - The use of the B-Double for approximately 70% of long distance road transport provides Australia with an unmatched productivity advantage compared to the five and six axle articulated trucks (8 axle rigid in NZ) in the selected countries. While the B-Double is a restricted access truck, it can operate on the majority of the national and state road network. There continues to be many last mile access restraints that need to be resolved with local road owners.

    - Driving/working hour's regulations that recognise the vast distance challenges involved in moving freight in Australia and have advantages compared to the selected countries.

6. Australia has broadly similar safety outcomes compared to the majority of the selected countries which means there should be no impediment to pursuing greater productivity outcomes. This is further outlined in Section 11 of Report 1. Most of the selected countries indicate a continuous decline in road fatalities involving trucks over the last 20 years despite an increasing freight task.

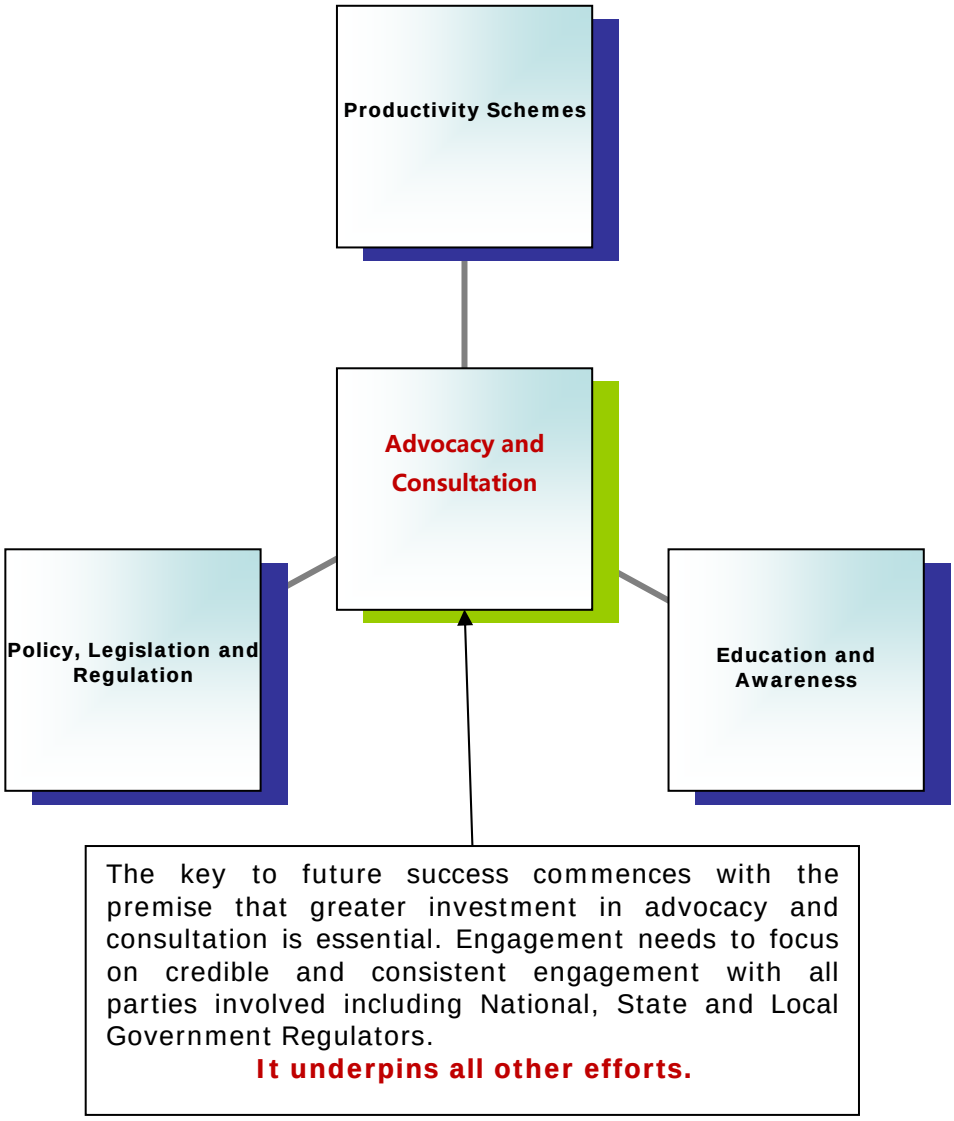
It should also be noted that these key findings are not specific to the transport of vegetables and relate to the road transport sector in general.

2. EXECUTIVE SUMMARY – MAIN FINDINGS

Overview

The Review team considers that greater investment in advocacy and consultation is essential for the future success of the vegetable industry in positively influencing road transport regulation outcomes in Australia. This conclusion is based on the results of the benchmarking review, detailed discussions with transport operators and Industry Associations in the selected countries and also local operators, and the evaluation of the findings from this process through case studies.

As shown in the figure below, the investment and engagement designed to achieve more favourable road transport regulations needs to focus on credible and consistent interactions with all parties involved including National, State and Local Government.



Plenty of scope for reform and no silver bullet solution

It is clear that ample scope exists to pursue reform within current regulatory initiatives already available in Australia that could benefit the vegetable sector based on identifying and utilising the unique characteristics of that sector. This includes taking advantage of the existing regulatory framework in Australia including specific productivity schemes already in place.

As outlined in Report One (1), the Reviews team investigations also found no "silver bullet" solution in the selected countries to provide quick gains based on the international benchmarking initiative.

Case study findings are positive

This finding is supported by the results from the first three case studies undertaken as part of this project. In summary the case study results indicate that there is scope for significant productivity gains in the road transport of vegetables. These include:

- introduction of high performance vehicles to transport vegetables (case study 1); **19 per cent productivity gain**;
- access to increased mass via incremental pricing for heavier loads of vegetables (case study 2) – **13 per cent productivity gain**;
- access to advanced fatigue management regime on trucks transporting vegetables (case study 3) – **6 per cent productivity gain compared to operations under standard hours**.

While preparing this report and as a result of undertaking the first three case studies, the Review Team identified further case studies that, if undertaken, would create a body of empirical evidence supporting the need for regulatory reform in the road transport of vegetables. These studies include:

- identifying the top five to ten key vegetable road transport networks and estimating the gains from the removal of restrictions on the use of productive vehicles on this network;
- the benefits of pursuing greater trailer lengths in selected tasks;
- the benefits of having flexible axle mass limits within existing gross vehicle mass (GVM) (moving weight across axle groups can greatly assist in optimising loading); and
- the opportunity to provide GVM allowances to remove conservative loading practices which are aimed at avoiding sanctions rather than optimising efficiency.

Four categories to improve outcomes

From greater professional engagement (Point 1 below) comes the potential for growing influence in the subsequent areas:

1. Advocacy and Consultation

2. Policy, Legislation and Regulation
3. Productivity Schemes and Improvements
4. Education and Awareness

The major recommendations of each category are briefly outlined below and are further informed by the Case Studies.

1. Advocacy and Consultation

a. Assess current advocacy approaches used by the vegetable sector to influence road transport policy, legislation and regulation in Australia.
b. Examine approaches taken by other regional sectors (livestock and grain for example) to obtain concessional road transport schemes that benefit growers;
c. Develop an Advocacy and Consultation Strategy for use with relevant Federal and State Ministers, Senior Officials and Local Government (in key regional and metropolitan areas) – aligned to key decision making forums of government.
d. Implement the agreed Advocacy and Consultation Strategy with those Government Agencies that develop policy, legislation and regulation in areas that would most benefit the vegetable sector.
e. Engage with the National Heavy Vehicle Regulator including through the proposed Agriculture Industry Advisory Group (IAG) to profile unique vegetable sector challenges.

2. Policy, Legislation and Regulation

a. Develop a prioritised suite of beneficial changes to existing policy, legislation and regulation that would assist the vegetable sector – with estimated productivity, safety and efficiency benefits (as exampled through the initial three Case Studies).
b. Identify and undertake further Case Studies and Economic Modelling as appropriate that will build on work done to date and support future changes sought.
c. Consider where new policy, legislation or regulation could be introduced to benefit vegetable growers.

3. Productivity Schemes and Improvements

a. Assess key supply chain improvements that can be pursued drawing on these Reports and relevant work of other HIA projects such as VG13084.
b. Identify potential productivity schemes for (but not limited to) driving hours and vehicles that will improve vegetable transport productivity, efficiency and safety.
c. Develop technically competent templates to form the basis of specialist productivity scheme/s for the road transport of vegetable products at critical periods. This should include a vegetable sector AFM template development initiative.
d. Identify key vehicle access constraints on key vegetable transport networks. This will include infrastructure issues where readily identified.
e. Undertake further work in consultation with relevant State and Local Governments to trial some test projects that deliver perceived benefits.

4. Education and Awareness

a. Assess current understanding in Vegetable sector of road transport policy, legislation and regulation in Australia and how it impacts the sector.
b. Undertake an Education and Awareness Program to increase the understanding of growers thereby facilitating future support and understanding of beneficial changes to policy, legislation, regulation and productivity opportunities in road transport.

5. Consultation

The consultation undertaken for Report 1 has provided substantial input to Report 2.

6. Next Steps

This report also provides some input to the following factors for HIA and AUSVEG to consider:

- Key Next Steps
- Resources
- Necessary Skills and Experience
- Timelines
- Indicative Costs

The challenge for the industry is to create a meaningful dialogue between growers, transport operators, equipment suppliers and governments to foster the introduction of the policies that can yield the identified productivity gains.

3. ADVOCACY AND CONSULTATION

As indicated above, the hub of future success starts with a review, acknowledgement and emerging vision that to be better in road transport regulation, a greater investment in advocacy and consultation is essential. Such engagement needs to focus on credible and consistent engagement with all parties involved including National, State and Local Government Regulators.

This decision should be considered based on an objective analysis of the perceived value of such engagement to the vegetable sector from which key priorities can then be determined and pursued.

A critical factor in this assessment should be on developing what the "vegetable transport" story is and why it is unique and requires where appropriate different regulation to road transport in general. In this regard "facts matter" is a critical task within what appears to be a very good case for pursuing road transport reform specifically for the vegetable industry.

The review team, based on their extensive and successful experience in dealing with governments in this area, have prepared the following guide as a possible template to pursue better outcomes:

3.1
Assess current advocacy approaches used by the vegetable sector to influence road transport policy, legislation and regulation in Australia.

It would appear that there is little consistent advocacy by the vegetable sector and vegetable growers directly in relation to influencing road transport policy, legislation and regulation outcomes. In other agricultural sectors the road transport operators themselves have advocated strongly and sometimes successfully over long periods for specific productivity schemes and other concessions.

Today, through a range of circumstances including the growing focus on chain of responsibility, other supply chain parties (retailers etc.) are getting more directly involved in advocacy and formal road transport consultation processes. This is evidenced by their membership in formal consultation-n processes established by Governments (e.g. the NSW Road Freight Industry Council).

Based on the clear benefits established by the three case studies undertaken to date as part of VG13107, the Review team finds merit and recommends increasing advocacy efforts targeted at specific road transport areas. This would require a competent Advocacy and Consultation strategy that needs to have the support of the sector or relevant parts of the sector with associated resources to implement.

3.2
Examine approaches taken by other regional sectors to obtain concessional road transport schemes that benefit growers

There is clear evidence that other regional Australia sectors like livestock and grain have benefitted from a consistent, professional and long term approach to advocacy and consultation at all levels of government.

These sectors have been able to identify and provide credible research to back claims that they have unique circumstances that require a different road transport regulatory framework.

Interestingly, most of this work has been done by the transporters themselves but with growing backing from the sectors involved themselves. This is partly due to the large number of transporters involved in these sectors but also recognises their foresight 25 years ago of the need to better support their industry and customers.

3.3
Develop an Advocacy and Consultation Strategy for use with relevant Federal and State Ministers, Senior Officials and Local Government (in key regional and metropolitan areas) – aligned to key decision making forums of government.

Based on the work undertaken in 3.1 and 3.2 above, it is recommended that an Advocacy and Consultation Strategy then be prepared specifically for the road transport of vegetables. This will need to be clear concise and realistic as to timelines for implementation and achievement of outcomes.

The Advocacy and Consultation Strategy would contain elements such as:

- Key productivity issues to be addressed at all levels of government drawing on the findings and recommendations of Report 1 and the above.
- The key issues would be tailored to each level of government – National, State/Territory and Local Government.
- Supporting third party empirical data.
- Options for addressing key productivity with indicative costs.
- Identified outcomes for each of the advocacy positions – productivity and financial benefits to supply chain participants.

The Advocacy and Consultation Strategy would be centred on the understanding that trucks are capable of achieving higher productivity with reduced infrastructure wear, improved environmental and safety outcomes that serve the objectives of the broader community.

The Advocacy and Consultation Strategy would acknowledge that Governments are very much influenced by the public at large which does not view trucks favourably. The public especially does not like the concept of larger or heavier trucks on the road network with other road users despite the fact these higher productivity trucks are safer and more efficient (i.e. can reduce the overall number of trucks on the road). This forms an important part of the political considerations involved with changes to regulation.

There are a range of key decision making forums that the Advocacy and Consultation Strategy would be aligned to as outlined below.

3.4 Implement the agreed Advocacy and Consultation Strategy with those Government Agencies that develop policy, legislation and regulation in areas that would most benefit the vegetable sector.

The Advocacy and Consultation Strategy would build on the work already done by AUSVEG in its broader advocacy role but would need dedicated resources focused on the road transport agenda.

As with other advocacy roles, it would involve:

- A regularised schedule of engagement with all levels of government through each financial year which would align with:
    - Key decision making forums as outlined below.
    - Preparation of budgets at all levels of government.
    - Conferences and events that are attended by Ministers.
    - Conferences and events that are issue specific – infrastructure, transport etc.
- This schedule would be supported by key individuals from the vegetable sector that have the skills and experience to represent the sector.
- Provision of information to and meetings with individual State/Territory Ministers and the National Heavy Vehicle Regulator (NHVR) based on the Advocacy Strategy.
- Depending on the nature of individual items, decisions may be a matter for an individual jurisdiction whereas others would require consideration as part of decision making forums under the COAG framework.
- These forums such as the Transport and Infrastructure Council meet 2 -3 times annually and there is a lead up preparation process conducted by senior public servants that is particularly relevant.
- Provision of information to and meetings with key Commonwealth and State/Territory public servants to assess the departmental positions and nature of briefings given to Ministers on key productivity issues.
- Consultation processes with Local Government at a regional level (political and administrative) to explain key productivity issues, seek feedback and identify potential mutually beneficial solutions – may include presentations to regional forums and individual councils
- Submissions to parliamentary enquiries and consultation processes undertaken by the NHVR and individual jurisdictions.
- Submission and presentations to annual conferences and events in the infrastructure and road transport sector.

Critical elements in the success of both the Advocacy and Consultation Strategy are persistence, well-reasoned positions and an ability to develop and maintain relationships.

