

**PERFORMANCE BASED  
STANDARDS  
REGULATORY IMPACT  
STATEMENT**

**March 2011**



**Prepared by  
National Transport Commission**

*National Transport Commission*

**Performance Based Standards – Regulatory Impact Statement**

Report prepared by: NTC

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## REPORT OUTLINE

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**Type of report:** Regulatory impact statement

**Objectives:** To detail options for the ongoing operation of the Performance Based Standards (PBS) heavy vehicle reform, including legislation, for Australian Transport Council (ATC) vote.

**NTC programs:** Productivity

**Key milestones:** ATC submission: 2011

**Abstract:** This regulatory impact statement contains two parts. Part 1 reviews and assesses options for various PBS scheme frameworks, including the development of legislation. Part 2 looks at options for enhancing how the scheme works regarding assessment of vehicles to resolve cost and operational flexibility issues.

**Purpose:** For ATC vote

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**Comments by:**

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## FOREWORD

The National Transport Commission (NTC) is an independent body established under an Act of Parliament and intergovernmental agreement to provide independent advice to transport ministers on regulatory and operational reforms. The NTC undertakes these reforms across road, rail and intermodal transport to improve safety, productivity and environmental outcomes.

Road freight productivity affects all Australians. The costs of goods and services, from the price of milk at the local supermarket to the iron ore exported through our ports, are directly impacted by the cost and efficiency of transport. Other benefits to the community flow from reducing the number of trips required to service a freight task – leading to fewer vehicles on the road, fewer kilometres travelled, less exhaust emissions and reduced fuel usage. Productivity improvements drive better safety outcomes for the transport industry and the broader community, deliver environmental improvements and reduce urban congestion, thereby improving urban liveability.

To allow industry to achieve better road freight productivity without sacrificing road safety or increasing road asset damage, the Australian Transport Council (ATC) approved the Performance Based Standards (PBS) reform in October 2007. The ATC supported the development of a performance-based approach to heavy vehicle regulation as an alternative regulatory system to the current prescriptive regulations.

However, significant challenges remain to ensure this important national productivity reform, endorsed by the Council of Australian Governments and the Productivity Commission, delivers on its true productivity and safety potential.

In general, industry has been very supportive about the concept of performance-based regulation for innovative or higher productivity vehicles. However, the access arrangements have been inconsistent, leading to poor uptake of the scheme. This regulatory impact statement evaluates ways in which the robustness of the scheme can be improved by utilising the National Heavy Vehicle Regulator to provide a nationally consistent framework for applicants and access determination.

Extensive consultation has been undertaken between the NTC and representatives of all Commonwealth, state and territory transport agencies, industry, the community and other relevant stakeholders, in order to identify issues with the current PBS scheme and gain comments on the acceptability of the proposed options.

The NTC acknowledges the work of Kristian Cook, George Konstandakos, Ian Hunter, Julian Del Beato, Jose Arredondo, Marcus Coleman and Meena Naidu in preparing this report. The NTC also acknowledges Associate Professor Kim Hassall from the University of Melbourne and the Industrial Logistics Institute for the preparation of the cost-benefit analysis used in this regulatory impact statement.



Greg Martin

Chairman



## EXECUTIVE SUMMARY

Australia is heavily reliant on road transport because of its low population density and the long distances between production centres, markets and communities. With trucks currently moving around 80 per cent of the freight task and buses carrying around 62 per cent of total public passenger trips, a safe, sustainable and efficient road transport industry is vital to Australia.

Productivity improvements are critical to Australia's economic growth, however, this is one sector of the economy currently lagging. Productivity improvements will result in fewer trucks on the road, fewer trips and better use of infrastructure and freight routes. This leads to better safety, environmental and efficiency outcomes.

In February 2006 the Council of Australian Governments (COAG) agreed to the development of the Performance Based Standards (PBS) scheme. The NTC was given a mandate to deliver a 'nationally agreed process for assessing the access of innovative vehicles to the road system' that would deliver a 'potential to increase productivity by encouraging the use of over-dimension or over mass vehicles where it is safe to do so and where their use will not cause unacceptable damage to road infrastructure.'<sup>1</sup>

COAG did not intend for this scheme to be a niche scheme to deliver small productivity benefits to limited operators, in fact it noted that:

Over the longer term, PBS is seen as the key productivity reform that has the potential to replace prescriptive rulemaking, as it would provide a regulatory framework for operator-driven flexibility in vehicle design and operation, subject to agreed safety and asset standards. PBS is seen as an important element in a regulatory approach to road transport which will enable continuous productivity gains and technological improvement, whilst meeting reasonable safety, road asset protection and environmental standards.<sup>1</sup>

To ensure that PBS has a place in transport policy COAG required the NTC to develop 'implementation of PBS regulation, including binding and effective national decision-making processes.'<sup>1</sup>

In support of the objective of a binding and effective national process the ATC agreed to the following principles at its meeting of 13 October 2006:

Ministers agreed that in future 'performance based' standards (PBS) will apply to more productive and safer heavy vehicle designs. These will permit a greater range of heavy vehicles to access the road network. Under PBS, vehicles operating in combination will be assessed on 'what the vehicle can do' as an alternative to prescriptive rules which govern 'what the vehicle looks like'.<sup>2</sup>

In July 2009 the NTC delivered its review of the operation of the PBS scheme. The scheme had been in operation under administrative arrangements within roads authorities in states and territories since October 2007.

The review concluded that while PBS has had limited success in improved productivity for some operators, many industry members have been discouraged from participating in the scheme due to the uncertainty around obtaining the desired road network access. In addition, industry participation has been subdued due to the limited flexibility and high

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<sup>1</sup> Council Of Australian Governments' Meeting - 10 February 2006, Appendix C ([http://www.coag.gov.au/coag\\_meeting\\_outcomes/2006-02-10/docs/attachment\\_b\\_ncp\\_review.pdf](http://www.coag.gov.au/coag_meeting_outcomes/2006-02-10/docs/attachment_b_ncp_review.pdf))

<sup>2</sup> Australian Transport Council – Communiqué 13 October 2006, Canberra (<http://www.atcouncil.gov.au/communique/atc24.aspx>)

cost of participation in the scheme. The NTC found that while the ATC formally adopted the PBS scheme in 2007, in practice, states and territories have not implemented the reform in a consistent manner.

From this review it was determined that some improvements need to be made to the scheme to improve industry participation.

This regulatory impact statement sets out the desired improvements. It contains two parts:

- Part 1 reviews and assesses options for various PBS scheme frameworks including the development of COAG requested legislation.
- Part 2 looks at options for enhancing how the scheme works regarding assessment of vehicles to resolve cost and operational flexibility issues.

## **PART 1: PBS ASSESSMENT AND ACCESS FRAMEWORKS**

### **Problem statement**

PBS provides an access framework for SMART<sup>3</sup> trucks and buses, which can carry more freight and passengers, to operate safely on the road. The end result is fewer trucks and buses on the road for the same freight and passenger tasks, improved road safety, less transport emissions and a more competitive and efficient domestic economy.

The key deficiency of the current PBS scheme is in the granting of road access to approved vehicles. Once the PBS Review Panel has assessed and approved the vehicle, it is then up to state and territory governments to provide a Class 3 permit to operate the vehicle. At this point there is no compulsion for the state or territory road authority to issue a permit and, as such, operators have been left with fully approved vehicles that are unable to access the desired network.

As many of the vehicles built using the PBS process are unable to be used outside of the scheme, the failure to gain access represents significant losses to the owners of the vehicles, not only in vehicle costs (which may run into hundreds of thousands of dollars) but also in wasted time and PBS assessment and certification fees. Many fleet operators who have been through the scheme have indicated that they would not be willing to use it in the future.

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<sup>3</sup> SMART is the public name for PBS-compliant vehicles.



## **Objectives**

To deliver on the 2006 COAG requirements, the key objectives of the PBS scheme are:

- improved freight productivity
- reduced impact on the environment in regard to vehicle emissions and CO<sub>2</sub>
- reduced impact on society in regard to reductions in road trauma and congestion.

To achieve these objectives, the scheme must deliver on a number of principles in order to attract the participation required for a meaningful outcome. Stakeholder consultation identified the following principles need to be met to deliver the required results:

- certainty of access for approved SMART trucks and buses
- national consistency in operating and access conditions
- improved operational flexibility of PBS vehicles
- reduced compliance cost
- improved industry participation.

### Options

There are two components of providing vehicle access that may either be national or state based. These are:

- vehicle assessment (against the PBS standards)
- network access arrangements (which are currently administered by state Class 3 permits).

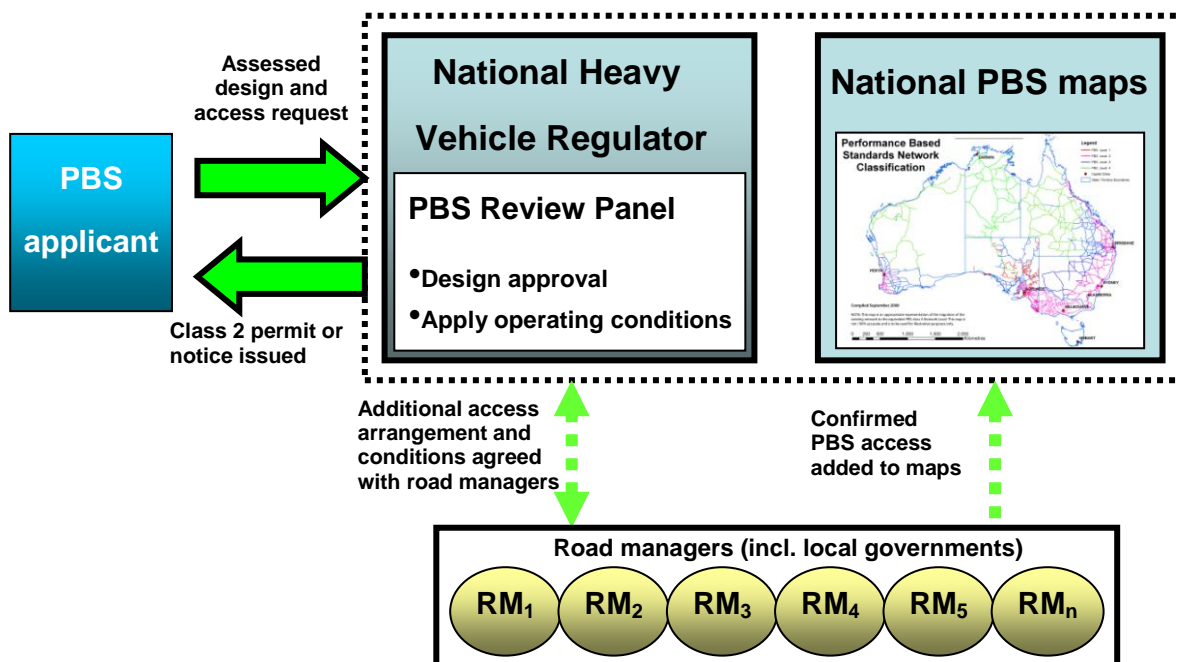
The options that may be adopted for these two elements are:

**Option 1:** Maintain the status quo by keeping the current administrative scheme in place in which PBS acts as a national assessment system requiring state-based permits for road network access.