4. POLICY, LEGISLATION AND REGULATION

Getting governments to agree to policy change is often influenced to some degree by any requirement for possible legislation and/or regulation changes which require parliamentary approval. Tight parliamentary programs and difficult parliamentary settings often stymie “good ideas” from becoming a reality.

In a road transport sense, road transport operating regulation is to a large degree now handled by the National Heavy Vehicle Regulator (HNVR) through a common set of Laws which sit under Queensland Law.

The process of changing this Law can take time so the short term agenda needs to look to work within existing frameworks whilst also having a medium to long term agenda which may require legislative change if appropriate.

Major policy changes and reviews are handled by the National Transport Commission (NTC) which has policy control across all modes. This role is very much influenced by State Government agendas, in particular states like NSW who carry much of the transport task load due to its location and size.

Once an agreed advocacy and consultation capability is established, policy and legislative goals need to be incorporated with the following possible targets being established.

4.1
Develop a prioritised suite of beneficial changes to existing policy, legislation and regulation that would assist the vegetable sector – with estimated productivity, safety and efficiency benefits (as available from Case Studies).

There are a range of policy changes that could be sought by vegetable producers working at an industry level as outlined in this Section.

Priority 1 - Vehicle Productivity, Vehicle Access and Driving Hours

The following short term targets which do not require legislative action could be pursued as the initial priority:

- Increases in the Higher Mass Limits (HML) network to service key regional vegetable growing locations on a point to point basis. It could also include the introduction of an incremental pricing scheme that was trialled in NSW and Victoria in 2009/10 based on National Transport Commission developed guidelines finding substantial productivity benefits in both trials.
- Utilising the Performance Based Standards (PBS) process to achieve greater trailer length. This includes pursuing the use of longer trailers than those currently allowed general access in Australia as is the case in the US and Canada. In the vegetable growing sector, trucks are usually volume rather than weight constrained, so adopting US and Canadian practices could assist for example:
    - 53ft (16.154m) two axle (or tandem) trailers working at 39.916t. The reduction of one axle set compared to the Australian equivalent truck reduces equipment costs, improves fuel efficiency and reduces maintenance costs.

  - 53ft three axle (or tridem) trailers working at 48.987t which provides approximately 10% productivity increase to a similar truck in Australia.
- Utilising the PBS process to obtain higher and more flexible individual axle weights and innovative vehicle combinations to assist with load configuration in what can be a difficult loading environment. Case study results indicate access to high performance vehicles could generate up to a 19 per cent productivity gain in the road transport of vegetables.
- Further research into restricted access combinations operating in Canada (B-trains) that have a higher total mass than Australian equivalents. Note: this includes better understanding why there is restricted use of the B-trains than would appear to be the case for B-Doubles in Australia.
- Increasing the focus on improving key B-Double networks that service vegetable growing areas including access in first and last mile operations to match improving federal and state road access.
- More flexible driving hours through establishing a vegetable sector template in the new Advanced Fatigue Management (AFM) Scheme. Case study results suggest AFM could offer up to a 6 per cent productivity improvement in road transport of vegetables.

Priority 2 - Specialist Schemes

The second priority could be developing and seeking approval for specialist productivity scheme/s for the road transport of vegetable products. This would be based on the experience of other regional sectors like livestock and grain in obtaining concessional arrangements that meet the unique requirements of the vegetable sector.

These are typically medium to long term projects which require much substance and strong research support to achieve even a “first base” review of their merits. Winning support from one or more state governments can be advantageous in this process.

Priority 3 – Accreditation and Quality Control

A key finding in Report 1 is the goal of seeking a reduction in the multiple accreditation and quality control regimes in place in Australia for the road transport industry.

These schemes often differ between produce clients (major supermarket chains), markets and governments which in turn is increasing the cost of road transport. These requirements don’t appear to be in place to such a large degree in the selected countries.

HIA and AUSVEG has commissioned the review team to undertake an additional case study in VG13107 to examine these costs with work due to commence shortly on this study having obtained the agreement of a road transport operator to participate. It is hoped this work can commence shortly and be completed by February 2015

4.2
Identify and undertake further Case Studies and Economic Modelling as appropriate that will benefit future changes sought.

The three Case Study results undertaken as part of VG13107 to date indicate that there is scope for significant productivity gains in the road transport of vegetables. These include:

- introduction of high performance vehicles to transport vegetables (Case Study 1); **19 per cent productivity gain**;
- access to increased mass via incremental pricing for heavier loads of vegetables (Case Study 2) – **13 per cent productivity gain**;
- access to advanced fatigue management regime on trucks transporting vegetables (Case Study 3) – **6 per cent productivity gain compared to operations under standard hours**.

In addition to the Case Studies above, HIA has indicated that it wishes Case study 6 to proceed. Case Study 6 is an evaluation of the extra costs vegetable growers face as a result of the added administration cost associated with transport operators having to meet several quality assurance schemes.

It will be important to consider developing with grower and transporter input, future possible cases studies, perhaps in the HML and B-Double area that will support sector needs for more action in this area.

While preparing this report and as a result of undertaking the first three case studies, the Review Team identified further case studies that, if undertaken, would create a body of empirical evidence supporting the need for regulatory reform in the road transport of vegetables. These studies include:

- identifying the top five to ten key vegetable road transport networks and estimating the gains from the removal of restrictions on the use of productive vehicles on this network;
- the benefits of pursuing greater trailer lengths in selected tasks;
- the benefits of having flexible axle mass limits within existing gross vehicle mass (GVM) (moving weight across axle groups can greatly assist in optimising loading); and
- the opportunity to provide GVM allowances to remove conservative loading practices which are aimed at avoiding sanctions rather than optimising efficiency.

4.3
Consider where new policy, legislation or regulation could be introduced to benefit vegetable growers.

This is the crystal ball or long term discipline application that leads to governments being willing to introduce new (as opposed to amending existing) legislation to deliver a benefit that the industry has shown would be beneficial.

This is where Case studies and associated economic modelling will provide highly valuable data which can be used to substantiate the priority changes being sought. This data will form an important part of the Advocacy and Consultation process outlined above.

5. SECTOR PRODUCTIVITY SCHEMES AND IMPROVEMENTS

Both road transport and broader supply chain possible initiatives that would improve productivity were identified through the project. Some of these have also been touched on in earlier sections but are consolidated in this section for ease of reference.

5.1
Assess key supply chain improvements that can be pursued drawing on these Reports and relevant work of other HAL projects such as VG13084.

In Report one (1), a wide range of anecdotal supply chain issues were identified from the discussion process. It is recommended that supply chain reforms be further analysed including a review of the outcomes of VG13084 in the areas of:

- Reductions in the double/triple handling of produce.
- Seeking to positively influence retailers' practices of mixing loads, branding boxes, not holding stock in store, not taking full loads and rejecting loads.
- Educating vegetable producers about the impact of late picking on the ability of transporters to "hit" markets by curfews. Producer knowledge of the transport task, particularly involving long haul, associated regulations and requirements is said to be quite variable. This is further outlined in Section 6 below.
- Improved temperature control at pick up to reduce the potential for not achieving chain stores temperature range and loads being rejected.
- Improved growers' cooperation to allow transport operators to pick up the same product from numerous producers recognising the commercial sensitivities involved.
- There are seasonal complexities experienced by transporters including periods of very high demand followed by reduced demand that impacts on the commercial viability of having specialised equipment.

5.2
Identify potential productivity schemes for (but not limited to) driving hours and vehicles that will improve productivity, efficiency and safety.

Outlined in 4.1 above.

5.3
Develop technically competent proposal/s to form the basis of specialist productivity scheme/s for the road transport of vegetable products at critical periods.

Other Australian agricultural sectors (e.g. livestock and grain) have obtained productivity gains and sector specific schemes by campaigning and winning concessions based on their perceived different operating needs. Strong research with clear productivity and safety outcomes were key aspects of more recent successes in these areas.

It is recommended that a process be undertaken to identify the products, locations, seasons and road transport tasks that would benefit from sector specific schemes. This may include gaining concessions in specific combinations of weight, dimension, access and driving hours above that available from the general productivity schemes outlined above.

5.4
Identify key vehicle access constraints on key vegetable transport networks. This will include infrastructure issues where readily identifiable.

As outlined in 4.1 above, it is recommended that priority be given to identify the products, locations, seasons and road transport tasks that would benefit from improved key B-Double networks that service vegetable growing areas. This would include improved access in first and last mile operations to match improving federal and state road access.

This will include the identification of key infrastructure constraints such as road pavement strength, road pavement widths and shoulder conditions, bridges etc.

This will allow regional industries like the vegetable growing sector (which have less opportunity to use such trucks from source) to remove a cost from their operations by removing the double handing caused by perceived local problems with granting B-Double access.

5.5
Undertake further work in consultation with relevant Local Governments and infrastructure providers to trial some test projects that deliver perceived benefits.

A recommended approach to seeking gains in these areas to do small scale “show them” projects in a structured process with the Local Governments in key locations. This would be based on the results of the above identification of key vehicle access constraints combined with constructive options as to how they could be managed at peak times. This is low risk and achievable and adds momentum to developing the big picture case for reform

This type of initiative will of course form an important part of the Advocacy and Consultation process outlined above.

6. EDUCATION AND AWARENESS

The detailed discussions with local transport operators who undertake work in the Australian vegetable growing sector has identified that current understanding of the road transport task is generally low. This is understandable in an ever changing and increasingly complex. However, if the vegetable sector is going to maximise the opportunities to leverage road transport law to deliver benefits, increased understanding is a must.

6.1
Assess current understanding in vegetable sector of road transport policy, legislation and regulation in Australia and how it impacts the sector.

This lack of understanding appears to have manifested to some extent in supply chain issues such as:

- Impact of late picking on the ability of transporters to “hit” markets by curfews. Producer knowledge of the transport task, particularly involving long haul, associated regulations and requirements is said to be quite variable. This is further outlined in Section 6 below.
- Variable temperature control at pick up that increases the potential for not achieving chain stores temperature range and loads being rejected.
- Lack of growers’ cooperation not allowing transport operators to pick up the same product from numerous producers, recognising the commercial sensitivities involved.
- There are seasonal complexities experienced by transporters including periods of very high demand followed by reduced demand that impacts on the commercial viability of having specialised equipment.
- Lack of local co-operation to work co-operatively improve access in local government areas.

Whilst this perception is created from a narrow window, an assessment of current understanding will help HIA and AUSVEG understand what is required to progress possible future initiatives in this area which to a large degree require local grower and transporter co-operation to be successful.

6.2
Undertake an Education and Awareness Program throughout the vegetable sector to increase the understanding of growers and transporters thereby facilitating identification of future beneficial changes to policy, legislation, regulation and productivity.

It is recommended that an Education and Awareness Program be developed and delivered throughout the sector based on the outcomes of the assessment suggested above. The key contextual aspects of such a program are:

- Individual vegetable growers are thought to be time poor and under commercial pressure with potentially little time to read and act on information. Associations will have a variety of mechanisms to disseminate information to vegetable growers and these need to be effectively used.

- Transport operators working for vegetable producers do not seem to have pursued specialist productivity schemes in the same manner as in other sectors. It is recommended that this circumstance be further analysed in order to inform future actions.

The key elements of the Education and Awareness Program are:

- Identification of key stakeholders in the sector and provision of specific information for them to be able to communicate to others.

- Development of key messages and materials for specific audiences within the sector – by produce type, by location etc. This would be presented at appropriate times as:

    - Potential changes and improvements that could be made now to supply chain processes as per above.

    - Potential initiatives that could be further developed to improve productivity for Transport Operators with financial gains for vegetable growers as per above.

    - Need for vegetable growers to work together in order to pursue changes as per above.

- Use of existing mechanisms to distribute key messages and supporting information including of other specific productivity schemes such as newsletters, websites, Association meetings and other regular forums.

- Delivery of information sessions by experienced road transport practitioners at existing Association meetings and forums.

- Use of appropriately experienced road transport practitioners to conduct a series of individual visits to vegetable growers in order to diagnose issues in more detail and to provide information in a more informal setting.

- Use of the current and future Case Studies to highlight the productivity and financial gains that can be made from changing existing supply chain practices.

- Use of the current and future Case Studies to highlight the productivity and financial gains that can be made from existing productivity schemes and specialist productivity schemes outlined above.

The Education and Awareness Program could also feature less commercially sensitive information being provided by:

- Road Transport Associations to Associations and their members.

- Associations to Road Transport Associations and their members.

This would be an effort have information shared about the challenges and opportunities at a sector level for mutual benefit.

Mechanisms such as use of surveys (online and phone based) at appropriate times could also be used to inform the development of the Education and Awareness Program.

7. NEXT STEPS

Further work is required in order for HIA and AusVeg to gain benefit from Report 1 and Report 2 of the Benchmarking international road transport regulations project. This is broadly outlined below.

7.1 Key Next Steps

Recommended next steps are:

a. Engaging appropriately experienced project manager/s to lead and manage the next steps.

b. Developing more detailed positions on the priority productivity schemes and improvements identified in Section 4 above. This would include initial technical analysis.

c. Undertaking supply chain and economic modelling to develop more detailed positions on the supply chain improvements identified in Section 4 above. This would identify priority supply chain improvements based on a set of criteria and undertake the analysis required.

d. Preparing information and collateral to support the priorities for inclusion in the Advocacy Strategy and the Consultation and Engagement Strategy.

e. Undertaking an initial round of consultation with key decision makers and third party experts to fine-tune priorities and approaches.

f. Developing and implementing the Advocacy Strategy and the Consultation and Engagement Strategy.

7.2 Resources

As outlined an investment is required to undertake tasks on an ongoing basis which will need to be supported as required by representatives of HIA, AusVeg and Associations and road transport operators. Options will need to be investigated to ensure a foundation and expertise to deliver road transport reform initiatives in the longer term is built if the benefit of making such an investment is seen as worthwhile by participants.

7.3 Necessary Skills and Experience

Without a detailed assessment, skills and resources matching the following would need to be established to pursue an agreed agenda in this area:

- Substantial experience and expertise in the road transport sector in all of its facets including operations, technical, regulatory and political environments. Experience or knowledge of the vegetable sector would be an added advantage.

- An established network of relationships to assist in achieving outcomes.

- Supply chain analysis, logistics and economic modelling experience and expertise.
- Project management experience to ensure integration of all disciplines and achievement of cost and timeline parameters.

7.4 Timelines

Development of Advocacy Strategy and Consultation and Engagement Strategy could be achieved by July 2015. This should include staged milestones.

7.5 Indicative Costs

The long term investment in this delivering this strategy has a ballpark or best guess figure of approximately $500,000 pa subject to the extent of research required.

The development and supported implementation of the Advocacy and Consultation Strategy as outlined above is estimated at approximately $150,000 based on staged milestones.