**Option 2:** Move to a state-based assessment and access system to provide high levels of flexibility and better single-state access assurance.

**Option 3:** Move to a national assessment and access framework utilising the National Heavy Vehicle Law and National Heavy Vehicle Regulator to improve national consistency and certainty of access, as depicted in Figure 1. This is the preferred option.

**Figure 1. National assessment and access framework concept**



## Impact analysis

Table 1 provides a summary of the expected impacts of each option on the key criteria. All data is sourced from Hassall (2009) *Forecasting the Benefits of Performance Based Standards for the Australian Road Transport Industry, 2011 to 2030* (Appendix 1 of this document).

**Table 1. Summary of option impact against objectives**

	Option 1	Option 2	Option 3
Improved industry participation	Low	Medium	High
Improve freight sector productivity	Medium	Medium	High
Reduced impact on the environment	Medium	Medium	High
Reduced impact on society (road trauma)	Medium	Medium	High
Certainty of access	Low	High	High
National consistency	Medium	Low	High
Reduced compliance cost	Low	Medium	Medium

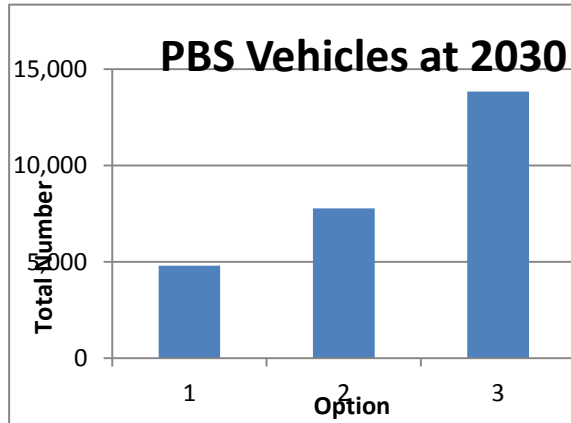
The success of PBS is reliant on two key factors: the take-up rate of more productive vehicles and the amount of additional productivity each PBS vehicle can deliver. While smaller vehicles will provide benefits in urban environments, larger combinations travelling interstate routes provide the most potential for savings. Option 3 is expected to deliver both the best take-up rate due to improved user confidence as a result of a more robust access scheme and delivers the best interstate interoperability to allow the highest benefits from long-haul vehicles.

**Table 2. Summary of financial, social and environmental benefits by option**

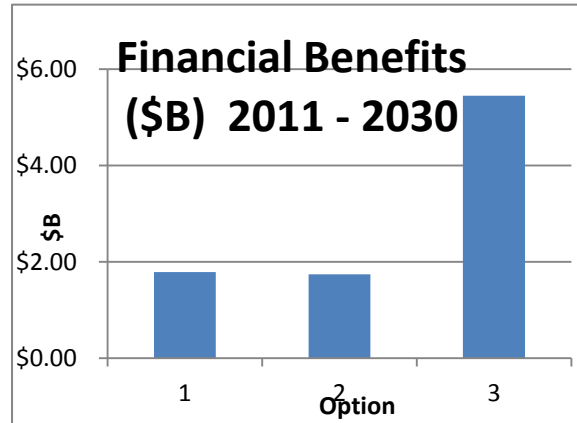
Selected PBS metrics	Option 1	Option 2	Option 3
1. PBS kilometre savings 2011–2030	1.06 b km	0.95 b km	3.7 b km
1a. Direct financial savings 2011–2030 (\$ nominal)	\$1.79b	\$1.74b	\$5.45b
2. Fatality savings to 2030	23.8	20.4	87.3
2a. Fatality savings (\$ nominal)	\$0.083b	\$0.071b	\$0.305b
Total savings (1a+2a) nominal	\$1.873b	\$1.811b	\$5.755b
4. Compliance costs (\$ nominal)	–\$0.084b	–\$0.136b	–\$0.112b
5. Administration costs (\$ nominal)	–\$0.011b	–\$0.029b	–\$0.016b
Total costs (4+5) nominal	–\$0.095b	–\$0.165b	–\$0.128b
<b>Net direct savings PBS 2011–2030 (nominal)</b>	<b>\$1.788b</b>	<b>\$1.646b</b>	<b>\$5.627b</b>
Carbon dioxide savings (Million Tonnes)	0.99 mt	0.72 mt	3.75 mt

Key benefits of the vehicle take-up rate (Figure 2) are in the areas of economic (Figure 3), environmental (Figure 4) and social (Figure 5) outcomes of each of the options.

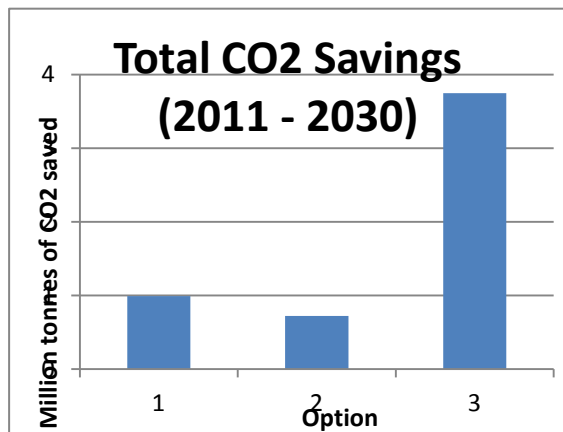
**Figure 2. Vehicle take-up**



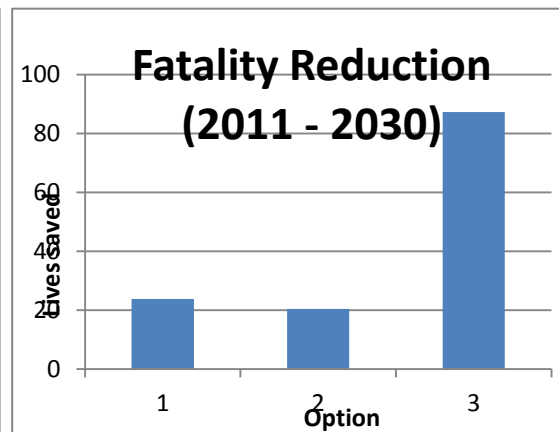
**Figure 3. Financial benefits**



**Figure 4. Total carbon dioxide savings**

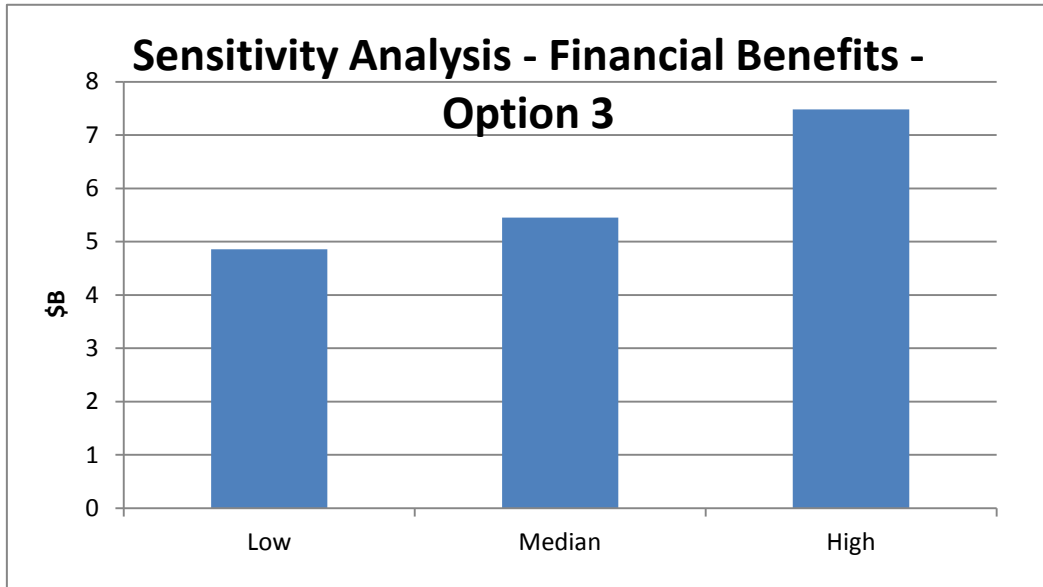


**Figure 5. Fatality reduction**



A sensitivity analysis was undertaken to understand the range of possible outcomes for Option 3. The overall range of financial benefits are shown on Figure 6. A detailed description is presented in Appendix 6 of the cost-benefit analysis.

**Figure 6. Sensitivity analysis – Option 3**



### Costs

The key benefit of the PBS system is that additional productivity may be realised by better utilisation of existing road infrastructure assets. Interim infrastructure requirements were approved by the ATC to limit the impact of PBS vehicles on the road network. There are ongoing efforts to develop and evaluate a new performance-based pavement loading requirement. A formal acceptance procedure (regulatory impact statement) will evaluate which standard provides the best asset protection while affording the highest tangible productivity benefits. For the purpose of this evaluation it is assumed that the interim standard will limit road wear from PBS vehicles such that there are no additional pavement wear costs over prescriptive vehicle levels.

Future expansions of PBS networks are expected to occur progressively based on government land transport planning schemes, such as the national AusLink approach, and state and territory transport planning schemes, such as Victoria's 'Freight Futures' network strategy. Benefits from these asset improvements will be shared by all road users and only a fraction of the cost will be attributable to PBS vehicles.

Compliance costs consist of the administrative, compliance and business time costs. For comparison purposes and to ensure that figures are conservative, the costs presented in Table 3 utilise the highest cost case for each option.