REPORT

ENHANCED EFFECIENCY IN THE ROAD TRANSPORT OF VEGETABLES

Case study 1 results: Transport of pumpkins using an A Double

15 December 2014

Prepared for:

Horticulture Innovation Australia

Prepared by:

John Zeitsch

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EXECUTIVE SUMMARY

To identify areas in which the transport cost of vegetables could be lowered through the introduction of improved regulation, facilities, equipment or work practices extensive interviews were undertaken with road transport operators involved in the transport of vegetables. These interviews identified several areas where it was considered that transport costs of vegetables could be lowered. Case studies were developed to quantify the gains from the potential cost saving areas identified. These were:

Case study 1: Identification of the gross productivity gain available from the use of high performance vehicles to transport vegetables from the Murray region of NSW and Victoria;

Case study 2: Benefits from access to higher vehicle mass through incremental pricing associated with heavier loads of vegetables transported by an operator in Northern Queensland;

Case study 3: Evaluation of the potential productivity gains in the transport of vegetables from Queensland available through greater driving hours flexibility available under the Advanced Fatigue Management scheme (AFM) available to accredited operators in Australia;

Case study 4: calculation of the extra transport costs vegetable growers face as a result of the extra costs Australian trucking operators face due to different payroll tax systems and workers compensation systems in Australia's states and territories;

Case study 5: Identification of the extent delays in the transport of vegetables originating at the grower level and evaluation of the factors generating any identified delays;

Case study 6: Evaluation of the extra costs vegetable growers face as a result of the added administration cost associated with transport operators having to meet several quality assurance schemes.

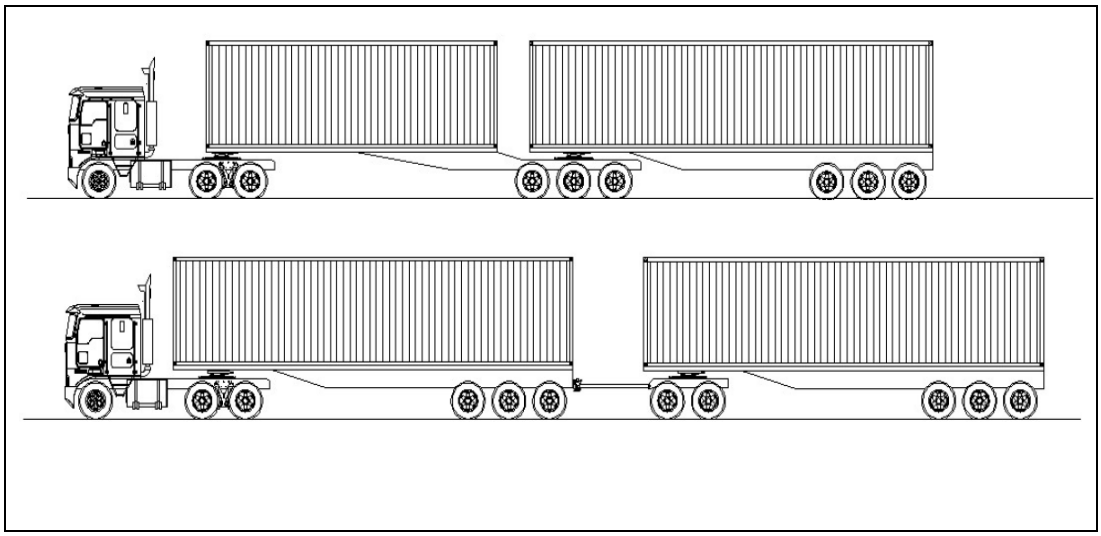
A document detailing the potential case studies was provided to HAL for their consideration. HAL indicated a preference for case studies 1, 2 and 3 to be undertaken. HAL subsequently indicated that they would also like case study 6 undertake.

This report documents the results obtained from Case study 1.

The results generated in **Case study 1** indicate there is significant potential to lower the cost of transporting pumpkins from the Murray region to markets in Adelaide, Perth and Sydney through the introduction of high performance vehicles.

Evaluation of alternate high performance vehicles indicated that a truck known as an A Double would have the greatest chance of being approved to operate into fresh vegetable markets in Australia. An A Double is only 4 meters longer than a B Double (Figure 1) and trailer manufacturers indicated that the A Double has road operating performance standards similar to the B Double.

Figure 1 : A 9 axle B double (top) and an A Double (bottom)



Source: Reproduced from, Ritzinger A, Haldane M. and Elischer M. 2014, Productivity gains through expansion of performance based standards network in Queensland. Available at: http://www.advantia.com.au/wp-content/uploads/2014/08/Productivity-gains-through-expansion-of-Performance-Based-Standards-Network-in-Queensland-Ritzinger.pdf

The high performance A Double truck would operate on what is known as the Performance Based Standards road network. This network may need expansion to cover routes typically accessed by trucks delivering vegetables to wholesale markets or distribution centres owned by major supermarket chains.

Case study 1 evaluated the gains available through the use of an A Double to transport pumpkins from the Murray Region of NSW to major vegetable markets in Victoria, New South Wales and South Australia.

The analysis indicated that the introduction of A Double vehicles could lower the cost of transporting pumpkins from the Murray region to market by almost 20 per cent.

1. INTRODUCTION

To identify areas in which the transport cost of vegetables could be lowered through the introduction of improved regulation, facilities, equipment or work practices extensive interviews were undertaken with road transport operators. These interviews identified several areas where it was considered that transport costs of vegetables could be lowered. These included:

- a greater use of higher performance trucks such as B Triples, Super B Doubles and A Doubles and/or improved design of existing trucks;

  greater access to higher mass on vehicles transporting vegetables either through;

  - expansion of the higher mass limits network for eligible vehicles; and/or
  - improving access for high performance trucks at the start and end of journeys (so called "last mile" access issues); and/or
  - the introduction of incremental pricing for vehicles with heavy loads;
- more flexible fatigue management regimes for truck drivers;
- unnecessarily high costs of road transport in Australia;
- duplication of quality assurance requirements across organisations receiving vegetables; and
- grower initiatives that could lower transport costs.

An evaluation was undertaken of the suggestions to improve the efficiency of transport of vegetables suggested by operators interviewed in the initial stages of the project. Based on this evaluation 6 potential case studies were identified. These were:

Case study 1: Identification of the gross productivity gain available from the use of high performance vehicles to transport vegetables from the Murray region of NSW and Victoria;

Case study 2: Benefits from access to higher vehicle mass through incremental pricing associated with heavier loads of vegetables transported by an operator in Northern Queensland;

Case study 3: Evaluation of the potential productivity gains in the transport of vegetables from Queensland available through greater driving hours flexibility available under the Advanced Fatigue Management scheme (AFM) available to accredited operators in Australia;

Case study 4: calculation of the extra transport costs vegetable growers face as a result of the extra costs Australian trucking operators face due to different payroll tax systems and workers compensation systems in Australia's states and territories;

Case study 5: Identification of the extent delays in the transport of vegetables originating at the grower level and evaluation of the factors generating any identified delays;

Case study 6: Evaluation of the extra costs vegetable growers face as a result of the added administration cost associated with transport operators having to meet several quality assurance schemes.

A document detailing the potential case studies was provided to HAL for their consideration. HAL indicated a preference for case studies 1, 2 and 3 to be undertaken. HAL subsequently indicated that they would also like case study 6 undertake.

In this document the results from case studies 1, are documented.

2. PRODUCTITY GAINS FROM GREATER USE OF HIGHER PERFORMANCE VEHICLES

2.1. BACKGROUND

During the interviews with transport operators undertaken as part of this project it was suggested that a greater reliance on higher performance trucks could improve the productivity of the road transport of vegetables. This could be achieved through;

- modification of the design of existing truck configurations to achieve higher productivity; and/or
- introduction of vehicles with greater capacity.

Interviews with transport operators identified improvements to existing truck configurations which could improve the productivity of transporting vegetables. These initiatives included increasing the length of trailers to accommodate an additional 2 pallets of vegetables and/or increasing the width of trailers. Increased trailer width would be particularly important for refrigerated transport as it would enable increased insulation to be installed in trailers without reducing the capacity of trailers. This would improve the thermal efficiency of trailers without reducing trailer capacity

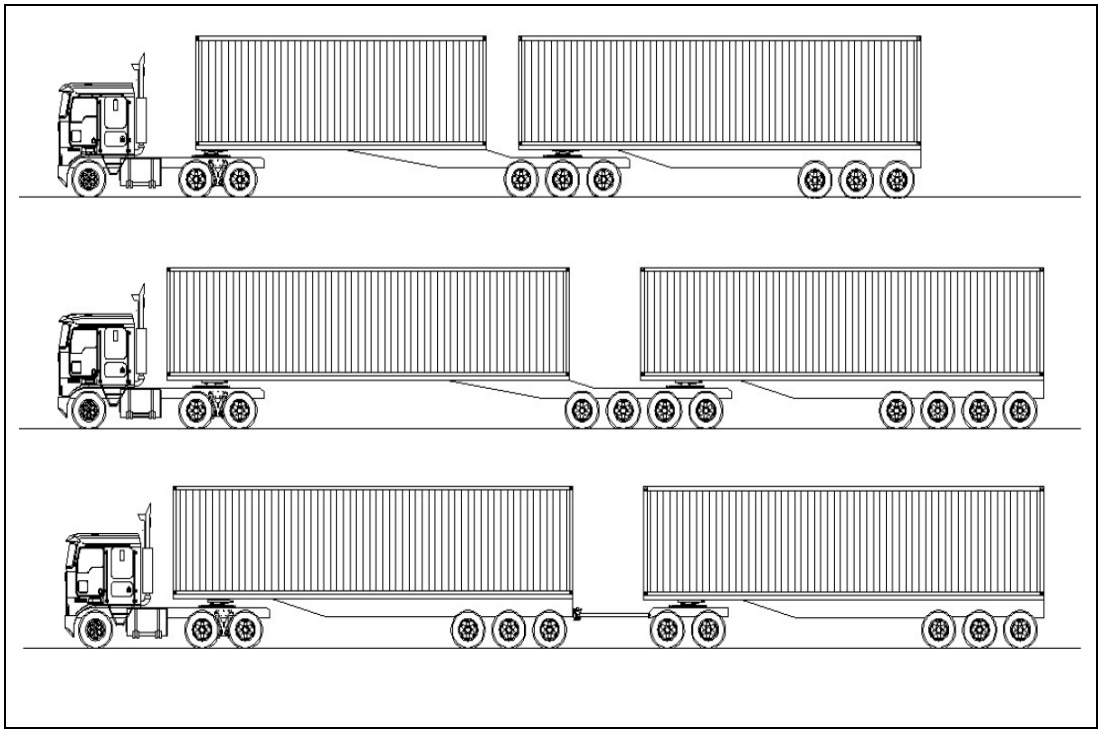
Modification of existing truck designs has the advantage that, if the modification is accepted, the vehicle could operate under “general access” provisions. That is, the modified truck would have access to the road network that the original truck had.

High performance trucks that have the potential to increase the productivity of road transport of vegetables include B Triples, Super B Doubles or A Doubles (Figure 2). An A Double could transport approximately 48 pallets of vegetables compared to 36 pallets transported in a B Double.

These trucks would operate on the Performance Based Standards road network which may need expansion to cover routes typically accessed by trucks delivering vegetables to wholesale markets or distribution centres owned by major supermarket chains.

To evaluate the gains from access to PBS vehicles to transport the pumpkins an appropriate PBS vehicle needs to be selected for the analysis. Alternate vehicles that could be used to transport pumpkins from the Murray region to markets are evaluated in the following section.

Figure 2 : The regulation design B-double, overall length < 26 m (top), a super B-double, overall length < 30 m (middle), and a PBS Level 2B A-double, overall length < 30 m (bottom)



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2.2. SELECTION OF THE PBS VEHICLE

As noted by the National Heavy Vehicle Regulator, the Performance-Based Standards (PBS) Scheme:

> *offers the heavy vehicle industry the potential to achieve higher productivity and safety through innovative and optimised vehicle design.*
>
> *PBS vehicles are designed to perform their tasks as productively, safely and sustainable as possible, and to operate on networks that are appropriate for their level of performance. The basic principle of PBS is matching the right vehicles to the right tasks.* [1]

There are four levels of access within the PBS scheme ranging from general access to Australia's road network (Level 1) to the most-restricted access (Level 4). Within access levels 2 to 4 the guidelines make provision for two subclasses of network access, designated Class A and Class B, based on vehicle length.

[1] National Heavy Vehicle Regulator 2014, About Performance-Based Standards. Available at: https://www.nhvr.gov.au/road-access/performance-based-standards/about-performance-based-standards

Proposed PBS vehicles access to this network is tested against 16 safety standards and 4 infrastructure standards to ensure the proposed PBS vehicle can operate safely on the existing road network (Figure 3).

Figure 3 : PBS vehicle standards

Standard	Type	Factors	Particularly Relevant to
A1 Pavement Vertical Loading	Infrastructure – road wear.	Axle group loads.	Heavy vehicles. PBS recognizes the existing mass-limit schemes GML, CML and HML.
A2 Pavement Horizontal Loading	Infrastructure – road wear.	GCM according to number of driven axles, axle group spreads and steerable axles.	Heavy vehicles. Level dependent.
A3 Tyre Contact Pressure Distribution	Infrastructure – road wear.	Weight on a single tyre or dual tyres.	Vehicles with high axle loads. Not Level dependent.
A4 Bridge Loading	Infrastructure – bridge capability.	Distribution of weight on a bridge. Bridge formulae must be met that relate weight and axle spacings.	Heavy trucks. Different bridge formulae are specified for different levels.
C1 Start-ability	Safety – ability to get the loaded vehicle moving on a grade	Effectively specifies minimum drive-train torque capability in low gear.	Heavy vehicles. Different starting grades are specified for the different Levels.
C2 Grade-ability	Safety – ability to hold a minimum speed on a specified grade and weight.	Minimum drive-train power in higher gears.	Heavy vehicles. Different speed -holding requirements apply for different Levels. Level 1 = 80 km/h
C3 Acceleration Capability	Safety – ability to move through intersections in a reasonable time.	Requires well-chosen low-gear ranges and a suitable engine torque.	Heavy vehicles. Different intersection clearing times for the different Levels.
C4 Overtaking Provision	Safety – ability of other road users to pass a long vehicle.	Total vehicle length.	Long vehicles. Limits total length according to Level and Class specification. Maximum length = 60m
C5 Tracking Ability on a Straight Path	Safety – ability to stay within a lane on a straight path.	Requires suitable dimensions and suspension and tyre performance.	Long vehicles. Requires suitable mechanical design. Level dependent.
C6 Ride Quality	Safety – driver comfort.	This standard is yet to be finalized. The intention is to specify maximum whole-body vibration dose limits.	All motor vehicles. Not Level dependent.
C7 Low-Speed Swept Path	Safety – ability to negotiate intersection corners.	Vehicle dimensions and coupling locations.	Long vehicles. Level dependent.
C8 Frontal Swing	Safety – ability to negotiate a tight turn.	Frontal projection dimension.	Vehicles with long frontal projections. Not Level dependent.
C9 Tail Swing	Safety – ability to negotiate a tight turn.	Maximum excursion out of a lane when making a turn.	Vehicles with long rear protrusions. Level dependent.
C10 Steer Tyre Friction Demand	Safety – understeer performance on a tight turn.	Maximum horizontal steering force according to weight (i.e. friction utilization) of the steer tyres.	Load distribution on the motive vehicle. Note Level dependent.
C11 Static Roll-Over Threshold	Safety – limits tendency to roll-over when cornering.	Maximum height of the centre of mass of each of the loaded vehicle parts.	Load distribution and dimensions of each vehicle part. Not Level dependent.
C12 Rearward Amplification	Safety – limits build-up on tail swing resulting from a sudden change of steered direction.	Dimensions, coupling locations, suspension characteristics and tyre characteristics.	Combinations with drawbar couplings. Not Level dependent.
C13 High-Speed Transient Off-Tracking	Safety – limits excursion from path during avoidance manoeuvre.	Dimensions, coupling locations, suspension characteristics and tyre characteristics.	Combinations with drawbar couplings. Level dependent.
C14 Yaw Damping Co-Efficient	Safety – limits time taken from a 'sway' mode to stop.	Dimensions, coupling locations, suspension characteristics and tyre characteristics.	Long multi-combination vehicles. Level dependent.
C15 Handling Quality	Safety – specifies adequate steering control	This standard is yet to be finalized.	Design of the motive vehicle steering system.
C16 Directional Stability Under Braking	Safety – limits wheel lock-up on the unladen vehicle under heavy braking .	Features of the brake system. Requires either an adaptive brake system or Antilock Brakes	Brake system design. Not Level dependent.

Source: Reproduced from: Peter Hart ARTSA Chairman 2013, The Potential of Performance-Based Standards. Available at: http://www.artsa.com.au/assets/articles/2013_04.pdf

In this exercise 2 potential PBS vehicles were evaluated against a traditional 9 axle B Double that is currently used to transport the pumpkins form the Murray region to markets. These were an A double and a super B Double. A super B Double is essentially a B Double with an A trailer equal in length to a B trailer. An A Double is essentially a double road train but with an advance dolly mechanism that couples the A trailer to the second trailer in such a way that vastly improved trailer performance is achieved relative to a traditional double road train (Figure 2).

The operating characteristics of the 2 PBS vehicles are summarised in Table 1 along with the regulatory parameters for a B Double. A 30 meter long A Double could accommodate two 40 foot trailers and have the potential to operate on the same (Class 2B) network that longer B

Doubles operate on. An A double operating at HML also offers a significant productivity advantage over a B Double as the A Double has a legal gross vehicle weight 30 per cent above a B Double operating at HML (Table 1).

Table 1: Regulatory parameters for selected PBS vehicles

Vehicle	Access level	Vechile length (m.)		Gross combination mass (t)	
		Class 'A'	Class 'B'	General Mass Limits	Higher Mass Limits
Regulation B-double	Level 2	L ≤ 26	26 < L ≤ 30	62.5	68
Super B-double	Level 3*	L ≤ 36.5	36.5 < L ≤ 42	67	73
A-double	Level 2B	L ≤ 26	26 < L ≤ 30	79.5	85

Source: Source: RTA, Ritzinger A, Haldane M. and Elischer M. 2014, Productivity gains through expansion of performance based standards network in Queensland.

In contrast, Super B Doubles are generally restricted to the Class 3 network due to relatively low swept path performance[2] (PBS Standard C7, see Figure 3). In addition a Super B Double offers a lower potential productivity gain as it has a legal gross vehicle mass of 73 tonnes at HML. This is approximately 15 per cent below the gross vehicle mass available for an A Double operating at HML (Table 1).

In terms of the PBS standards detailed in Figure 3 a manufacturer of A Double trailers indicated that the A Double can achieve many of performance standards equivalent to those achieved by a B Double. For example, the manufacturer indicated that an A Double has the same or better swept path performance than a B Double. The manufacturer also indicated that A doubles are currently operating from Toowoomba into Brisbane Port.

An A Double was chosen as the PBS vehicle to be evaluated in this study based on the higher productivity advantage offered by an A Double and given the manufacturers assessment of the PBS performance an A Double can provide.

The productivity gains available from the transport of pumpkins in high performance vehicles are documented in the following section.

2.3. CASE STUDY RESULTS

To identify the potential benefits associated with the use of higher performance trucks to transport vegetables agreement was reached with a transport operator located in the Murray Region of NSW to provide data related to the transport of vegetables to major vegetable markets in Victoria, New South Wales and South Australia.

Discussions were held with the operator to determine a sub set of the operators total road transport movements that would benefit from access to higher performance vehicles. It was decided that the analysis should concentrate on an evaluation of the productivity gains available in the transport of a typical year's production of pumpkins.

Data provided by the operator indicated that in a typical year approximately 7,250 tonnes of pumpkins are produced in the study region. Currently, these pumpkins are transported to vegetable markets in Sydney Adelaide and Melbourne in 9 axle B Double trucks. In a typical year 35 per cent of production is sent to Adelaide markets, 65 per cent to Melbourne markets and 5 per cent to Sydney markets.

[2] Ritzinger A, Haldane M. and Elischer M. 2014, Productivity gains through expansion of performance based standards network in Queensland, p. 6.

The operator indicated the trucks operate at Higher Mass Limits. That is, they have a maximum legal vehicle mass of 68 tonnes (Table 2). However, the operator indicated they aim to achieve a truck gross vehicle mass of 64 tonnes which allows for variation in pumpkin weights and a lower weight is also required to ensure the mass limit of 22.5 tonnes on the first tri axle on the 9 axle B Double is not exceeded (Table 2).

Table 2: Axle mass limits under GML, CML and HML (tonnes)

	1 Axle		2 Axles			3 Axles
	2 tyres	4 tyres	4 tyres	6 tyres	8 tyres	12 tyres
GML	6.0t	9.0t	11.0t	13.0t	16.5t	20.0t
CML	6.0t	9.0t	11.5t	13.5t	17.0t	21.0t
HML	6.0t	9.0t	11.5t	14.0t	17.0t	22.5t

Source: National Heavy Vehicle Regulator 2014, National heavy vehicle mass and dimension limits.

The operator indicated that to meet the target weight of 64 tonne per B double load they typically aim for 100 bins per load with each bin weighing a gross weight per bin of 380 kilograms or approximately 38 tonnes of pumpkins per B Double load.

To estimate the productivity gain from the utilisation of A Double trucks rather than B Double trucks to transport pumpkins a loading calculator was used to estimate the distribution of the load on each truck type.[3]

The tare weight of the 9 Axle B Double truck of 26 tonnes was first used to derive estimates of the tare weight of each axle. This was achieved by distributing this weight over the axles assuming approximately:

- 18.8 per cent of the weight was on the steer axle
- 23.2 per cent of the remaining tare weight was on the drive axle;
- 30.3 per cent of the remaining tare weight was on the A trailer Tri axle; and
- 27.7 per cent of the gross vehicle weight was on the B trailer Tri axle.

The calculated tare weights of each axle were then entered into the Loading Calculator and the truck was then loaded with 100 bins of pumpkins each weighing 380 kilograms. The calculated loads on each axle are given in Chart 1.

[3] The loading calculator was an adapted version of a Livestock Loading calculator developed for Roads & Maritime Services in NSW. See: Roads & Maritime Services 2012, Livestock Loading Calculator User Guide. Available at: http://www.rms.nsw.gov.au/documents/business-industry/heavy-vehicles/livestock-calculator-user-guide.pdf

Chart 1 **Axle weights on a 9 axle B Double transporting 100 bins of pumpkins each weighing 380 kilograms and operating at HML (kilograms)**

Axle weight summary					
Weight	Steer axle	Drive axle	A-Trailer tri axle	B-Trailer tri axle	Total Vehicle
Tare	4,893	6,044	7,867	7,196	26,000
Load	134	10,437	14,049	13,380	38,000
Gross	5,027	16,481	21,916	20,576	64,000
Maximum	6,000	17,000	22,500	22,500	68,000

Data source: Output from loading calculator.

As indicated by the operator when 38 tonnes of pumpkins are loaded on to a truck with a tare weight of 26 tonnes, the loaded weight on the first tri axle approaches its mass limit of 22,500 kilograms (i.e. 21,916 kilograms, see A -Trailer tri axle column in Chart 1). Thus, the specific gravity of pumpkins constrains the load than can be transported by a B Double, even if the truck operates at HML.

An A Double was then assumed to transport the pumpkins. The tare weight on each axle group in the A Double was estimated by taking the tare weight of a double road train livestock truck and then deducting 2 tonnes per trailer as the estimated extra weight associated with a livestock crate relative to a curtain sider trailer.

The calculated tare weights on each axle were then entered into the Loading Calculator and alternate loading patterns were entered into the calculator until the load was maximised without breaching any axle limits. This procedure resulted in 138 bins of pumpkins being loaded, 68 on the first trailer and 70 on the second trailer.

The axle weights for this loading pattern are given in Chart 2 where it can be seen that the A Double can transport approximately 52 tonnes of pumpkins. This represents a gross productivity gain of approximately 38 per cent over transport of pumpkins using a B Double.

Chart 2 **Axle weights on an A Double transporting 138 bins of pumpkins each weighing 380 kilograms and operating at HML (kilograms)**

Axle weight summary for A Double transporting 138 bins of pumpkins (kilograms)						
Weight	Steer axle	Drive axle	A-Trailer tri axle	1st Dolly axle	B-Trailer tri axle	Total Vehicle
Tare	4,423	5,778	7,146	5,534	7,146	30,027
Load	227	11,145	14,468	11,358	15,242	52,440
Gross	4,651	16,923	21,614	16,892	22,388	82,467
Maximum	6,000	17,000	22,500	17,000	22,500	85,000

Data source: Output from loading calculator.

However, there would be extra costs associated with the operation of an A Double compared to a B Double. The additional costs arise from the higher purchase cost of an A Double compared to a B Double and the higher operating costs of an A Double relative to a B Double (mainly fuel).

To estimate the additional costs associated with an A Double a truck cost calculator produced by Freight Metrics[4] was used to cost the operation of a B Double and the operating cost

[4] Costs calculated using the "Trial version" of Freighmetrics truck cost calculator. Available at: http://www.freightmetrics.com.au/Calculators/TruckOperatingCostCalculator/tabid/104/Default.aspx

approximated by the operating cost of a Double road train, but with fuel consumption rates adjusted for line haul operation.

This calculation yielded an illustrative cost per kilometre of travel of $3.00 for B Double and $3.40 for an A Double. Based on these freight rates and given the higher productivity of an A Double it was estimated that transport to market of a typical year's production of pumpkins in the Murray region would yield a transport saving of approximately $110,000 per year (Table 3) or a saving of just under 20 per cent of existing transport costs.

Table 3: Calculation of the productivity gain from transporting pumpkins using A Doubles

Transport of pumpkins from Murray region to market, using B Doubles

Origin	Destination	Distance (km.)	Tonnes	Tonnes per trip	Trips (no.)	Freight cost ($/km)	Total cost ($)
Mildura	Adelaide	394	2600	38	68	3.0	162,277
Mildura	Melbourne	540	4180	38	110	3.0	359,780
Mildura	Sydney	1015	460	38	12	3.0	73,773
						Total	$595,830

Transport of pumpkins from Murray region to market, using A Doubles

Origin	Destination	Distance (km.)	Tonnes	Tonnes per trip	Trips (no.)	Freight cost ($/km)	Total cost ($)
Mildura	Adelaide	394	2600	52	50	3.4	132,202
Mildura	Melbourne	540	4180	52	80	3.4	289,906
Mildura	Sydney	1015	460	52	9	3.4	61,303
						Total	$483,411
						Differnce	$112,419

The cost saving of approximately $110,000 generated through the use of A Doubles is a gross saving that does not take account of the any costs associated with the introduction of A doubles to transport pumpkins (other than the extra truck costs associated with the use of an A Double instead of a B Double).

Given that A doubles are operating from Toowoomba to Brisbane Port it can be assumed that an A Double would meet PBS standards. Prior to the introduction of A Doubles to transport pumpkins from the Murray region to the markets in Melbourne, Adelaide and Sydney an assessment would be required for each of these routes. Each route assessment costs approximately $50,000 and takes into account:

- Opportunities on the route for overtaking the PBS vehicle;
- Railway level crossing requirements;
- Traffic light timing; and
- Stacking distances.

The manufacturer contacted as part of this case study indicated, for example, that it would be likely that a route assessment from Toowoomba into Brisbane markets would not identify any major impediments to A Double access to the market. The manufacturer indicated that the timing of lights near the market may need to be altered and there may be a need to lengthen the available stacking distance once A Doubles enter the market.

The annualised cost of 3 route assessments at $50,000 each is approximately $12,100 at a 7 per cent real discount rate and a 30 year project length. If the cost of route assessments were the only additional cost associated with A Double access it can be calculated that use of A Doubles to transport pumpkins from the Murray region to major vegetable markets would yield a benefit cost ratio of over 10.

2.4. CONCLUSIONS – ACCESS TO PBS VEHICLES

The illustrative calculations undertaken in the previous section indicate there is significant potential to lower the cost of transporting pumpkins from the Murray region to markets in Adelaide, Perth and Sydney through the introduction of high performance vehicles.

Route assessments would need to be undertaken to determine if such a transport option is technically feasible. Route assessments would also identify any infrastructure improvements that would be required to allow A Double access to fresh fruit and vegetable markets in Adelaide, Melbourne and Sydney.

It is also relevant to note that if A Double access were possible into these markets the transport of vegetables other than pumpkins would also benefit. Indeed, transport of all commodities entering the market would have the potential to benefit from access to these markets by A Doubles.

REPORT

ENHANCED EFFECIENCY IN THE ROAD TRANSPORT OF VEGETABLES

Case study 2 results: transport of sweet potatoes

4 December 2014

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EXECUTIVE SUMMARY

To identify areas in which the transport cost of vegetables could be lowered through the introduction of improved regulation, facilities, equipment or work practices extensive interviews were undertaken with road transport operators involved in the transport of vegetables. These interviews identified several areas where it was considered that transport costs of vegetables could be lowered. Case studies were developed to quantify the gains from the potential cost saving areas identified. These were:

Case study 1: Identification of the gross productivity gain available from the use of high performance vehicles to transport vegetables from the Murray region of NSW and Victoria;

Case study 2: Benefits from access to higher vehicle mass through incremental pricing associated with heavier loads of vegetables transported by an operator in Northern Queensland;

Case study 3: Evaluation of the potential productivity gains in the transport of vegetables from Queensland available through greater driving hours flexibility available under the Advanced Fatigue Management scheme (AFM) available to accredited operators in Australia;

Case study 4: calculation of the extra transport costs vegetable growers face as a result of the extra costs Australian trucking operators face due to different payroll tax systems and workers compensation systems in Australia's states and territories;

Case study 5: Identification of the extent delays in the transport of vegetables originating at the grower level and evaluation of the factors generating any identified delays;

Case study 6: Evaluation of the extra costs vegetable growers face as a result of the added administration cost associated with transport operators having to meet several quality assurance schemes.

A document detailing the potential case studies was provided to HAL for their consideration. HAL indicated a preference for case studies 1, 2 and 3 to be undertaken. HAL subsequently indicated that they would also like case study 6 undertake.