**Table 3. Compliance cost per annum by option**

Cost	Option 1	Option 2	Option 3
Compliance cost (\$/year)	\$3,120,000	\$5,044,000	\$4,152,000
Administrative cost (\$/year)	\$419,600	\$1,100,000	\$580,800
<b>Total costs (\$/year)</b>	<b>\$3,539,600</b>	<b>\$6,144,000</b>	<b>\$4,732,800</b>

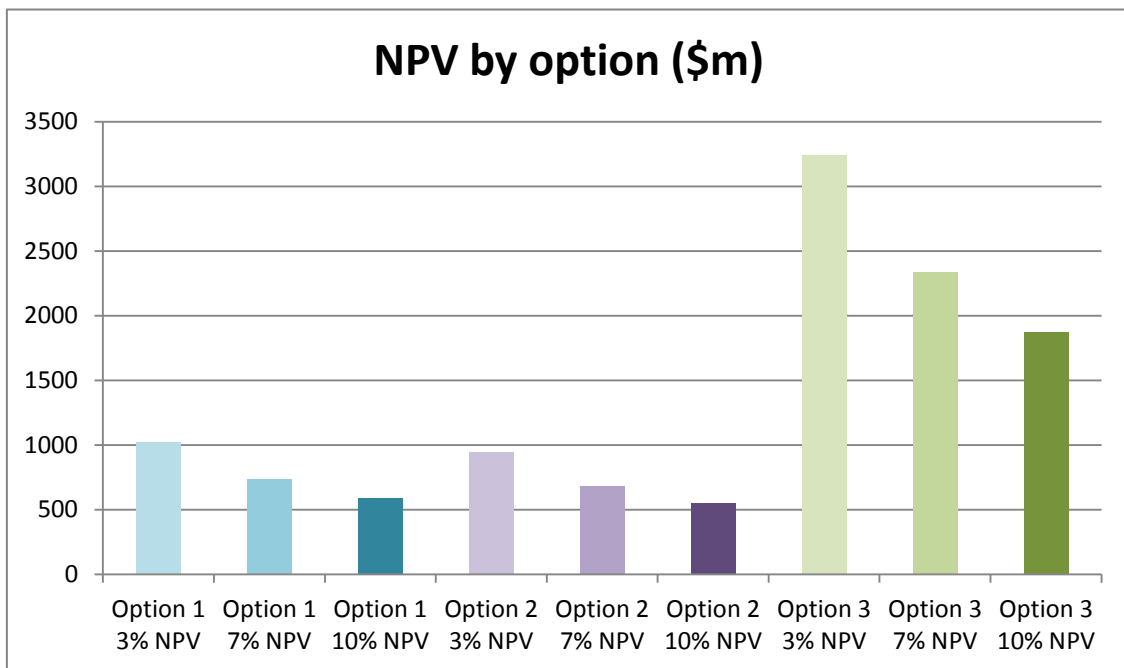
### Net present value of benefits

A net present value evaluation of the options was conducted using real discount rates of 3, 7 and 10 per cent<sup>4</sup>.

**Table 4. Net present value (NPV) by option**

Discount rate	Option 1	Option 2	Option 3
3%	\$1022.7m	\$945.6m	\$3245.1m
7%	\$735.7m	\$680.2m	\$2334.5m
10%	\$590.7m	\$546.2m	\$1874.5m

**Figure 7. Reform direct net present value by option**



<sup>4</sup> The NPV of each option estimated above use the real discount rates recommended by the Office of best Practice Regulation. Different deflators were used in the consultant's analysis. While this alters the reported magnitude of the net benefits, it does not alter the conclusion that option 3 is superior to options 1 and 2.

## Implementation

Implementation of the reform is to be delivered and measured against milestones set out in a national implementation plan. The NTC will work with the individual state and territory governments to develop the plan following an ATC vote on the preferred option. This process will reflect the two-stage approval process recommended in the 2009 NTC Review and endorsed by the ATC. Preliminary work has commenced on the implementation plan.

The preferred option of PBS legislation (Option 3) is intended to be incorporated into the National Heavy Vehicle Law and administered by the National Heavy Vehicle Regulator (agreed at the ATC in May 2009). This arrangement will provide the best environment for PBS to deliver a clear, nationally consistent scheme for delivering improvements in the road freight industry.

Operation of the National Heavy Vehicle Regulator is proposed to commence from January 2013. It is intended that the scheme would continue to be administered in its current form until the national regulator is able to take over the function, at which point the scheme would swap to the national assessment and access model.

Should Option 3 be pursued, a set of national access and operating conditions will be developed to ensure that risks inherent with a particular vehicle design are adequately controlled. The NTC will develop these requirements in cooperation with governments, industry, and vehicle development and safety experts and will address matters including adding PBS law to the National Heavy Vehicle Law, complete technical development of performance-based bridge and pavement loading standards, developing a PBS application lodgement, assessment and approval process, development of a consistent process by which the regulator will liaise with road managers to determine access and access conditions (Note: Under the National Heavy Vehicle Law the intent is that the Regulator will be responsible for determining vehicle access conditions whilst the road manager will be responsible for determining route access conditions to protect infrastructure and preserve amenity. The road manager may request a specific vehicle condition, but does not have the authority to impose it), creation of a process for maintaining and adding to the PBS maps while networks are developed that will ensure that operators are aware changes and planned network extensions, development of a dispute resolution process for approval and access decisions, development of business systems to manage applications, permits and notices, development of a PBS route assessment tool for use by local and state governments.

Regardless of the options chosen for the PBS scheme, the mapping of networks by road managers (in particular where local council road assets are included) will remain a key component of a successful implementation. Governments are encouraged to work with local councils to facilitate the accurate sharing of information on the PBS system and to work towards providing viable PBS networks that include the 'last mile'. Without this, the full productivity benefits associated with the PBS scheme will be under-realised. It should be noted that while not specific to PBS but to access generally, the NHVR will monitor and track access 'hot spots' in order to better resolve recurring, persistent bottlenecks.

The national implementation plan will include a comprehensive communications strategy to engage councils and address perception issues around high productivity vehicle use.

## **PART 2: PBS SCHEME ENHANCEMENTS**

### **Problem statement**

In addition to the options for implementing the PBS scheme, the review noted that some changes are required to assist the scheme in delivering a more cost-effective and flexible system for vehicle operators. Specifically this includes:

- Based on industry feedback, a means by which PBS vehicles can be provided to the market and operated in a more flexible manner than what is currently allowed
- the need to improve the quality, distribution and cost of PBS assessment and certification resources to service a growing PBS customer base.

### **Objective**

The objective of the changes to assessing vehicles in PBS is to allow operators to use PBS-approved equipment in a more flexible manner by being able to assemble compliant PBS combinations from pre-assessed components (modular assessment). The current system can only approve a single vehicle that cannot be broken down or have modules, such as compatible prime movers swapped, for example, when a prime mover is out of service or unavailable for any reason.

The secondary purpose is to encourage more vehicle manufacturers to be involved in the assessment and sale of PBS-compliant vehicles to reduce the cost to operators of more productive vehicles.

This draft regulatory impact statement seeks to gain agreement to pursue the development of these concepts within the PBS framework.

### **Options**

To improve the flexibility and reduce the cost of the PBS system the following changes are recommended:

- develop a system of modular assessment for PBS combination vehicles
- allow manufacturer self-assessment and certification of vehicles and component vehicles.

The options presented are to accept and pursue the development of these concepts or maintain the current processes.

### **Impact analysis**

PBS vehicle compliance costs typically include the cost of assessment of the vehicle against the PBS standards and the cost to certify that the vehicle, as built, meets the requirements of the design approval (vehicle assessment).

As it is difficult to define a typical transport operator; it is just as difficult to develop a typical cost of compliance for the PBS scheme. To study the relative compliance costs between the options presented in this paper, a test case that is similar to a small PBS vehicle operator has been assessed. In this case the operator runs two PBS combination types (a super B-double and a quad-axle semitrailer), each with four complete combination vehicles.



Under the current system, costs are borne almost exclusively by fleet operators. Should modular certification and self-certification be implemented, it is expected that the compliance costs would generally be borne by the manufacturer of SMART vehicles and such costs may be amortised over the full production run of the vehicle component. Table 5 compares the current costs to expected costs with these process improvements.

**Table 5. Comparative compliance costs per option for a given fleet**

	Sample fleet compliance cost	Cost to change prime mover
Current system	\$56,000	\$17,000
With Part 2 enhancements	\$16,000	\$500

### **Recommendation**

NTC recommends that both self-certification and modular assessment be agreed for inclusion in the PBS business and assessment rules.

### **Implementation**

Technical work to confirm that the concept of modular certification is robust is currently being conducted by approved PBS assessors. Successful implementation will require that a system for identifying compatible vehicle modules for the purposes of operation and compliance monitoring is developed and robust. This work is expected to be led by the NTC with input from governments and industry, should modular assessment be approved.

To implement self-certification, in particular the auditing requirements, the PBS Review Panel secretariat would need to be sufficiently resourced and staffed with individuals experienced in, and capable of, carrying out technical audits. This may be accomplished through utilisation of the resources of the National Heavy Vehicle Regulator.



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**APPENDIX 2: Law on Performance Based Standards for heavy vehicles**

**APPENDIX 3: National Heavy Vehicle Regulator process for PBS applications, vehicle licencing and access requests**

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## 1. INTRODUCTION

### Summary

- The Performance Based Standards (PBS) scheme is a voluntary alternative to existing prescriptive regimes that mandate the size and mass of a heavy vehicle.
- PBS provides a nationally approved heavy vehicle assessment method.
- PBS governs what a vehicle can do, not what it should look like.
- The design flexibility offered by PBS allows vehicles to be better suited to their freight task, providing freight productivity gains.
- Improved efficiency and productivity of road freight and improved road-based mass transit can deliver significant economic, social and environmental benefits.

The Performance Based Standards (PBS) scheme is a voluntary scheme tailored to providing road network access to higher productivity vehicles by directly assessing their suitability for use in different environments. The key focus is on how the vehicle behaves on the road, rather than its dimensions and mass (prescriptive limits), through a set of safety and infrastructure standards. This ensures that a vehicle's performance is matched to its level of road network access.

The OECD report *Performance-Based Standards for the Road Sector*<sup>5</sup> noted:

While most regulations for heavy vehicles remain prescriptive, performance-based approaches to regulation have been the focus of regulation reforms internationally in recent years. This has been to ensure:

- Governments only intervene when there is a need for them to do so.
- The performance that needs to be regulated is transparent.
- Regulations are subject to an ongoing process of evaluation.
- Consistency is achieved across jurisdiction boundaries.
- Innovation and take-up of new technologies and approaches is encouraged by regulations that do not create unnecessary inflexibilities for those who have to comply with them.