This report documents the results obtained from Case study 2.

Case study 2 examined the merits of allowing trucks transporting vegetables to pay an "incremental charge" to operate at mass levels higher than the current regulated limits. This concept has become known as "incremental pricing". In 2009 the National Transport Commission released a report outlining the guiding principles and possible options for developing an incremental pricing scheme. However, to data only incremental pricing trials have been undertaken and no Australian jurisdiction has to date introduced incremental pricing.

Access to the higher mass on trucks transporting vegetables from Bundaberg to markets in Southern Australia is constrained by the fact that the Higher Mass Limits network does not extend into Bundaberg. **Case study 2** evaluated the merits of facilitating access to the HML

for trucks transporting vegetables out of Bundaberg by charging these vehicles a fee to operate at higher mass on the roads that link Bundaberg to the higher mass limits network. The analysis indicates that incremental pricing of trucks transporting sweet potatoes from Bundaberg to southern markets could yield a road transport productivity gain of approximately 11 per cent.

1. INTRODUCTION

To identify areas in which the transport cost of vegetables could be lowered through the introduction of improved regulation, facilities, equipment or work practices extensive interviews were undertaken with road transport operators. These interviews identified several areas where it was considered that transport costs of vegetables could be lowered. These included:

- a greater use of higher performance trucks such as B Triples, Super B Doubles and A Doubles and/or improved design of existing trucks;

  greater access to higher mass on vehicles transporting vegetables either through;

  - expansion of the higher mass limits network for eligible vehicles; and/or
  - improving access for high performance trucks at the start and end of journeys (so called "last mile" access issues); and/or
  - the introduction of incremental pricing for vehicles with heavy loads;
- more flexible fatigue management regimes for truck drivers;
- unnecessarily high costs of road transport in Australia;
- duplication of quality assurance requirements across organisations receiving vegetables; and
- grower initiatives that could lower transport costs.

An evaluation was undertaken of the suggestions to improve the efficiency of transport of vegetables suggested by operators interviewed in the initial stages of the project. Based on this evaluation 6 potential case studies were identified. These were:

Case study 1: Identification of the gross productivity gain available from the use of high performance vehicles to transport vegetables from the Murray region of NSW and Victoria;

Case study 2: Benefits from access to higher vehicle mass through incremental pricing associated with heavier loads of vegetables transported by an operator in Northern Queensland;

Case study 3: Evaluation of the potential productivity gains in the transport of vegetables from Queensland available through greater driving hours flexibility available under the Advanced Fatigue Management scheme (AFM) available to accredited operators in Australia;

Case study 4: calculation of the extra transport costs vegetable growers face as a result of the extra costs Australian trucking operators face due to different payroll tax systems and workers compensation systems in Australia's states and territories;

Case study 5: Identification of the extent delays in the transport of vegetables originating at the grower level and evaluation of the factors generating any identified delays;

Case study 6: Evaluation of the extra costs vegetable growers face as a result of the added administration cost associated with transport operators having to meet several quality assurance schemes.

A document detailing the potential case studies was provided to HAL for their consideration. HAL indicated a preference for case studies 1, 2 and 3 to be undertaken. HAL subsequently indicated that they would also like case study 6 undertake.

In this document the results from case study 2 are documented.

2. PRODUCTITY GAINS FROM ACCESS TO HIGHER VEHICLE MASS

During the interviews with transport operators undertaken as part of this project it was suggested that certain vegetables had high specific gravities and that transport of these vegetables was constrained by the mass limits of vehicles rather than the volume of trailers. Examples of vegetables with high specific gravities include sweet potatoes, pumpkins and carrots.

Heavy vehicles operate under 3 regimes of mass limits. These include:

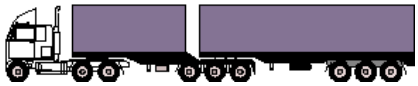
General Mass Limits (GML) – limits prescribed in State and Territory legislation incorporating the requirements of the National Road Transport Reform (Mass and Loading) Regulations;

Concessional Mass Limits (CML) – for eligible vehicles an additional 0.5 tonnes is permitted on a tandem axle and 1 tonne on a tri-axle up to a maximum of 1 tonne for a vehicle up to 55 tonnes and a maximum of 2 tonnes for vehicles exceeding 55 tonnes; and

Higher Mass Limits (HML) – vehicles with road-friendly suspensions operating on approved routes, are permitted up to an additional 0.5 tonnes on a tandem-axle group and up to 2.5 tonnes on a tri-axle group above GML limits.

The above mass limits translate into the truck mass limits given below.

Table 1 GML, CML and HML vehicle mass selected vehicles (tonnes)

Vehicle	Vehicle diagram	GML	CML	HML
Six-axle semi-trailer		42.5	43.5	45.5
Seven-axle B-double		55.5	57.0	57.0
Eight-axle B-double		59.0	61.0	62.5
Nine-axle B-double		62.5	64.5	68.0

Trucks operating at HML can only operate on roads designated as part of the HML road network. Road operators interviewed indicated that the HML network is overly restrictive and this constrains the achievement of higher vehicle mass especially when vegetables with higher specific gravities are being transported. In addition, use of the HML network is restricted by the fact that certain bridges located on the HML network have restricted access.

Greater access to HML would be a practical way to enable higher mass to be carried by trucks transporting vegetables. This could be achieved through;

- increased take-up of HML by operators transporting vegetables; and/or
- expansion of roads included in the HML road network; and/or
- upgrades to bridges on the existing HML network that are currently restricting full utilisation of the HML network on some routes.

Increased mass on trucks transporting vegetables could also be achieved through so called "incremental pricing". How incremental pricing was envisaged to work by the National Transport Commission (NTC) is detailed in the following section.

2.1. INCREMENTAL PRICING

In a report outlining the guiding principles and possible options for developing an incremental pricing scheme the NTC [1]noted that:

> *the Council of Australian Governments (COAG) on 13 April 2007 clearly set out an agenda for road infrastructure pricing reform to unlock more productivity from the road network and deliver more efficient pricing and investment through a market based approach.*
>
> *One of the key first steps in this agenda is to investigate the potential for the development of a scheme that would enable heavy vehicles, such as trucks and buses, to pay an "incremental charge" to operate at mass levels higher than the current regulated limits. This concept has become known as "incremental pricing"*

[1] National Transport Commission 2009, Incremental pricing scheme feasibility, p.ii. Available at: http://ntc.wdu.com.au/filemedia/Reports/IncPricingFeasibilityJan09.pdf

and has the potential to increase productivity by allowing transport operators to move the same amount of product with fewer trips. This could be beneficial on both major roads and for the "first mile" or "last mile" in the supply chain, where existing mass limits can have large impacts on the efficiency of a supply chain.

The NTC provided a series of guidelines that were designed to ensure that any incremental pricing scheme was safe, efficient and sustainable (Figure 1).

The NTC indicated that incremental pricing trials could be undertaken to evaluate the merits of such schemes. Initially Queensland, New South Wales, Victoria and South Australia indicated they would undertake incremental pricing trials. However, trials were only held in Victoria and NSW. These consisted of:[2]

- New South Wales. Travel on 750 metres of local road from the business to a private rail head. Extra 5 tonnes transported per trip which represented a 16-18 per cent productivity gain at an additional cost of less than $1 per trip;
- Victoria. Three B-doubles from regional Victoria to the Port of Melbourne, a distance of just under 80 kilometres. Extra 2 tonnes per trip allowed. $430 net savings per trip with an increment price of $20 per trip.

To date there has been no formal introduction of incremental pricing in any Australian jurisdiction.[3]

To undertake a case study of the potential benefits of incremental pricing associated with the transport of vegetables an agreement was reached with a transport operator located in Queensland who transport large quantities of vegetables from Queensland to markets in Brisbane, Sydney, Melbourne, Adelaide and Perth.

[2] GHD, A Review of Incremental Pricing Trials in Australia, pp.3-7.

[3] Juturna Consulting 2011, COAG Road Freight Incremental Pricing Trials, Prospects for a more commercial focus in road reform, report prepared for Infrastructure Australia, August.

Figure 1 : Summary of the NTC's guiding principles for an incremental pricing scheme

Component	Summary of Guiding Principle
Safety Assessment	▪ Nationally consistent process using Performance Based Standards (PBS) for safety
Infrastructure Assessment and Route Definition	▪ Access up to maximum road infrastructure capacity ▪ Nationally consistent outcomes
Pricing and Monitoring System	▪ Efficient, nationally consistent and simple ▪ Align with the applicable current charging system (currently PAYGO[1]) ▪ Monitoring of mass, distance and location ▪ Privacy (aligned with same controls as current Intelligent Access Program process)
Fee Calculation and Collection	▪ Accurate and timely ▪ Transport operator friendly ▪ Scalable and flexible structure ▪ Effective debt management
Funds Distribution	▪ Funds directed back to road infrastructure service provider
Road Spending	▪ Road spending to ensure service level

Source: National Transport Commission 2009, Incremental pricing scheme feasibility, p.ii. Available at: http://ntc.wdu.com.au/filemedia/Reports/IncPricingFeasibilityJan09.pd

Initial discussions were held with the operator to determine what produce would benefit most from access to higher mass. The operator indicated that availability of higher mass would significantly improve the efficiency of transport of sweet potatoes. This was because current practice was to:

- load bins of sweet potatoes to ensure mass limits are met; and to
- ship mixed loads of sweet potatoes and vegetables with a lower specific gravity to ensure mass limits are met.

The case study results of incremental pricing road transport of sweet potatoes are outlined in the following section.

2.2. CASE STUDY RESULTS

To estimate the gains from incremental pricing associated with the transport of vegetables a case study was undertaken involving the transport of sweet potatoes from Queensland. A road transport operator agreed to provide data on a week's shipments of sweet potatoes from Bundaberg. For each truck movement data was provided on the number of pallets of vegetables, weight of sweet potatoes, gross vehicle mass and the load on each axle or axle group.

Inspection of the data revealed that sweet potatoes comprised between 100 per cent of the load down to approximately 5 per cent of the load with sweet potatoes comprising approximately half the load over all loads examined.[4]

Typically, trucks were loaded with 34 pallets, 12 in the A trailer and 22 in the B trailer. The operator indicated that pallets of sweet potatoes are usually under loaded.

> *The issue is we only get 32 per b/double if we load straight sweet pot as they are over the gross weight of 1050KG per pallet….normally 1100kg to 1150kg…we normally need to mix a lighter product in the load if we want to be at capacity*
>
> *Ideally we would like to add another 4 cartons per pallet which would add approx. 80kg extra. Another approx. 3tn per load.*

In the data provided by the operator there was one load that consisted entirely of sweet potatoes that was destined for the Sydney markets. 34 pallets were loaded with a gross weight of 34,608 kilograms or 1,018 kilograms per pallet i.e. the pallets were under loaded. The gross weight of the vehicle was 62,070 kilograms indicating a tare weight of the vehicle of 28,002 kilograms (gross weight of 62,070 kilograms minus load of 34,608 kilograms).

The operator provided data on the gross weight of each axle or axle group. The tare weights were then estimated by first loading the truck with 34 pallets of sweet potatoes each weighing 1,018 kilograms. The load on each axle generated by the loading calculator was then deducted from the gross axle weights provided by the operator. These procedures yielded a truck with the following tare weights

- steer axle, 5,703 kilograms;
- drive axle, 8,391 kilograms;
- A trailer Tri axle, 6,597 kilograms; and
- B trailer Tri axle, 6,767 kilograms.

These tare weights were re entered into a loading calculator and the truck was loaded with 34 pallets of sweet potatoes, 12 in the A trailer and 22 in the B trailer. The weight on individual pallets was set at 1,018 kilograms. The truck was then loaded with the same number of bins but with each bin loaded to capacity that was assumed to be 1,150 kilograms.

When the truck is loaded to the capacity it is calculated to have a gross vehicle weight above the concessional mass limit of 64.5 tonnes. At this weight the gross weight on the drive axle, A trailer tri axle and B trailer axle are all in excess of the legal mass limit for a 9 axle B double.

[4] The median number of sweet potatoes pallets was 17 with the average number of pallets per load of 15.83 pallets.

Chart 1 **Loading patterns for a standard load of sweet potatoes & a loading patter with a truck loaded with bins loaded to capacity (kilograms)**

Axle weight summary, B Double 34 pallets sweet potatoes @ 1,018 kilograms per pallet					
Weight	**Steer axle**	**Drive axle**	**A-Trailer tri axle**	**B-Trailer tri axle**	**Total Vehicle**
Tare	**5,703**	**8,391**	**6,597**	**6,767**	**27,458**
Load	**107**	**8,329**	**13,033**	**13,143**	**34,612**
Gross	**5,810**	**16,720**	**19,630**	**19,910**	**62,070**
Maximum	**6,000**	**17,000**	**21,000**	**21,000**	**64,500**
SAR/ESAs	**1.34**	**2.15**	**1.27**	**1.34**	**6.10**

Axle weight summary, B Double 34 pallets sweet potatoes @ 1,150 kilograms per pallet					
Weight	**Steer axle**	**Drive axle**	**A-Trailer tri axle**	**B-Trailer tri axle**	**Total Vehicle**
Tare	**5,703**	**8,391**	**6,597**	**6,767**	**27,458**
Load	**121**	**9,409**	**14,722**	**14,847**	**39,100**
Gross	**5,824**	**17,800**	**21,320**	**21,614**	**66,558**
Maximum	**6,000**	**17,000**	**21,000**	**21,000**	**64,500**
SAR/ESAs	**1.35**	**2.77**	**1.76**	**1.86**	**7.75**

Axle weight summary, B Double 34 pallets sweet potatoes @ 1,089 kilograms per pallet					
Weight	**Steer axle**	**Drive axle**	**A-Trailer tri axle**	**B-Trailer tri axle**	**Total Vehicle**
Tare	**5,703**	**8,391**	**6,597**	**6,767**	**27,458**
Load	**114**	**8,914**	**13,948**	**14,066**	**37,042**
Gross	**5,817**	**17,305**	**20,545**	**20,833**	**64,500**
Maximum	**6,000**	**17,000**	**21,000**	**21,000**	**64,500**
SAR/ESAs	**1.35**	**2.47**	**1.52**	**1.61**	**6.95**

Data source: Author's calculations using loading calculator.

Under an incremental pricing scheme the mass above the legal limit could be loaded provided the operator paid a charge to cover the extra wear and tear cost on roads caused by the extra load. In the example detailed in Chart 1 the incremental charge would facilitate a 4.5 tonne increase in the load of sweet potatoes which represents a productivity gain of approximately 13 per cent.

The NTC suggested three methods of charging for the extra load[5]. These were:

- 1. Charge per incremental SAR/ESA-kilometres – This would involve charging based on the number of ESA's that relate to road wear above the regulated maximum mass limit (or the "incremental ESAs" above the base mass limit)
- 2. Charge per unit of incremental mass-kilometres – This would involve charging based on the level of mass above the regulated maximum mass limit (or the "incremental mass" above the base mass limit)
- 3. Combination of the above two options.

In this exercise the incremental charge is calculated using method 1, i.e. based on the extra ESA kilometres the truck generates. A SAR/ESA is a unit of road wear calculated according to the formula[6] $SAR = \sum_{i=1}^{i=m} (L_i / SL_i)^n$ where Li = load carried by axle group type in kilo

[5] National Transport Commission 2009, Incremental pricing scheme feasibility, p.40. Available at: http://ntc.wdu.com.au/filemedia/Reports/IncPricingFeasibilityJan09.pdf

[6] National Transport Commission 2009, Incremental pricing scheme feasibility, p.38. Available at: http://ntc.wdu.com.au/filemedia/Reports/IncPricingFeasibilityJan09.pdf

newtons, SLi = standard load for axle group type i, m =number of axle groups, n is the power that it is raised to. SAR is equal to an Equivalent Standard Axles (ESA) if n = 4.

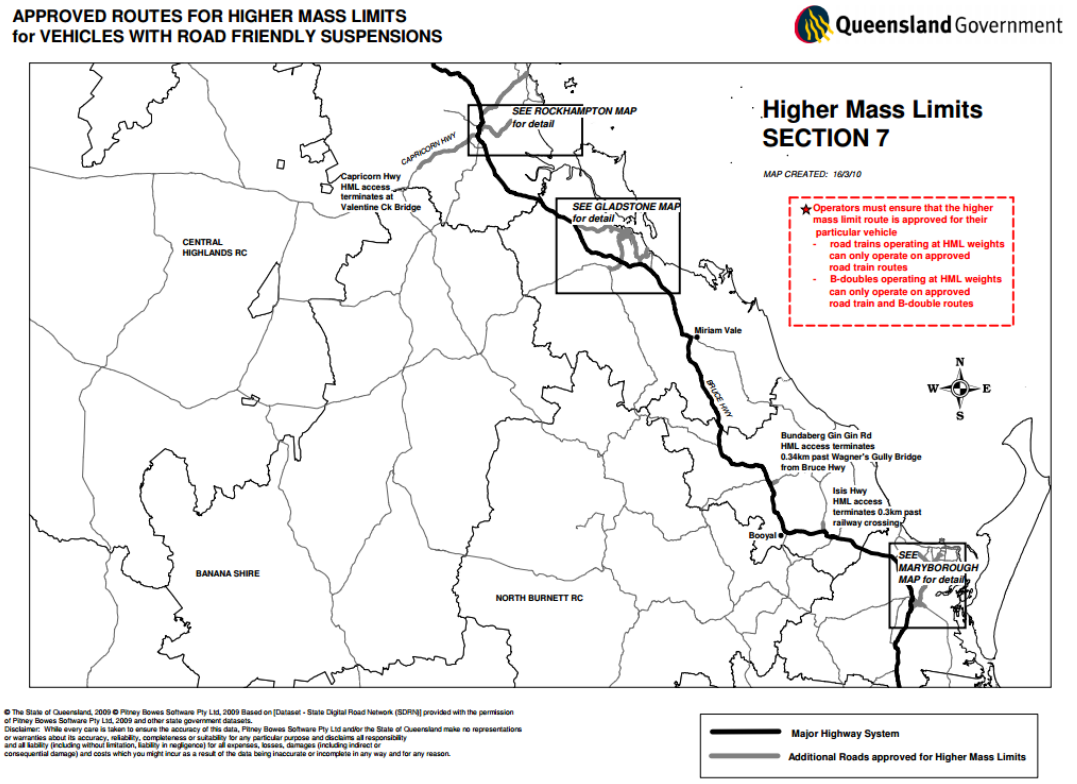
ARRB[7] has developed a model that links road wear to the use of the road measured in SARs/ESAs. For a sprayed seal unbound granular pavement the calculated costs ranged from $0.55 cents per SAR kilometre for a rural access road down to less than one cent for rural freeways (Table 2).

Table 2 **Road incremental costs (cents / SAR/ESA klm.)**

Road type	Type of pavement	Marginal cost (c/SAR-km)
Rural freeway	In service	0.8
Rural arterial	In service	1.8
Rural arterial	New	0.9
Rural collector	In service	21.6
Rural access	In service	55.7
Urban arterial	In service	0.8
Rural freeway	In service	0.8

Data source: Will Hore-Lacy, Thorolf Thoresen and Tim Martin, ARRB Group 2012, Using the freight axle mass limits investigation tool (FAMLIT) to estimate the marginal cost of road wear, 25th ARRB Conference – Shaping the future: Linking policy, research and outcomes, Perth, Australia 2012, p.12.

Chart 2 **HML network incorporating Bundaberg in Southern Queensland**



Data source: Queensland Government.

[7] Will Hore-Lacy, Thorolf Thoresen and Tim Martin, ARRB Group 2012, Using the freight axle mass limits investigation tool (FAMLIT) to estimate the marginal cost of road wear, 25th ARRB Conference – Shaping the future: Linking policy, research and outcomes, Perth, Australia 2012

We assume that under an incremental pricing scheme the operator would enrol in the HML scheme and so a B Double could load to 68 tonnes when using this network. However, the HML network in Queensland does not extend into Bundaberg but stops just east of the Bruce highway on the Isis Highway and just past Warners Gully Bridge on the Gin Gin road (Chart 2)

Under incremental pricing scheme the operator would be able to load to above CML and then pay a fee for the extra weight loaded on to the truck on the roads from Bundaberg to just east of the Bruce highway. Assuming these roads are rural arterial roads, the fee for the use of these roads at weights above CML would be calculated at the rate of 1.8 cents per ESA kilometre (Table 2).

According to Google Maps the distance between the operator's depot in Bundaberg and the Bruce Highway is approximately 60 kilometres. Loading the truck to CML weights would generate 6.95 ESAs/SARs (Chart 1). Loading each pallet to 1,150 kilograms would generate approximately 7.75 ESAs/SARs (Chart 1), an increase of 0.8 ESAs/SARs. Consequently the incremental fee per journey would be 84 cents (0.8 extra ESAs/SARs * 1.8 cents *58.85 klms = 84 cents).

If the operator remained in the Concessional Mass scheme the incremental fee would be calculated over the length of the entire trip of approximately 1,290 kilometres. Thus the fee would be approximately $18.58 (1.8 cents * .8 extra ESAs/SARs * 1,290 kilometres = 1,858 cents).[8]

2.3. CONCLUSIONS – INCREMENTAL PRICING

Incremental pricing is calculated to facilitate a 4.5 tonne increase in the load of sweet potatoes which represents a gross productivity gain of approximately 13 per cent. This reduces to a net productivity gain of approximately 11 per cent when account is taken of the incremental charges and the extra costs associated with operating trucks at higher.

Overall, the results of the case study are in line with the results obtained from the incremental pricing trials in New South Wales and Victoria in that incremental pricing is seen to generate large increases in gross productivity at a modest cost.

[8] Incremental pricing was originally only meant to be available for trucks operating at HML. An advantage in extending it to trucks operating at CML is that it would remove the need for the conservative loading practices as a fee could be paid if the truck breached a particular axle limit during normal loading operations.

REPORT

ENHANCED EFFECIENCY IN THE ROAD TRANSPORT OF VEGETABLES

Case study 3 results: gains avaiable from access to Advanced Fatigue Management

4 December 2014

Prepared for:

Horticulture Innovation Australia

Prepared by:

John Zeitsch

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EXECUTIVE SUMMARY

To identify areas in which the transport cost of vegetables could be lowered through the introduction of improved regulation, facilities, equipment or work practices extensive interviews were undertaken with road transport operators involved in the transport of vegetables. These interviews identified several areas where it was considered that transport costs of vegetables could be lowered. Case studies were developed to quantify the gains from the potential cost saving areas identified. These were:

Case study 1: Identification of the gross productivity gain available from the use of high performance vehicles to transport vegetables from the Murray region of NSW and Victoria;

Case study 2: Benefits from access to higher vehicle mass through incremental pricing associated with heavier loads of vegetables transported by an operator in Northern Queensland;

Case study 3: Evaluation of the potential productivity gains in the transport of vegetables from Queensland available through greater driving hours flexibility available under the Advanced Fatigue Management scheme (AFM) available to accredited operators in Australia;

Case study 4: calculation of the extra transport costs vegetable growers face as a result of the extra costs Australian trucking operators face due to different payroll tax systems and workers compensation systems in Australia's states and territories;

Case study 5: Identification of the extent delays in the transport of vegetables originating at the grower level and evaluation of the factors generating any identified delays;

Case study 6: Evaluation of the extra costs vegetable growers face as a result of the added administration cost associated with transport operators having to meet several quality assurance schemes.

A document detailing the potential case studies was provided to HAL for their consideration. HAL indicated a preference for case studies 1, 2 and 3 to be undertaken. HAL subsequently indicated that they would also like case study 6 undertake.

This report documents the results obtained from Case study 3.

Case study 3 investigated the gains available in the transport of vegetables through the adoption of Advanced Fatigue Management (AFM) AFM offers more flexibility than other available fatigue management schemes in return for the operator demonstrating greater accountability for managing their drivers' fatigue risks.

The case study results indicate there are significant savings available in the transport of vegetables through the adoption of AFM, particularly when vegetables are transported long distances to markets. An operator transporting vegetables out of Queensland was calculated to have a median line haul distance to market of approximately 920 kilometres. The return journey elapsed time for a distance to market of 920 kilometres, assuming an average line haul speed of 80 kilometres per hour, is 36 hours under standard hours, 34 hours under basic fatigue management and 32 hours under advance fatigue management. Thus AFM is

calculated to generate a saving of between 12 to 6 per cent in elapsed journey times compared to operating under alternate fatigue management regimes available in Australia.

These savings translate into productivity improvements for the trucking operation of 6 per cent for AFM compared to standard hours and 2 per cent for AFM compared to basic hours.

1. INTRODUCTION

To identify areas in which the transport cost of vegetables could be lowered through the introduction of improved regulation, facilities, equipment or work practices extensive interviews were undertaken with road transport operators. These interviews identified several areas where it was considered that transport costs of vegetables could be lowered. These included:

- a greater use of higher performance trucks such as B Triples, Super B Doubles and A Doubles and/or improved design of existing trucks;

  greater access to higher mass on vehicles transporting vegetables either through;

  - expansion of the higher mass limits network for eligible vehicles; and/or
  - improving access for high performance trucks at the start and end of journeys (so called "last mile" access issues); and/or
  - the introduction of incremental pricing for vehicles with heavy loads;
- more flexible fatigue management regimes for truck drivers;
- unnecessarily high costs of road transport in Australia;
- duplication of quality assurance requirements across organisations receiving vegetables; and
- grower initiatives that could lower transport costs.

An evaluation was undertaken of the suggestions to improve the efficiency of transport of vegetables suggested by operators interviewed in the initial stages of the project. Based on this evaluation 6 potential case studies were identified. These were:

Case study 1: Identification of the gross productivity gain available from the use of high performance vehicles to transport vegetables from the Murray region of NSW and Victoria;

Case study 2: Benefits from access to higher vehicle mass through incremental pricing associated with heavier loads of vegetables transported by an operator in Northern Queensland;

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A document detailing the potential case studies was provided to HAL for their consideration. HAL indicated a preference for case studies 1, 2 and 3 to be undertaken. HAL subsequently indicated that they would also like case study 6 undertake.

In this document the results from case study 3 are documented.

2. MORE FLEXIBLE FATIGUE MANAGEMENT REGIMES FOR TRUCK DRIVERS

During the interviews with transport operators undertaken as part of this project certain truck operators indicated that the production of vegetables is highly seasonal. At the hight of the season greater flexibility in driving hours could generate a significant improvement in truck utilisation leading to higher transport productivity.

Several operators indicated that more flexible driving hours are available under Advanced Fatigue Management (AFM) scheme but that entry into the AFM scheme was costly and this cost could not be justified given the seasonal nature of the vegetable transport task.

We note that the National Heavy Vehicle Regulator is looking at new "template" approach to AFM which will expand the opportunity for take up of AFM by reducing the costs operators face in achieving accreditation to enter the AFM program.

The operation of AFM is detailed in the following section

To estimate the potential gains available through greater driving hours flexibility an operator working under AFM agreed to provide data on the origin and destination of vegetable consignments over a period of one month. This data was used to.

2.1. ALTERNATE FATIGUE MANAGEMENT REGIMES

According to the National heavy vehicle Regulator[1]:

> *Driver fatigue or drowsy driving is an important safety hazard for the road transport industry. The main causes of 'drowsy driving' are not enough sleep, driving at night (when you should be asleep) and working or being awake for a long time.*
>
> *……..*
>
> *At the heart of the laws for fatigue management is a primary duty - a driver must not drive a fatigue-regulated heavy vehicle on a road while impaired by fatigue. Drivers may be impaired by fatigue even when complying with work and rest limits.*

Drivers can operate under either of 3 fatigue management regimes[2]. These are:

[1] National Heavy Vehicle Regulator 2014, About Fatigue Management. Available at: https://www.nhvr.gov.au/safety-accreditation-compliance/fatigue-management/about-fatigue-management

[2] National Heavy Vehicle Regulator 2014, Fatigue Management, Work and rest requirements. Available at: https://www.nhvr.gov.au/safety-accreditation-compliance/fatigue-management/about-fatigue-management

- Standard hours are the maximum amount of work and minimum amount of rest possible that can be performed safely without additional safety countermeasures.
- Basic Fatigue Management gives operators a greater say in when drivers can work and rest, as long as the risks of driver fatigue are properly managed.
- Advanced Fatigue Management offers more flexibility than standard hours or BFM in return for the operator demonstrating greater accountability for managing their drivers' fatigue risks.

Work and rest requirements under basic hours and standard hours are given in Chart 1. Work and rest requirements under AFM are considered on a case-by-case basis by the National heavy vehicle regulator. Any proposed AFM arrangement is assessed against a risk classification system[3].

To estimate the potential gains available through greater driving hours flexibility an operator working under AFM agreed to provide data on the origin and destination of vegetable consignments over a period of one month. The results derived from this case study are presented in the following section

2.2. CASE STUDY RESULTS

The operator that agreed to provide data for the AFM case study provided data on shipments the operator handled over a period of one month. Shipments covered vegetables, fruit and other food products. Data was provided on the origin and destination of each consignment represented by a postcode, the quantity of pallets of product and a description of the produce.

In the data supplied there were approximately 50,000 consignments. To undertake the analysis a random sample of the consignments was undertaken. The sample size was designed to enable a 5 per cent statistical difference in results to be detected. A sample size of 383 shipments was analysed.

The sampled shipments consisted of 131 shipments of vegetables and 252 shipments of other food products i.e. vegetables accounted for approximately one third of all consignments handled by the operator.