This approach to regulation has been adopted internationally 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.<sup>6</sup>

PBS is primarily concerned with providing vehicle designers and operators greater flexibility with respect to the mass, dimensions and possible vehicle combinations (trucks carrying one or more trailers) than is available under prescriptive mass and dimension schemes such as the Australian Design Rules.

PBS sets minimum vehicle safety and infrastructure standards to ensure heavy vehicles are stable on the road, can turn, stop and accelerate safely and cause no additional infrastructure damage than other heavy vehicles. In other words, PBS governs what a vehicle can do, not what it should look like. PBS-approved vehicles have been promoted as SMART<sup>7</sup> trucks and

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<sup>5</sup> OECD, *Performance-Based Standards For The Road Sector*, 2005, p. 18

<sup>6</sup> OECD, *Performance-Based Standards For The Road Sector*, 2005, p. 17

<sup>7</sup> SMART is the public name for PBS-compliant vehicles.

buses because they have been intelligently designed to best fit the task for which they are intended.

Applicants can obtain an independent engineering assessment of their SMART truck or bus design, typically using computer simulations, to determine whether the vehicle meets the standards. This gives regulators confidence in the vehicle's safety. Vehicles are matched to suitable road networks according to their on-road performance. The better the vehicle's performance, the better its level of access to the road network.

Using a purpose-built SMART heavy vehicle to do a particular task can deliver significant efficiency gains. Productivity benefits could include: a small increase in trailer length (using steering axles, which use less road space on turns); more axles and better load distribution to carry more weight; or modular trailer designs for improved flexibility.

Improved freight productivity has effects on the cost of transport and thus the direct cost of goods and services. It also has flow-on benefits by allowing organisations to adjust warehouse and inventory requirements, and reduce their costs, which leads to further productivity gains.

There are also non-financial benefits to be derived from improvements in road freight productivity, including reducing the number of trips required to service a freight task, leading to less vehicles on the road (for the same task), fewer kilometres travelled, and less exhaust emissions. Road safety is also improved because fewer vehicles on the road reduces the chances of vehicle-to-vehicle, single-vehicle or pedestrian impacts. Fewer trips required to move a task can also lead to improved driver hours and reduced fatigue.

Improved road freight can enhance and provide productivity improvements to other forms of transport such as rail. Intermodal transport is dependent on reliable and timely supply of freight in order to be effective and efficient. Road congestion degrades the reliability and performance of carriers, shippers and terminal operators. Improved road freight productivity can alleviate congestion around intermodal hubs and improve the viability of intermodal services.

PBS is one of the few tools available to governments that can be used to improve road freight productivity without requiring investment in road network infrastructure, as it attempts to derive the maximum benefit from the assets already in place.

The benefits of the PBS system are that it:

- has the ability to design and operate a 'smart' efficient vehicle that you wouldn't normally be able to under prescriptive guidelines
- allows the ability to tailor-build a vehicle to suit a customer's logistic requirements
- allows greater productivity
- allows safer vehicles.

– **Robert Blanchard, CEO Blanchard Haulage and SMART vehicle operator**



## 2. THE HISTORY OF PERFORMANCE BASED STANDARDS

Heavy vehicle productivity has been on the reform agenda of governments for decades. The key driver for reform has been the increasing demand for, and Australia's reliance on, land-based freight transport. Since the early 1960s, the national freight task has increased from under 20 billion tonne-kilometres (btkm) to about 200 btkm today.

Due to Australia's low population density and dispersed major population centres, road freight constitutes a large component of the total freight task, with many movements unable to be serviced by other means, such as rail, due to infrastructure limitations. Likewise, bus transport is a key part of the public transport network, which contributes significantly to facilitating the movement of people to and from work and around cities and urban communities. Improved transport productivity can therefore reduce the cost of moving people and freight, which has a positive effect on the cost of goods and services.

Early efforts to increase productivity were focused on relaxing prescriptive regulations through mass and dimension growth (known as mass and dimension creep). For example, between the 1970s and the 1990s, the permissible gross mass of a semitrailer and prime mover increased from around 35 to 42.5 tonnes. The maximum length increased from 16 to 19 metres.

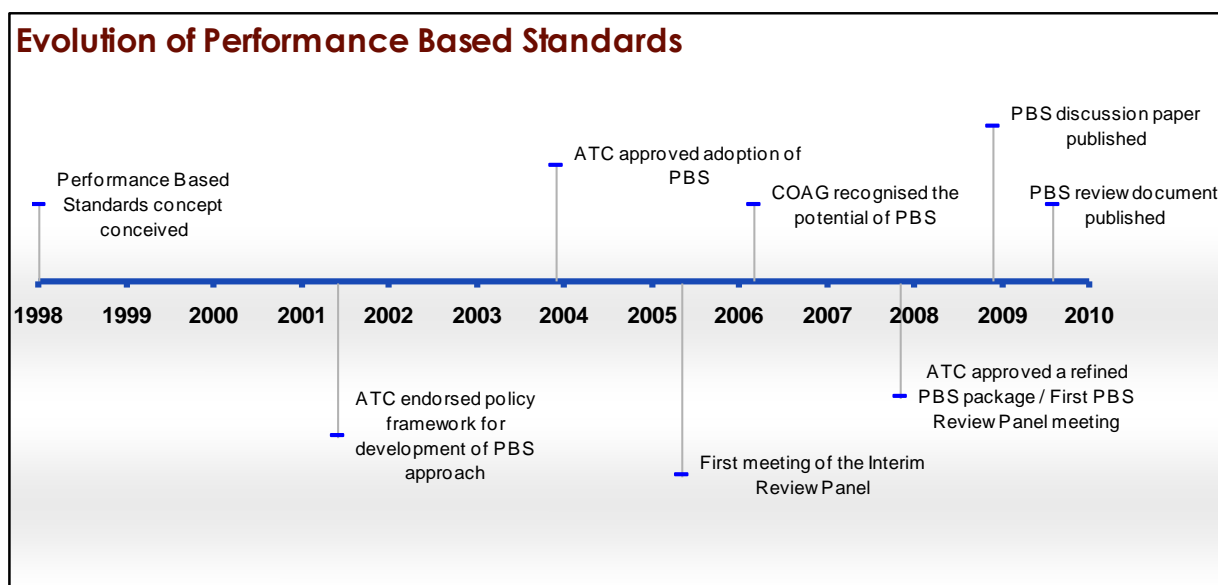
Further gains were achieved by the introduction of B-double combinations in the early 1990s, which substantially replaced the use of semitrailers on line-haul routes.

The ability to continue mass and dimension creep of prescriptive vehicles for general access (unrestricted access) is limited by the existing infrastructure. The prescriptive standards are thereby limited by the worst performing vehicles that may comply with them.

As mass and dimension creep became unsustainable, states and territories began to offer concessions and exemptions for better performing vehicle designs, or those with special needs (e.g. when transporting an over-dimensional load).

The utilisation of permit and general notice schemes has continued to grow in size, to the point where road agencies had difficulty in keeping pace with demand and the administrative load. This has resulted in differing approaches being taken by states and territories that have inhibited cross-border freight flows. For example, where 53-metre-long road trains have been granted access to a substantial proportion of the road networks of Western Australia and the Northern Territory, only B-doubles up to 26 metres long are granted significant access to Victorian roads.

In response to these pressures, the PBS concept was conceived in 1998. It had an objective of applying nationally uniform assessment methods for vehicles while allowing for different constraints of state and territory road networks.

**Figure 8. Timeline of PBS developments**

In May 2001 the Australian Transport Council (ATC) endorsed the policy framework for the development of a performance-based approach to heavy vehicle regulation and, in December 2003, voted to adopt the PBS.

The PBS project was divided into six phases. They were:

- Phase A:** Performance measures and standards – identifying the appropriate performance measures and standards and surveying the performance of the current heavy vehicle fleet.
- Phase B:** Regulatory and compliance processes – establishing a regulatory system in which PBS can operate as a seamless national alternative to existing prescriptive regulations including national compliance and enforcement arrangements.
- Phase C:** Guidelines – preparing guidelines detailing the procedures and processes for the consistent application of PBS.
- Phase D:** Legislation – developing the legislative arrangements for PBS to operate as an alternative to prescriptive regulations.
- Phase E:** Case studies – assembling work previously conducted and demonstrating the practical application of PBS to nationally agreed priorities.
- Phase F:** Implementation – putting in place the necessary legislative and administrative systems to allow PBS to operate nationally and providing the training and information to support these changes.

Most of these phases represented ongoing tasks and were to be addressed concurrently. At the time of writing, these tasks have been completed, with the exceptions being Phases D (legislation) and F (implementation).

During the final stages of reform development, the PBS Interim Review Panel was established in April 2005 to ‘road test’ the reform by reviewing ‘case study’ applications. While not empowered to approve access for SMART vehicles, it could make recommendations to road agencies on whether to grant a permit. In total, the PBS Interim Review Panel reviewed 27 SMART vehicle designs.

In February 2006 the Council of Australian Governments (COAG) agreed to the development of the PBS scheme. The NTC was given a mandate to deliver a ‘nationally agreed process for assessing the access of innovative vehicles to the road system’ that would deliver a ‘potential to increase productivity by encouraging the use of over-dimension or over mass vehicles where it is safe to do so and where their use will not cause unacceptable damage to road infrastructure.’

To ensure that PBS has a place in transport policy COAG required the NTC to develop ‘implementation of PBS regulation, including binding and effective national decision-making processes.’

In support of the objective of a binding and effective national process, the ATC agreed to the following principles at its meeting of 13 October 2006:

Ministers agreed that in future ‘performance based’ standards (PBS) will apply to more productive and safer heavy vehicle designs. These will permit a greater range of heavy vehicles to access the road network. Under PBS, vehicles operating in combination will be assessed on ‘what the vehicle can do’ as an alternative to prescriptive rules which govern ‘what the vehicle looks like’.

A national regulatory panel will establish a single point of contact for vehicle operators and will be charged with assessing vehicle characteristics for conformance against the technical standards. If the vehicle meets the PBS standards then decisions will be mutually recognised by governments and access will be provided within a statutory timeframe. Individual States and Territories however will retain the right to determine the level of access to their road systems.<sup>8</sup>

In October 2007 the ATC approved a refined PBS package, including further developed vehicle standards and assessment rules, business rules governing administration of the scheme and network classification guidelines. This package represented a significant step towards the development of a nationally agreed, robust and autonomous scheme.

Under the revised administrative scheme, the responsibility for reviewing PBS applications shifted from the Interim Review Panel to the PBS Review Panel, which continues to operate today. It was agreed that the PBS scheme would be reviewed after 12 months of operation, with a view to developing legislation.

In July 2009 the NTC delivered its review of the operation of the PBS scheme, which had been in operation via administrative arrangements within roads authorities since October 2007. The review concluded that while PBS has had limited success in improving road productivity for some operators, the majority of industry members have disregarded the scheme, largely because approved vehicles have not realised the desired network access.

The NTC found that while the ATC formally adopted the PBS scheme in 2007, in practice, jurisdictions have not implemented the reform in a consistent manner. Some jurisdictions feel that the PBS scheme, while able to assess the technical suitability of a vehicle to a road, is not

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<sup>8</sup> Australian Transport Council – Communiqué 13 October 2006, Canberra (<http://www.atcouncil.gov.au/communique/atc24.aspx>)

able to adequately deal with perception issues and community acceptance of higher productivity vehicles.

In addition to this, jurisdictions have also struggled to find adequate resources to conduct the road and bridge assessments necessary to publish robust PBS network maps. This has led to delays in the publication of maps and the exercising of discretionary authority over granting access to PBS vehicles, which may have already been approved by the PBS Review Panel. The lack of uniformity and certainty of road and bridge access for compliant vehicles has created a major impediment to PBS take-up in the freight community.

The NTC suggested a number of improvements to the scheme and prioritised recommendations to re-establish national consistency to improve transparency in network access approvals and streamline the vehicle approval processes while improving flexibility of SMART vehicle operation.

A key recommendation made in the review of the PBS scheme was to develop a regulatory impact statement in accordance with Phase D of the ATC agreement of December 2003. This regulatory impact statement draws on the experience of PBS and provides a discussion and assessment of the merits of either:

- continuing the scheme as it is currently administered as a national assessment, with state-based access permits
- changing the scheme to a national assessment and access framework, or
- assessing the capacity for greater improvement in freight productivity through state or regional assessment and access schemes, given the significant differences in operating environments, community attitudes and existing infrastructure in each state.

It was recognised during the review that, along with assessing how the scheme is administered, additional process-based improvements and clarifications would be required to deliver on the productivity increases envisaged in the establishment of the scheme, and these improvements are therefore to be developed and assessed through this regulatory impact statement.

Should there be sufficient support for the concept of a national access framework, the NTC recommends that the required legislation could be enacted through the National Heavy Vehicle Law and administered by the National Heavy Vehicle Regulator. The National Heavy Vehicle Regulator is expected to be established and administering national law by January 2013.

### **3. INTENT OF THE REGULATORY IMPACT STATEMENT**

This regulatory impact statement contains two parts:

- Part 1: Review and assessment of various PBS scheme framework options
- Part 2: Options for additional measures to enhance how the scheme works regarding assessment of vehicles.

In addition to the ATC requirement to develop legislation for the purpose of implementing the PBS scheme, the review of PBS noted that some changes may assist the PBS scheme in delivering the productivity, social and infrastructure benefits requested by COAG.

Two key changes identified in the review and supported by industry are modular assessment of vehicles (allowing prime movers to be assessed independently of the trailers used) and removing the reliance on scarce third-party engineering resources by allowing self-certification and wider vehicle manufacturer participation.

This regulatory impact statement seeks to gain agreement on the most appropriate way to administer the scheme and for a decision to pursue the development of the noted PBS improvements.

## PART 1: PBS ASSESSMENT AND ACCESS FRAMEWORKS

### 4. PROBLEM STATEMENT

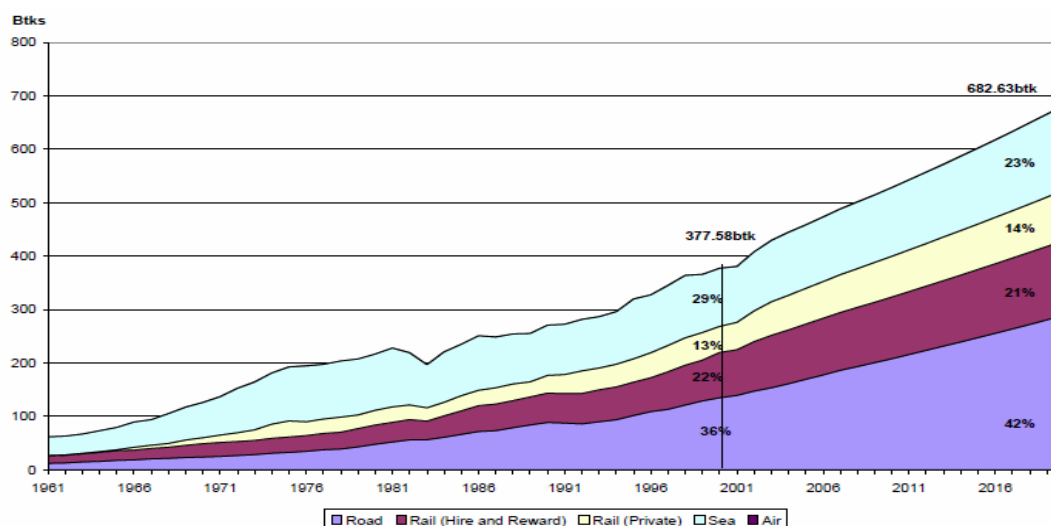
#### Summary

- The road freight task is projected to double every 20 years.
- The capacity to build infrastructure is limited, particularly in urban environments.
- Bus/coach transport will become more important as urban areas extend out beyond city rail systems.
- Improved efficiency and productivity will have to be delivered through better use of existing road network assets and vehicles better suited to specific tasks.

#### 4.1 PBS addressing the growing freight task

The *Twice the Task*<sup>9</sup> report shows that the national freight task will double in size over a 20-year period. This is corroborated by the latest figures from BITRE<sup>10</sup> that show the growth in the overall freight task will outstrip the rate of population growth (projected at 1.58 per cent per year) and will increase alongside GDP growth (projected at 2.7 per cent per annum). With a high proportion of freight being ‘non-contestable’ by alternative modes such as rail and sea, road transport is expected to increase its share of freight by 6 per cent per annum over a 20-year period (see Figure 9). This increase in freight demand is occurring at the same time as significant population growth in Australian cities, both of which lead to greater levels of urban congestion, road trauma, increased fuel usage and associated emissions.

**Figure 9. Projected growth and distribution of the domestic freight task<sup>9,11</sup>**



<sup>9</sup> National Transport Commission, *Twice the Task – A Review of Australia's Freight Transport Tasks*, February 2006, available at <<http://www.ntc.gov.au/DocView.aspx?page=A02312400400570020>>.

<sup>10</sup> BITRE Report 121 – Road freight estimates and forecasts in Australia: interstate, capital cities and rest of state (see <[http://www.bitre.gov.au/publications/74/Files/Report\\_121.pdf](http://www.bitre.gov.au/publications/74/Files/Report_121.pdf)>).

<sup>11</sup> Billion tonne-kilometres (btkm) is a freight measure describing the mass of freight and the distance it is moved.

The NTC estimates that not addressing these issues in a meaningful way will result in approximately another 50,000 trucks on Australian roads by 2020, with one in four vehicles in cities carrying freight.

The impact of freight growth will be greatest in urban areas, particularly around ports, inter-modal terminals and distribution centres. Given the majority of the population in Australia live in urban areas and the bulk of both domestic and imported industrial production is delivered to these areas, the result is an increased demand for urban freight transport. Furthermore, as urban freight transport deals primarily with the distribution of goods at the end of the supply chain, many deliveries tend to be made in small loads and in frequent trips, thus resulting in many vehicle kilometres travelled. The following factors can also be attributed to the growth in freight task:

- the consumption of more products and services
- on-shelf availability is driving smaller order sizes and more frequent deliveries
- lower logistics costs driving the consolidation of production facilities
- increasing global markets with extended supply chains
- increases in resource demand for minerals and agricultural production
- the substitution and growth of imports.

In addition to freight pressures, public transport is also increasingly dependent on road transport as new urban growth projects extend beyond the limits of the existing passenger rail systems, further burdening the road networks of major cities. In such environments road infrastructure and the possibilities for its extension are both limited and unsustainable. This disparity between demand and limitations of the urban environment has resulted in significant problems associated with urban freight transport. The most commonly mentioned are congestion, pollution, safety, noise and carbon dioxide emissions. The combined effects of these problems are both economic and societal, in that they not only reduce the efficiency and effectiveness of urban freight transport and logistics operations but also impact on quality of life through detrimental effects on health.<sup>12</sup>

Unlocking constraints on freight productivity has been identified by government and industry alike as necessary for maintaining downward pressure on the price of goods, as well as contributing to improved road safety and meeting targets for reduced levels of greenhouse gases produced by the transport sector.

Improved freight vehicle design, which better matches the type of vehicle used to the freight task and operating environment, has been identified globally as a key method of reducing the number of vehicles that will be needed to service the growing freight task.

It has become clear that governments are looking to schemes such as PBS to deliver required productivity gains safely, particularly for combination vehicles where performance can vary depending on the equipment used.

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<sup>12</sup>European Communities, *Urban Freight Transport and Logistics – An overview of the European research and policy*, 2006.

## 5. CURRENT REGULATORY ENVIRONMENT

### Summary

- PBS is the only nationally recognised scheme for assessing the suitability of non-standard vehicles.
- PBS vehicle designs span the spectrum of heavy vehicle and bus design from light rigid vehicles to multi-combination vehicles.
- PBS vehicles are currently treated as Class 3 ‘restricted access’ vehicles, with state-based permits required to be issued to allow use of the vehicle.
- Current access arrangements are not national and may not be suitable for the actual types of vehicles utilising the scheme.
- Network mapping by jurisdictions is currently inconsistent, and in some areas incomplete.
- Access to local council roads is currently problematic due to issues of assessing infrastructure and non-technical issues such as community perception and acceptance of higher productivity vehicles.
- Risk factors may differ between locations and this is difficult to adequately address simply through geometric road classification.

### 5.1 What types of vehicle use PBS?

PBS is intended to provide an alternative compliance scheme for vehicles that do not fit within the existing (prescriptive) heavy vehicle access schemes. When considering the assessment and access arrangements for PBS vehicles, it is important to understand the range of vehicle types that may utilise the scheme. This may range from the highly innovative vehicle type with a very specific freight task to generic vehicle types (with subtle changes to improve productivity) that have a much broader freight task.