[3] National Heavy Vehicle Regulator 2014, Risk classification system for advanced fatigue management evidence statement, https://www.nhvr.gov.au/files/201402-149-risk-classification-system-for-afm-policy.pdf

Chart 1 **Standard fatigue management (top) conditions and basic fatigue management conditions (bottom)**

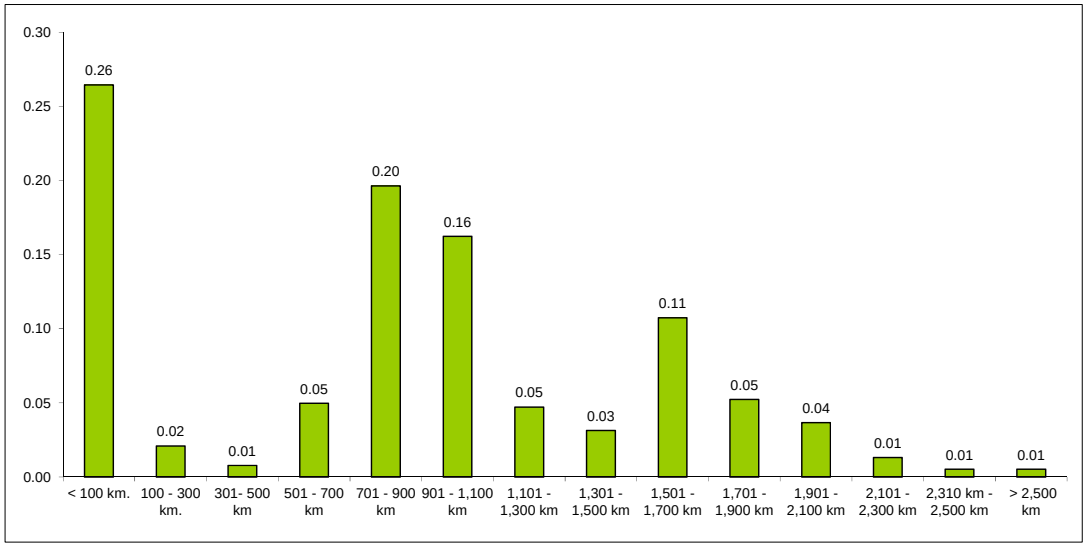
Time	Work	Rest
In any period of...	A driver must not work for more than a **maximum** of...	And must have the rest of that period off work with at least a **minimum** rest break of...
5 ½ hours	5 ¼ hours work time	15 continuous minutes rest time
8 hours	7 ½ hours work time	30 minutes rest time in blocks of 15 continuous minutes
11 hours	10 hours work time	60 minutes rest time in blocks of 15 continuous minutes
24 hours	12 hours work time	7 continuous hours stationary rest time*
7 days	72 hours work time	24 continuous hours stationary rest time
14 days	144 hours work time	2 x night rest breaks# **and** 2 x night rest breaks taken on consecutive days

Time	Work	Rest
In any period of...	A driver must not work for more than a maximum of...	And must have the rest of that period off work with at least a minimum rest break of...
6 ¼ hours	6 hours work time	15 continuous minutes rest time
9 hours	8 1/2 hours work time	30 minutes rest time in blocks of 15 continuous minutes
12 hours	11 hours work time	60 minutes rest time in blocks of 15 continuous minutes
24 hours	14 hours work time	7 continuous hours stationary rest time*
7 days	36 hours long/night work time**	No limit has been set
14 days	144 hours work time	24 continuous hours stationary rest time taken after no more than 84 hours work time and 24 continuous hours stationary rest time and 2 x night rest breaks# and 2 x night rest breaks taken on consecutive days.

Data source: National Heavy Vehicle Regulator.

Google maps were used to calculate the road distance between the origin and destination postcodes for the sampled shipments. A distribution of distances was formed by allocating the delivery distance for each shipment to one of 14 distance bands. This analysis indicated that a large number of consignments handled by the operator were transported relatively short distance but a significant number of consignments were transported over 700 kilometres and nearly one quarter of consignments were transported over 1,500 kilometres.

Chart 2 **Distribution of distances to market of sampled commodities**



Data source: Data supplied by the transport operator

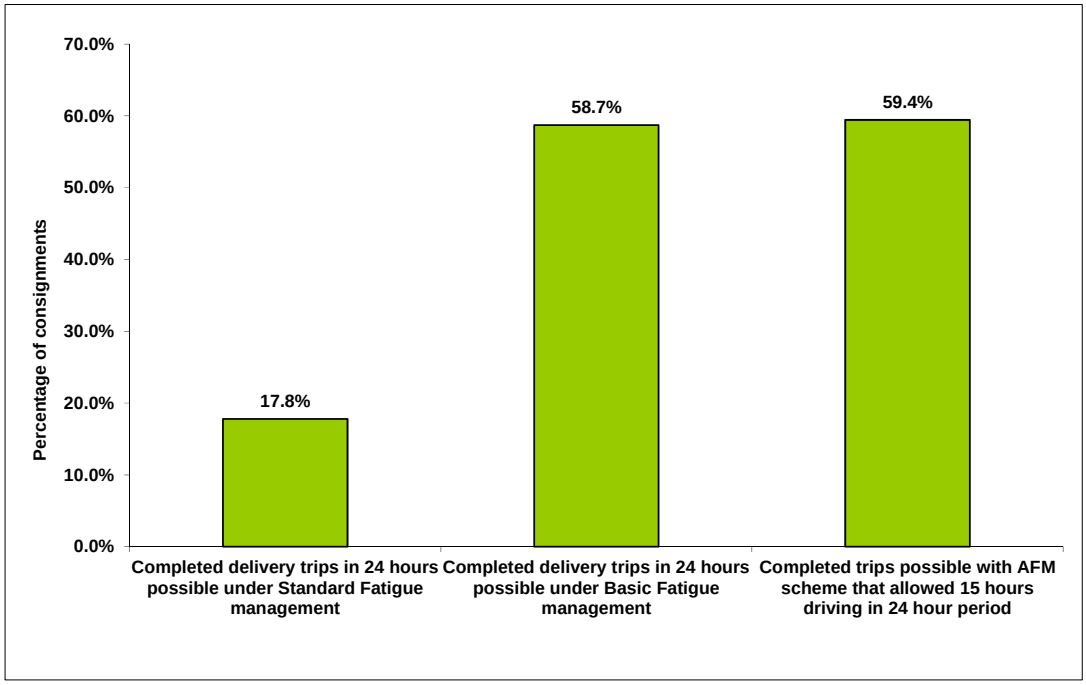
The data on distance consignments were transported was used to calculated work times a driver would incur while delivering the consignments. Driving time was calculated by dividing distances consignments were transported by an assumed line haul speed of 80 kilometres per hour. Total work time was then calculated by adding a loading and unloading time of 1.25 hours per consignment to the calculated driving time.

Given the calculated work time the number of consignments that could be delivered in a 24 hour period was calculated assuming the driver could operate under:

- Standard hours which allows up to 12 hours work time within a 24 hour period;
- Basic fatigue management which allows up to 14 hours work time within a 24 hour period; and
- An Advanced Fatigue Management regime that would allow up to 15 hours work time within a 24 hour period.

Based on these work time possibilities and given the calculated work times for each consignment it was calculated that less than 20 per cent of consignments could be delivered within 24 hours under standard hours. In contrast, almost 60 per cent of consignments could be delivered within 24 hours if the truck driver could operate under basic fatigue management or advanced fatigue management.

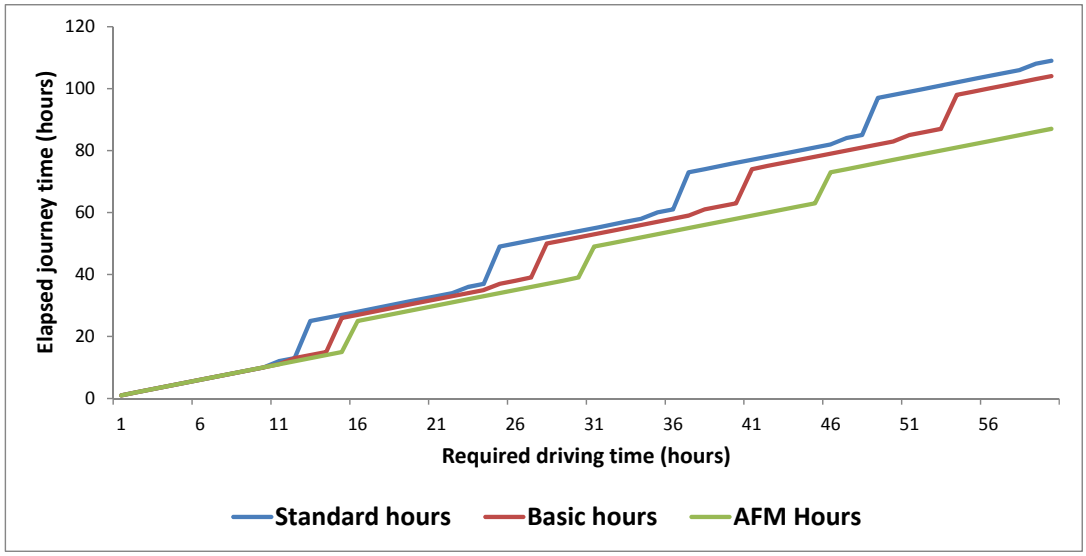
Chart 3 **Proportion of line haul deliveries made within 24 hours**



Data source: Data supplied by the transport operator

While AFM offers a slight advantage in the delivery of consignments the more significant benefit from AFM accrues when the time taken to undertake both the delivery and to make the return journey is taken into account. Using the work and rest times detailed in Chart 1the elapsed time to undertake a journey was calculated. The calculations indicate that elapsed journey times fall significantly under AFM, particularly for longer journeys Chart 4.

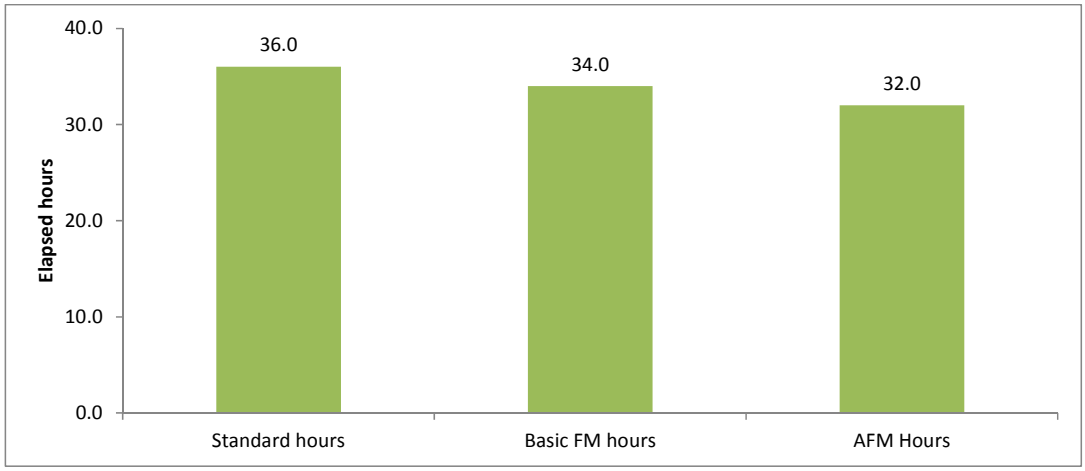
Chart 4 **Elapsed times for journeys under standard hours basic hours and AFM hours (hours)**



Data source: Data supplied by the transport operator

Application of the elapsed journey times to the data provided by the operator indicates that the total journey elapsed time (delivery plus return) is approximately 4 hours faster under AFM compared to standard hours (Chart 5) – a saving of approximately 12 per cent in elapsed travel time. AFM offers a 2 hours round trip elapsed time saving compared to operating under basic hours (Chart 5) – a saving of approximately 6 per cent.

Chart 5 **Average elapsed time to undertake delivery and return to base (elapsed hours)**



Data source: Data supplied by the transport operator

Capital and labour costs account for approximately 30 per cent of the total cost to operate a B Double curtain sider[4]. Consequently, a 12 per cent elapsed travel time saving would translate into an overall productivity gain of approximately 4 per cent. Similarly, a 6 per cent elapsed travel time saving would translate into an overall productivity gain of approximately 2 per cent.

2.3. CONCLUSIONS –AFM

The case study results indicate there are significant savings available in the transport of vegetables through the adoption of AFM, particularly when vegetables are transported long distances to markets. An operator transporting vegetables out of Queensland was calculated to have a median line haul distance to market of approximately 920 kilometres. The return journey elapsed time for a distance to market of 920 kilometres, assuming an average line haul speed of 80 kilometres per hour, is 36 hours under standard hours, 34 hours under basic fatigue management and 32 hours under advance fatigue management. Thus AFM is calculated to generate a saving of between 12 to 6 per cent in elapsed journey times compared to operating under alternate fatigue management regimes available in Australia.

These savings translate into productivity improvements for the trucking operation of 6 per cent for AFM compared to standard hours and 2 per cent for AFM compared to basic hours.

[4] Costs calculated using the "Trial version" of Freighmetrics truck cost calculator. Available at: http://www.freightmetrics.com.au/Calculators/TruckOperatingCostCalculator/tabid/104/Default.aspx

REPORT

ENHANCED EFFICIENCY IN THE ROAD TRANSPORT OF VEGETABLES

Case study 6 results: quality assurance schemes

20 March 2015

Prepared for:

Horticulture Innovation Australia

Prepared by:

John Zeitsch

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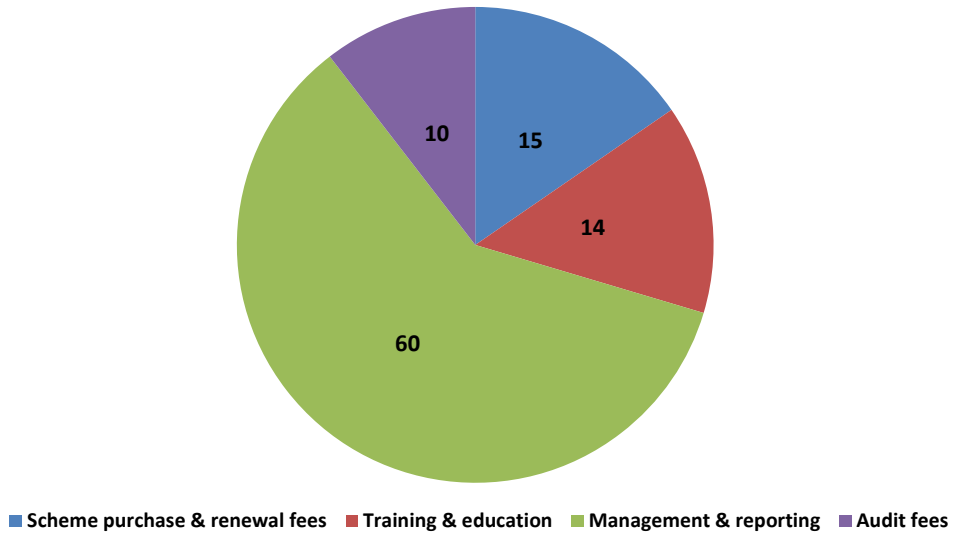
EXECUTIVE SUMMARY

To identify areas in which the transport cost of vegetables could be lowered through the introduction of improved regulation, facilities, equipment or work practices, extensive interviews were undertaken with road transport operators involved in the transport of vegetables. These interviews identified several areas where it was considered that transport costs of vegetables could be lowered. Case studies were developed to quantify the gains from the potential cost saving areas identified.