Current experience with PBS has shown that the majority of applications for PBS approval have been for more standard, smaller vehicles, with slight changes to improve productivity. However, it is expected that if the scheme gains acceptance, more routes will be mapped for longer combinations and with greater access certainty; applications for these types of vehicles may increase.



Figure 10. Heavy vehicle types approved under the PBS scheme to date

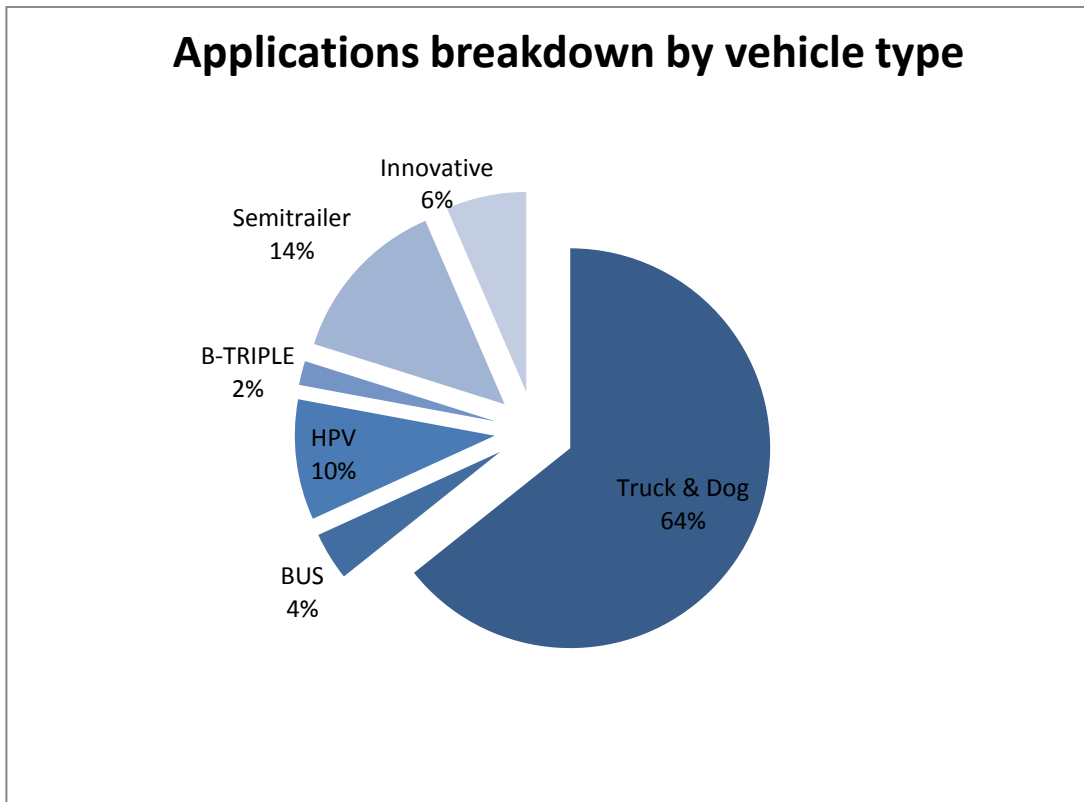
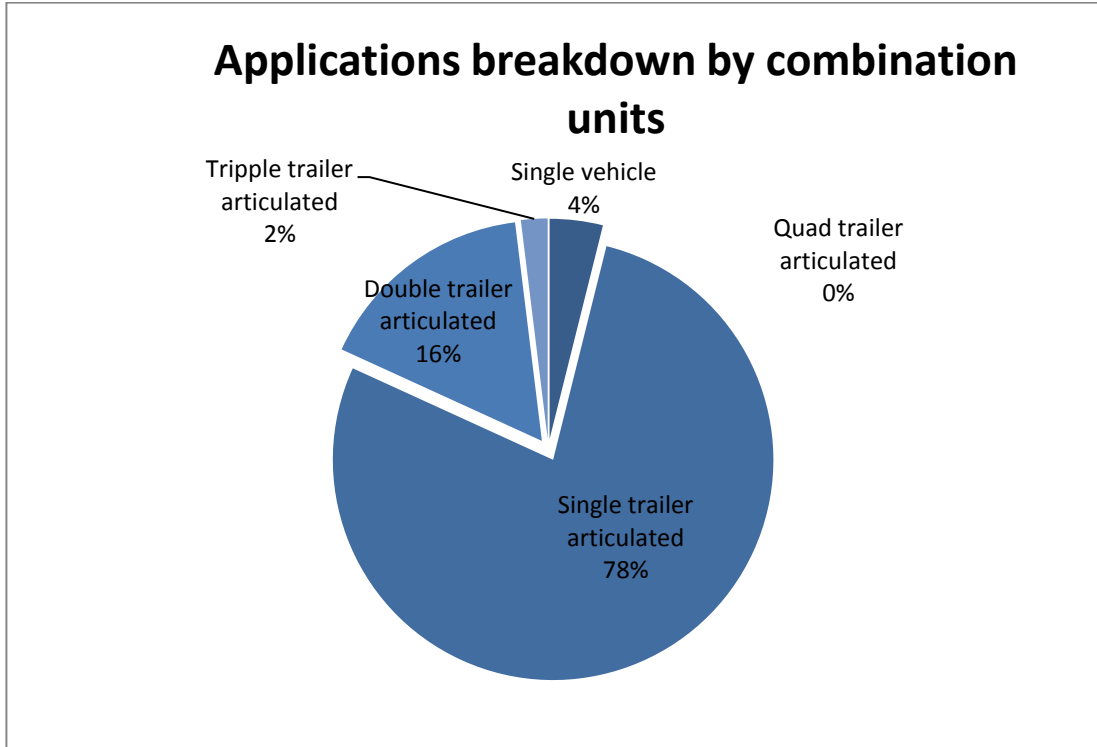


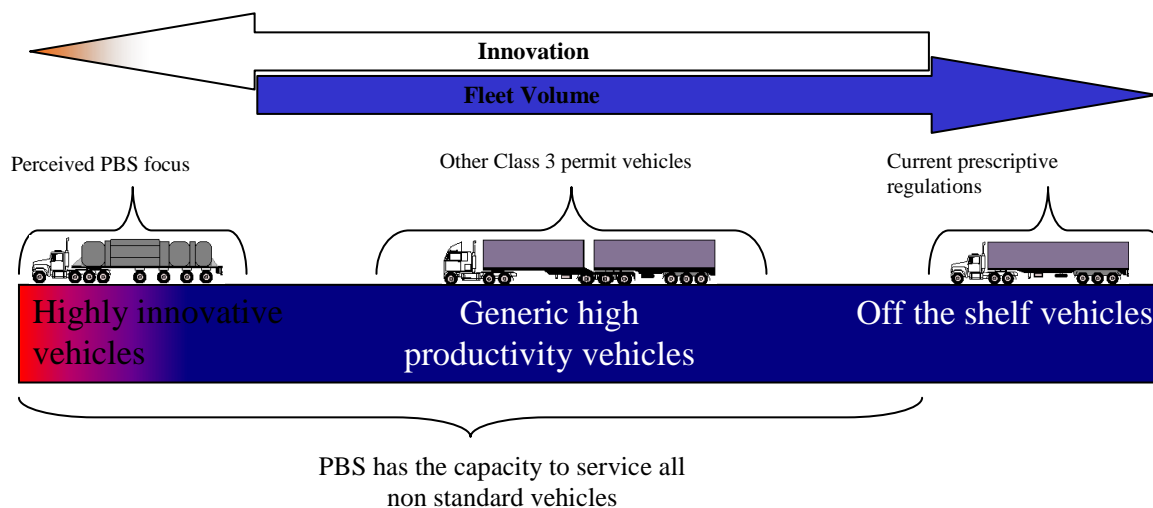
Figure 11. Breakdown of approved vehicles by combination units



The key learning from the current operation of the PBS scheme is that it is being used for industry to gain productivity improvements across the range of possible freight vehicles and buses, with most of the focus on smaller, more flexible vehicles rather than larger vehicles. The access arrangements that were put in place at the commencement of the scheme, which rightly

expected most of the PBS fleet to be larger combinations requiring specific access assessments by state authorities, should be reviewed with this in mind.

**Figure 12. Applicability of PBS to the vehicle fleet**



## 5.2 Access frameworks

Under national model legislation, heavy vehicles are categorised in the following four classifications:

- **General access** vehicles are those complying with the vehicle standards and mass and loading regulations (e.g. rigid trucks, semitrailers, standard type truck trailers).
- **Class 1** vehicles are engaged in 'special purpose' transport operations, which include oversize and overmass, agricultural and mobile plant vehicles (e.g. low loaders, concrete mixer trucks).
- **Class 2** vehicles are specific types and combinations that are compliant with applicable model regulations. As a result of their size and/or mass they are subject to restricted access (e.g. B-doubles, road trains and long buses).
- **Class 3** vehicles are non-standard heavy vehicles<sup>13</sup> that do not fall within the Class 1 or 2 categories. These are typically higher productivity vehicles that operate under concessional access/permit schemes or under the PBS scheme (e.g. super B-doubles and, under existing legislation, all PBS vehicles). Their access to the road network is either restricted or in accordance with the PBS access levels.

The classes are divided based on the freight task, taking into consideration the demands on payload mass and volume, as well as the extent of access required.

<sup>13</sup> *Non-standard heavy vehicles* refers to those that do not comply with applicable vehicle standards and/or mass and loading regulations, and therefore, do not qualify for 'as of right' access to the road network.

In Classes 1 to 3, a risk-based approach is applied to prescriptive standards in order to strike a balance between allowing the productivity concession and maintaining an adequate level of safety and protection of road infrastructure.

In the case of state/territory-specific permit schemes, variations with corresponding state, territory or national schemes may sometimes account for specific local circumstances. However, they often tend to also reflect more subjective differences, such as in the judgment of road agency staff. It is between these schemes that the greatest degree of variation between states/territories exists. PBS is currently the only nationally recognised scheme for assessing the suitability of new or non-standard vehicle types against a common set of criteria and acceptance values for vehicle performance.

### **5.3 Prescriptive regulations**

Heavy vehicle access regulations are formed in two broad ways:

- as national model regulations, developed by the NTC in collaboration with road agencies and approved by the ATC
- as state/territory regulations. These may complement national model regulations or substitute for them (where a state/territory has not accepted the model regulations).

National model regulations, developed by the NTC, must account for and balance the needs of all states and territories. They are approved by the ATC and made available for implementation in state and territory transport legislation.