This report documents the results obtained from a case study that examined the savings in the transport cost of vegetables available through the rationalisation of product and truck quality assurance schemes. An operator involved in the transport of vegetables from South eastern Queensland provided data on the cost involved in the business' participation in 3 product quality assurance schemes, 3 food safety schemes, export control schemes for two establishments and 4 truck quality assurance schemes.

Participation in these schemes was estimated to cost the business approximately $500,000 per annum. Over half this cost was accounted for by the costs associated with the administration of the schemes within the business (Chart 1).

Chart 1 **Cost shares for quality assurance schemes (per cent)**



Data source: Author's calculations using data supplied by the operator.

Rationalisation of these schemes through the removal of duplicated services was estimated to save the operator approximately $100,000 per year. This saving is equivalent to approximately 10 cents per pallet transported by the operator in a typical year of operations.

This saving would generate a productivity saving for the business of approximately 0.1 per cent based on a typical year of operations for the business.

1. INTRODUCTION

To identify areas in which the transport cost of vegetables could be lowered through the introduction of improved regulation, facilities, equipment or work practices, extensive interviews were undertaken with road transport operators. These interviews identified several areas where it was considered that transport costs of vegetables could be lowered. These included:

- a greater use of higher performance trucks such as B Triples, Super B Doubles and A Doubles and/or improved design of existing trucks;
- greater access to higher mass on vehicles transporting vegetables either through;
  - expansion of the higher mass limits network for eligible vehicles; and/or
  - improving access for high performance trucks at the start and end of journeys (so called "last mile" access issues); and/or
  - the introduction of incremental pricing for vehicles with heavy loads;
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- unnecessarily high costs of road transport in Australia;
- duplication of quality assurance requirements across organisations receiving vegetables; and
- grower initiatives that could lower transport costs.

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Case study 6: Evaluation of the extra costs vegetable growers face as a result of the added administration cost associated with transport operators having to meet several quality assurance schemes.

A document detailing the potential case studies was provided to HIA for their consideration. HIA indicated a preference for case studies 1, 2 and 3 to be undertaken. HIA subsequently indicated that they would also like case study 6 undertaken.

In this document the results from case study 6 are documented.

2. QUALITY ASSURANCE SCHEMES

All line haul operators interviewed as part of this study indicated that enrolment in several quality assurance schemes was required to transport vegetables. The operators however indicated that while quality assurance schemes differ across organisations receiving vegetables all schemes basically require similar information to be collected. Operators indicated that the duplication of quality assurance programs led to additional costs as each quality assurance program required that operators be audited to ensure compliance with the required quality assurance scheme. Audits require considerable time and effort to collect and store the information that auditors require to undertake an audit. Participation in the actual audit can require several person days input of staff employed by the business.

To allow the documentation of the additional costs associated with duplication of quality assurance schemes a company involved in the interstate road transport and logistics industry located in South West Queensland agreed to provide data on the cost involved in meeting the quality assurance schemes the company is required to participate in to operate profitability in the transport of vegetables and other commodities out of the region.[1] The company operates approximately 100 vehicles and employs over 240 staff.

The company indicated that they participate in 3 product quality assurance schemes, 3 food safety schemes, export control scheme covering two establishments and 4 truck quality assurance schemes

This review does not examine the costs faced by customers or other parties' costs associated with quality assurance schemes the operator participates in.

2.1. PRODUCT QUALITY ASSURANCE SCHEMES

The operator indicated that the business participates in 3 product quality assurance schemes. These include:

- Woolworths Quality Assurance (WQA). Requires that all growers and suppliers of fresh food to Woolworths "are certified through the Woolworths Quality Assurance program. The Woolworths Quality Assured logo means the produce you are buying is fresh, safe, and of high quality"[2];

1 Red Tape Case Study, Transport & Logistics: Available at: https://www.cciq.com.au/.../RedTapeCase-StudyTransportLogistics.docx

2 Woolworths Food Safety. Available at : http://www.woolworths.com.au/wps/wcm/connect/website/woolworths/fresh+living/health+and+wellbeing/healthy+information/food-safety/food+safety

- Hazard Analysis & Critical Control Points (HACCP). HACCP is a management system that addresses food safety through analysis and control of biological, chemical, and physical hazards.[3]
- Retail Logistics Supply Chain (RLSC). The RLSC is a voluntary scheme "designed to ensure that all participants are aware of their responsibilities in the supply chain when they control or influence the carriage of freight"[4]. Woolworths requires suppliers to be registered with RLSC.

2.2. FOOD SAFETY SCHEMES

The operator indicated that they participate in 3 food safety assurance schemes. These include:

- SafeFood Queensland accreditation for storage and transport of meat and dairy products[5];
- NSW Food Authority, license to store meat or dairy products; and
- Dairy Food Safety Victoria, Dairy Food carrier license[6].

2.3. EXPORT CONTROL SCHEMES

The operator indicated that their establishments in Victoria and Queensland are:

- Registered with Biosecurity Australia as export establishments.[7]

2.4. TRUCK QUALITY ASSURANCE SCHEMES

The operator indicated that they participate in 4 truck quality assurance schemes. These include:

- National Heavy Vehicle Accreditation Scheme (NHVAS)[8]. Under NHVAS operators that have robust safety and other management systems in place may seek accreditation to operate under various modules that have the potential to increase the productivity of trucking operations. The productivity enhancing modules available under NHVAS include:

[3] U.S. Food and Drug Administration, Hazard analysis and critical control points. Available at: http://www.fda.gov/Food/GuidanceRegulation/HACCP/,

[4] Australian Logistics Council, Retail Logistics supply chain code of practice. Available at: http://austlogistics.com.au/wp-content/uploads/2011/03/RLSC_Flyer_final.pdf

[5] SafeFood Queensland, Accreditation. Available at http://www.safefood.qld.gov.au/index.php?option=com_content&view=article&catid=29&id=32&Itemid=33

[6] Dairy Food Safety Victoria, Dairy License Terms and conditions. Available at: http://www.dairysafe.vic.gov.au/resource-library/dairy-licence-conditions

[7] Department of Industry and Science, Australian Business License and information service, Export Establishment Registration: Australian Government. Available at: https://ablis.business.gov.au/AG/pages/a16256c2-e595-4357-876e-42b5f6ea3ecc.aspx

[8] National Heavy Vehicle Regulator, National Heavy Vehicle Accreditation Schemes. Available at: https://www.nhvr.gov.au/safety-accreditation-compliance/nat-heavy-vehicle-accreditation-scheme/accreditation-modules

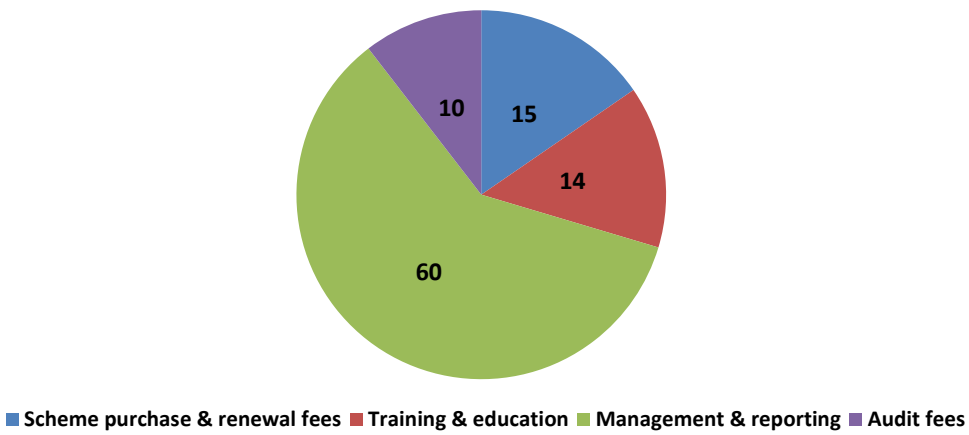
- Mass Management module. Operators accredited under this module can access additional mass concessions above those available through general mass limits;
- Maintenance Management module. Operators accredited under this module may avoid the need for annual state based inspections as part of the registration process; and
- Fatigue management module. Accredited operators have access to more flexible working hours under Basic Fatigue Management as long as the risks of driver fatigue are properly managed. Under Advanced Fatigue Management even greater flexibility in working hours is available to accredited operators in return for the operator demonstrating greater accountability for managing their drivers' fatigue risks.

- TruckSafe is a business and risk management system owned by the national Australian Trucking Association (ATA) that aims to improve the safety and professionalism of trucking operators[9];

For each of the above schemes the operator provided estimates of the cost the business incurs associated with scheme costs broken down into program costs (registration and annual renewal fees, training costs, program management costs associated with documentation and reporting and the cost associated with program audits).

In total the quality assurance schemes were calculated to increase costs faced by the business by approximately $500,000 per year. Of this cost approximately 60 per cent was associated with management and reporting and approximately 15 per cent involved fees associated with accessing the schemes and the training required to implement the schemes (Chart 2). Audit costs were approximately 10 per cent of the estimated total cost of the schemes (Chart 2).

Chart 2 **Cost shares for quality assurance schemes (per cent)**

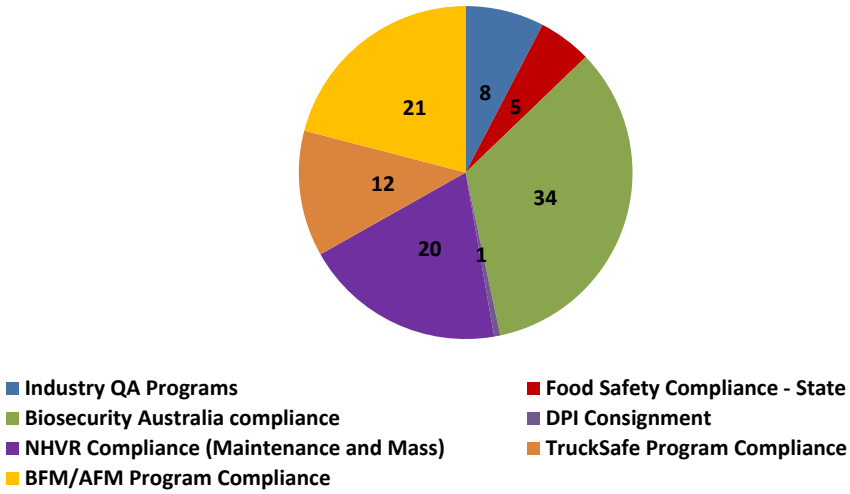


Data source: Author's calculations using data supplied by the operator.

[9] TruckSafe, The trucking industry's business risk management system. Available at: https://trucksafe.wordpress.com/about/

In terms of costs per scheme, compliance with Biosecurity Australia export control standards accounted for approximately one third of all scheme costs (Chart 3) and vehicle quality assurance scheme costs (fatigue management 20 per cent of costs, and mass and maintenance compliance 21 percent) were also major costs (Chart 3). Food safety and quality assurance programs comprised a small proportion of the cost of all schemes (Chart 3).

Chart 3 **Cost of quality assurance schemes broken down by scheme type (per cent of total cost)**



Data source: Author's calculations using data supplied by the operator.

The above data was employed in an exercise to quantify the scope for reductions in the costs of quality assurance schemes the operator participates in. The case study results are provided in the following section.

3. CASE STUDY RESULTS

Separate calculations were undertaken for product quality assurance schemes (including export controls) and truck quality assurance schemes.

3.1. PRODUCT QUALITY ASSURANCE SCHEMES AND EXPORT CONTROLS CASE STUDY RESULTS

Discussions were held with the operator to determine the scope to reduce the cost of quality assurance schemes and export control schemes the operator participates in. The operator noted that food safety requirements do not differ significantly across schemes. In fact they:

> *actually apply the same standards and controls – might be different for unpackaged products. Every retailer, wholesaler or trader has heavy vehicle regulation/requirements. Very little difference to the requirements under the QA programs and it could easily be one or the other.*

Similarly, when commenting on the standards that are imposed under alternate product quality assurance schemes and export controls the operator noted:

> *Retailers Logistics Code is another program which replicates WQA plus a little bit of Truck Safe plus a little of a few other programs. If cross matched you would find a lot of crossover of the standards.*
>
> *……*
>
> *AQIS, SFQ, QA schemes each have a pest management requirement – but they each have subtle differences in their standard and what is expected by way of demonstration of compliance with the standard.*

Because of the significant overlap of standards and requirements associated with the various product quality assurance schemes and export control schemes the operator believes that a single scheme could be developed that would meet industry quality assurance requirements, export control standards and safe food standards.

Such a situation could be aproximated through the introduction of a common set of standards across all schemes. A common set of standards would reduce administration and training costs and could facilitate the introduction of a single audit to cover compliance across all schemes.

The data provided by the operator was used to estimate the saving to the operator if one set of standards were to replace the various standards that apply to the current 7 schemes.

For this calculation it was assumed that the existing Biosecurity Australia export standards would be retained and the remaining quality assurance schemes and food safety schemes would be amalgamated into this scheme via the establishment of a common set of standards and the introduction of a single audit to cover all export control, food safety and quality assurance schemes.

We assume all schemes would be retained and so the operator would still be required to pay annual fees associated with the food safety schemes and the quality assurance schemes.

Under this scenario there would be an annual saving of approximately $40,000 to the operator. This is equivalent to approximately $0.04 per pallet transported by the operator.

3.2. TRUCK QUALITY ASSURANCE SCHEMES CASE STUDY RESULTS

With respect to quality assurance schemes for vehicles the operator indicated that the business reports to Queensland Transport and the National Heavy Vehicle Regulator and that the National Heavy Vehicle Regulator is supposed to be taking power off the states. The dual regulation requirements have added to the costs for the operator. For example the operator indicated that:

> *NHV working hours which are not national – many state based modifications and requirements – increases scheduling and staffing issues*
>
> *National HV Accreditation Schemes (NHVAS) – two separate schemes for maintenance and mass. Both programs are run by state based jurisdictions currently - but may be moving to NHVR. The standards for maintenance cross over Truck safe – so an audit for Truck Safe is recognised by the state department as compliance with their maintenance scheme/standards.*

The operator estimated that full and effective transfer of state based heavy vehicle regulation planned to the National Heavy Vehicle Regulator would save the operator approximately $50,000 per annum in existing costs associated with vehicle accreditation schemes. This saving is equivalent to approximately $.06 per pallet transported by the operator in a typical year.

4. CONCLUSIONS – QUALITY ASSURANCE SCHEMES

The results of the case study suggest that rationalisation of existing quality assurance schemes and export controls would generate annual savings to the operator of approximately $100,000 in the costs associated with the road transport of vegetables and other commodities. This saving is equivalent to approximately 10 cents per pallet transported by the operator in a typical year of operations.

This saving would generate a productivity saving for the business of approximately 0.1 per cent based on a typical year of operations for the business.

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