Conversely, state/territory-specific regulations are developed within a given state/territory and approved under the applicable legislative process.

Prescriptive regulations, such as the Australian Vehicle Standards Rules, have been implemented by states and territories in a broadly uniform manner. However, they do not offer the flexibility to be utilised for the regulation of higher productivity vehicles.

A variation on prescriptive regulations is gazettal notices. These allow road agencies to designate prescriptive standards for heavy vehicles, much in the same way as for prescriptive regulations. A key difference is that, as they do not represent regulations, road agencies may vary the conditions of such notices with relatively greater discretion. Some states, notably Queensland, have made extensive use of gazettal notices in regulating access for higher productivity vehicles.

### **5.4 The permit system**

In addition to prescriptive regulations, all states and territories administer permit systems that may allow, under certain conditions, restricted access to the road network for non-standard heavy vehicles (i.e. those not complying with prescriptive standards, including notices).

A key point of distinction between permits and regulations is the greater degree of individual assessment for permit applications. Permits cater particularly for vehicles that cannot practically comply with prescriptive regulations but may be permitted access to the road network under the discretionary approval of road agency staff. The most common types of permit vehicles are special purpose (Class 1) vehicles (to which PBS does not apply).

The continued pressure for freight productivity gains has led to an increase in the use of the permit system for approving higher productivity vehicles. Generally, the more productive a heavy vehicle, the more likely it is to be regulated under a permit regime.

Road agencies have indicated the need to reduce the heavy resource burden imposed by the current permit system. Although this was part of the rationale for the PBS scheme's conception, under current PBS scheme arrangements, SMART vehicles are still processed as permit applications. An important distinction is that their assessment is wholly (or predominantly) undertaken by third parties (accredited PBS assessor and certifier).

#### **5.4.1 PBS permit access issues**

Class 3 permit access has traditionally been a method by which jurisdictions provide restricted access to vehicles that do not fully comply with existing legislation or vehicle notices. This arrangement has been generally suitable for larger and heavier vehicles that are restricted due to their size and mass or have bridge compliance issues. This arrangement is not as suitable for interstate operations or for smaller PBS level 1 'general access' vehicle types such as rigid trucks, slightly longer semitrailers and truck-trailer combinations that are deployed to many different locations on a day-to-day basis rather than running a single route.

Operators of national PBS fleets are required to obtain permits from each jurisdiction and, in some cases, permission from each local area council in which they wish to operate. PBS operators have commented that this is often a time-consuming process that offers no guarantee of access.

In summary, the PBS is a good process that is available to the industry whereby we can think 'outside the square'; however, having to deal with the individual state jurisdictions should be simplified. For a small operator to have to deal with five different state jurisdictions and, in some states, any local council where we operate in their region to gain full access to the network, is complex and time consuming.

– SMART vehicle operator

Local government permissions (discussed in detail in section 5.5.1) have been a particular issue for PBS applicants who frequently operate off state-based road networks. This has deterred some operators from using PBS vehicles, instead opting for less efficient standard vehicles (see Kirowin case study).

**Kirowin case study: Local road access**

Rick Taylor is an owner-driver who carries fuel to farms and businesses in central Queensland. He had a good idea for a better vehicle design.

The truck can be broken up, he thought, because it's modular. The front half is used for deliveries to farms and sites where access is poor. The rear trailer can be unhooked and used as a storage tank. An extra 6 tonne payload also helps absorb cost increases and stay viable.

The PBS reform allowed Mr Taylor to get the truck assessed against performance standards – to prove it's safe and won't damage bridges – and it is now up and running on a permit.

He approached the 15 local councils armed with his PBS assessment and state government support but found many were unaware of the reform.

'Some were good and some just didn't want to know,' he told *Australasian Transport News*.

'Hopefully Performance Based Standards will get up to a stage where once the truck goes through the NTC's Review Panel it's able to get on the road.'

In an *Australian Financial Review* article published in May 2008, Mr Taylor said he subsequently purchased another truck but this time opted to comply with prescriptive regulations to avoid the red tape associated with negotiating road access.

'The local governments were less helpful ... they are scared of the regulations,' he said.

The NTC has received feedback from a number of operators that the process of applying to some road agencies and local governments for network access pre-approval (prior to submitting a formal PBS application) has proven frustrating and lacks transparency. A contributing factor is that PBS approval is not yet a 'one-stop shop' and requires applicants to negotiate with a range of road agency permit officers and local governments, as well as the PBS Review Panel. One operator reported to the NTC that he had waited almost two years for a route (bridge) assessment to be completed and was yet to receive a response.

The current administrative PBS scheme does not have a dispute resolution process or a way in which vehicle access and network classification decisions may be reviewed. This can leave operators with fully compliant SMART vehicles without a means to contest adverse access decisions.

**5.4.2 Application of access and operating conditions**

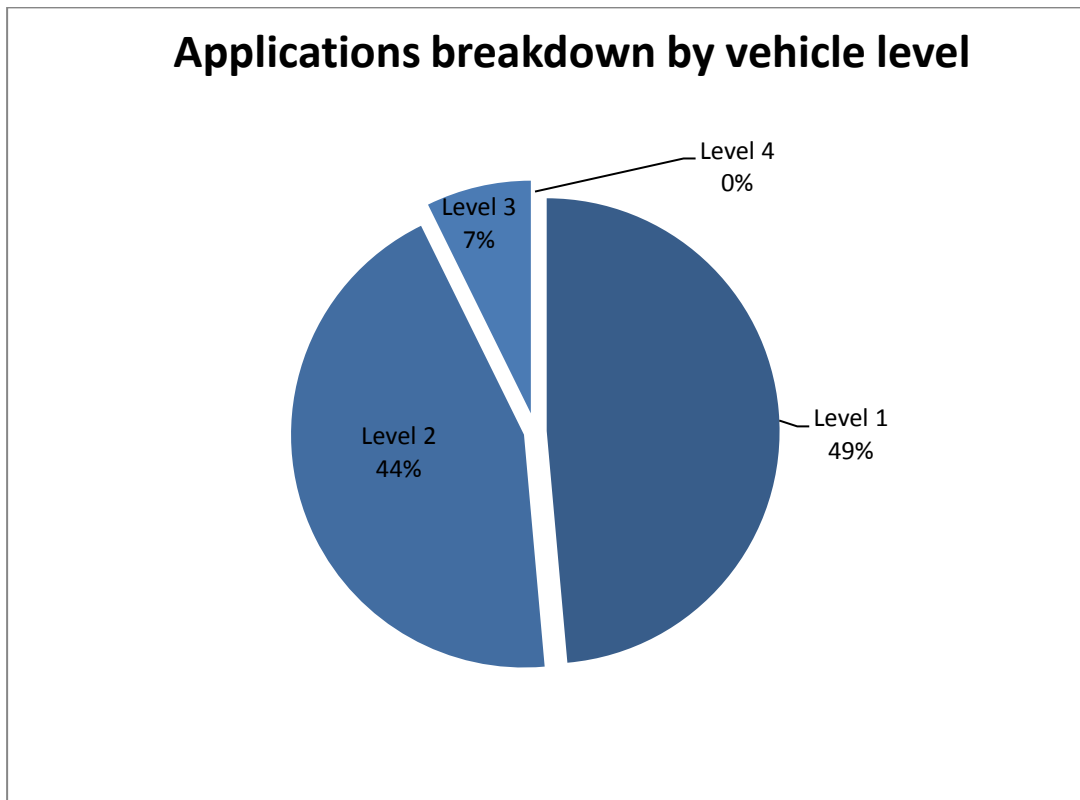
The PBS scheme has been designed as a nationally consistent method for assessing vehicles and providing road network access based on the agreement of the PBS Review Panel. To be effective, it is important that each state implements the reform in a manner that aims to deliver a consistent outcome, so far this has not been the case.

Some states and territories have applied additional (and in some cases conflicting) requirements on SMART vehicles by way of 'access conditions'. These additional requirements range from design requirements, such as the fitting of side underrun protection devices, to meeting additional pavement vertical loading standards. This has led to fragmented regulation of PBS vehicles, effectively reducing the capacity for vehicle developers to provide improved vehicles on a national basis. This drives a scheme that is more geared towards regional operators instead

of manufacturers, who may have greater experience and knowledge of vehicle design and certification of fully compliant vehicles to national customers in the same way as prescriptive vehicles. It is in the interest of the industry to have the manufacturers primarily involved with the development and assessment of supplied components so that operators, who may know little about vehicle design and testing, can concentrate on the business of running efficient fleets.

To date, a number of operators have utilised the scheme to realise productivity benefits, particularly with smaller combinations such as truck trailers and semitrailers. This is reflected in the number of approvals for different levels of vehicles. Figure 13 shows that only 7 per cent of applications are for larger combinations. While this may partly be driven by a lack of mapped networks for these larger vehicles it is also an indication that these vehicles, which are typically used for line haul and interstate operations, have not been able to realise consistent access conditions across state borders (see following case study).

**Figure 13. PBS approvals by vehicle level**



**Case study: Access inconsistency across states and territories for the same PBS-approved vehicle**

A PBS customer who operates a general access, PBS-approved vehicle in a number of states has found that the process and operating conditions of the vehicle is not currently nationally consistent in the way PBS was designed and agreed.

- Jurisdiction 1
  - Applied for in-principle approval mid-December 2008
  - In-principle approval granted early February 2009
  - Road authority advised I would need to have vehicle inspected by a heavy vehicle inspection station to ensure it was built to design and state/territory standards. I had advised that an independent engineer had certified these vehicles for PBS and questioned the need for this process
  - PBS permit issued early April 2009 for PBS design loading of 48.5 tonnes
  - No road restrictions, general access at full weight
  - Not able to operate vehicle with extendible trailer extended to full 48.5 tonnes at present – 43.5 tonnes still applies
- Jurisdiction 2
  - Contacted jurisdiction in late May 2009 regarding process to operate vehicle in that particular state/territory
  - Reply received on the same day
  - Permit to operate at PBS-approved combination 20 m issued less than two weeks later
  - No road restrictions, general access at full weight
  - Advised that combination could also operate when extended > 20 m at full 48.5 tonnes as per OD guidelines
- Jurisdiction 3
  - Contact made with jurisdiction by email late May 2009 regarding process to operate in that particular state/territory
  - Advised it is not automatic approval to operate in that state/territory even though PBS Review Panel has approved the design
  - Road authority advised that the vehicle design would need to go to bridge engineers, and then local councils need to give approval to operate on their roads
  - Informed that local councils have not agreed to twin steer prime movers
  - Full PBS-approved design load of 48.5 tonnes would only be allowed on B-double routes
  - Contacted road authority regarding the typical locations including approximately 15 local council areas that these vehicles may operate in. Also noted that customers require drop-offs to various work sites, which can not be planned. Outlined requirement also for use of extendible trailer extended able to operate at same PBS assessed mass
  - Road authority advised that separate council approvals would be needed for each area in which the vehicle is to operate
- Jurisdiction 4
  - Jurisdiction advised that an overmass/overweight permit would need to be applied for
  - Have requested forms to be sent; however, no further contact has been made





PBS applicants require clearly defined rules regarding the application of operating and access conditions upfront. The PBS operating condition guidelines state: ‘an operating condition should not be imposed on a vehicle unless the imposition of the condition will eliminate or significantly reduce a significant risk or harm that might arise from the operation of the vehicle.’

National consistency for approved SMART vehicles is important for reducing regulatory burden and improving the productivity of interstate freight movements. A system that supports manufacturer-led PBS assessments would allow for the development of national PBS vehicle designs. This requires a single set of nationally consistent requirements that will allow for increased participation, thus improving the quality of vehicles offered to market and reducing the cost to operators.

### 5.5 Networks made available to PBS-compliant vehicles

A key objective in developing the PBS scheme was to develop a system that would match vehicles to appropriate road networks. As a result, a stratified road network classification was devised, which became known as PBS road network levels.

Currently there are four network levels, referred to by numbers one through to four. These four levels roughly equate to existing networks for prescriptive vehicles, in ascending order, for general access, B-double routes, and type I and type II road trains (see Table 6).

Jurisdictions acknowledged that it would be difficult to immediately assess road networks for longer vehicles. A transition path was agreed where ‘A’ networks for shorter vehicles would initially be mapped for each level while eventually assessing and developing the ‘B’ networks for longer combinations.

**Table 6. Performance Based Standards – road network length limits**

Vehicle performance level	Network access by vehicle length, L (m)		
	Access Class ‘A’	Access Class ‘B’	Previous class
Level 1	L ≤ 20		General access*
Level 2	L ≤ 26	26 < L ≤ 30	B- doubles
Level 3	L ≤ 36.5	36.5 < L ≤ 42	Road train type 1
Level 4	L ≤ 53.5	53.5 < L ≤ 60	Road train type 2

General access is subject to a 50 tonne general mass limit (GML), posted local restrictions and restrictions or limitations specified by the jurisdiction (e.g. under the higher mass limits (HML) scheme).

In approving the development of a PBS scheme under administrative arrangements COAG directed jurisdictions to develop and publish PBS ‘A’ level networks by the end of 2007, and to also develop expanded ‘B’ level networks. In general most ‘A’ level, state-owned road networks have now been mapped. ‘B’ level access has typically not been widely mapped and is available by individual route assessment or only available in special trial areas and subject to additional requirements.

Road assessment can be a resource-intensive activity for jurisdictions and local governments. Further, local issues and community perceptions and acceptance of higher productivity vehicles can impede this process or make gaining access to critical parts of the infrastructure network challenging and time consuming.

The network level maps are intended to provide certainty for prospective SMART vehicle developers and operators. Mapped networks provide the basis on which a freight task may be planned and executed, and dictates the most appropriate equipment for the task.

In practice the PBS network maps have not provided the certainty that industry desires. Under the PBS principle of matching roads to vehicles, it was intended that a vehicle approved as compliant with the safety standards of a given PBS level would be granted access to the corresponding approved PBS road network as per the ATC decision of February 2006. While this remains the agreed national policy, in practice some states and territories determine the level of access for approved SMART vehicles on a case-by-case basis. This makes efficient planning and optimisation of a freight task – an activity that can provide significant efficiency and productivity improvements – a game of hit and miss. Under such an arrangement, an applicant may receive an insufficient level of road access than required to meet their business needs.

In addition, some states and territories have regarded the mapped levels as indicative only and require further route assessments and bridge assessments on a per vehicle basis for the mapped routes, with associated costs and time. Given the time sensitivity of the logistics industry, which is often required to plan and quote against customer contracts within defined time limits, if the network classification is not available in an acceptable timeframe, the contractor will have to assume that improved productivity vehicle access is not available and thus will be forced to design and execute a less efficient logistical operation.

Robust network maps and access arrangements need to be delivered for any vehicle productivity scheme to be successful, and this includes PBS. A business case for deploying SMART vehicles cannot be made if there is no certainty that the vehicle will be allowed to run on the routes that have been indicated as suitable for a particular level of performance.

### **5.5.1 Local government and 'last mile' issues**

Access to the 'last mile' (where a vehicle is required to depart the state/territory-owned road network and travel on a local council-owned road to reach a particular destination) has been highlighted as a major issue by road authorities and industry. Generally, local governments have not provided mapped roads due to their concerns regarding asset protection, lack of funding for road maintenance, perceived safety concerns and the lack of resources to conduct road and bridge assessments.

Although some state and territory road authorities have been working with local governments to improve access for PBS vehicles, it is clear that more work needs to be done in this area to dispel negative misconceptions about high productivity freight vehicles.

Technical issues faced by local governments in making route assessments will be assisted by the publication of Austroads guides on network and bridge assessment (AP-R333/09 *Guidelines for Assessing Heavy Vehicle Access to Local Roads*, Austroads, 2009). These documents were designed to provide local governments with a set of nationally consistent guides on assessing the suitability of their road networks.

The Austroads guides can only be of use if local governments are sufficiently resourced, in terms of expertise and capacity to conduct network assessments, and are committed to deploying those resources for the purposes of network mapping.

## **5.6 Matching vehicles and operating environment risks**

Some jurisdictions have indicated that, although the PBS scheme provides a technical assessment method for matching a vehicle performance level to a road network, it does not adequately assess community concerns and other operating risks associated with the level of access.

To date, these issues have been resolved by applying access and operating conditions to vehicles in order to manage access risks and community concerns. These can be applied at either the design approval stage or at the access/permit stage. While operating conditions applied at the design approval stage are made by the PBS Review Panel, those made at the access stage are generally made by road agency staff, which may not be reviewable.

This can create issues for an operator or vehicle manufacturer who is not able to define where the vehicle will be used. For example, if one road authority requires side underrun protection to be fitted as an operating condition, the manufacturer will be required to fit this device for all markets.

## **5.7 Conclusion**

PBS has the capacity to provide real benefits to operators, the community and infrastructure owners (see Appendix 1). In general, industry has been very positive about the concept of performance-based regulations for innovative or higher productivity vehicles. However, the access arrangements have been inconsistent and lead to poor uptake of the scheme. Robust networks need to be in place for any access system to work properly and efficiently. There needs to be a focus on resolving last mile issues, and the method by which vehicles gain access to the roads needs to be matched to environmental, vehicle and productivity considerations.

## 6. OBJECTIVES

### Summary

- COAG has identified PBS as an important element in enabling productivity growth for the road transport sector.
- To deliver on the COAG objectives PBS requires greater certainty in delivering road network access, nationally consistent access requirements and improved operational flexibility.
- Reducing the operator's cost of compliance will allow greater industry participation.

The PBS scheme has been identified by COAG as an important element in enabling productivity growth for the road freight sector. However, in regulating the PBS scheme it is important to ensure improvements are not only felt in the area of improved road freight productivity. Superior regulation should serve to improve the triple bottom line of productivity, environmental and social impact.

To deliver on the COAG requirements, the key objectives of the PBS scheme are:

- improved freight productivity
- reduced impact on the environment in regard to vehicle emissions and carbon dioxide
- reduced impact on society in regard to reductions in road trauma and congestion.

To achieve these objectives, the scheme must deliver on a number of principles in order to attract the participation required for a meaningful outcome. Through stakeholder consultation, the following items have been identified as critical success factors:

- certainty of access for approved SMART vehicles
- national consistency in operating and access conditions
- improved operational flexibility of PBS vehicles
- reduced compliance cost
- improved industry participation.

Overall it is the level of industry participation that will determine the success of PBS and its ability to deliver tangible road freight productivity benefits, improved road safety and reduced environmental impacts.

These objectives have formed the assessment criteria in developing the regulatory and non-regulatory options presented in this draft regulatory impact statement. The expected performance of each option against these objectives is detailed in section 11 – Impact assessment.



## 7. REGULATORY CHANGE

### Summary

- In developing the options for implementing PBS legislation, there are competing requirements for national consistency versus state by state flexibility.
- Implementation needs to address both the assessment of vehicles and the method by which they are granted access to the road network.
- The options for implementation include:
  - national assessment with state-based access (current situation)
  - state-based assessment and access or
  - national assessment and access.

The concepts and principles of performance-based regulation have been widely accepted by regulators, jurisdictions and industry both within Australia and internationally. The PBS scheme requirements and standards have also been generally accepted to ensure that vehicles that comply are safe to operate on their designated network. The main area of contention is the framework in which to operate the scheme and how that framework is able to best deliver the road access required by industry and the safety and amenity required by the community.

An emerging issue is the conflict between providing a nationally consistent method for assessing a vehicle and providing road access against the regulatory flexibility required by each jurisdiction. This flexibility has been requested as a method of dealing with regional and local community concerns and operating environment risks. The objective is to develop a method addressing safety concerns that is consistent, efficient and transparent. All of these issues affect the certainty of access for a given vehicle.

A national system would provide interoperability of a vehicle between states and territories that would allow greater cross-border operation of higher productivity vehicles. However, the flexibility to match a vehicle's operating risk to each part of the country is limited and would either require a worst case scenario approach being adopted or an alternative risk-based method for imposing access and operating conditions to certain vehicle types.

A state-based system is better able to deal with risk factors and community perception associated with their particular operating environments, thus allowing vehicles to be designed to match those risks rather than simply following a worst case approach. However, the national interoperability of vehicles will be limited to vehicles that meet the highest operating condition requirements. Thus, while state-based operators may be able to be efficient, national and interstate operators will be disadvantaged.

There are two components that may either be national or state-based. These are the assessment of the vehicle (in this case to the PBS standards) and the network access arrangements, currently administered by issuing state-by-state Class 3 permits. As such, the options that may be adopted for these two elements are described in Table 7.

**Table 7. Options for assessment and access**

	<b>Assessment</b>	<b>Access</b>	<b>Additional conditions applied by</b>
<b>Current system</b>	National	State-based	National and state
<b>State-based system</b>	State-based	State-based	State
<b>National system</b>	National	National	National

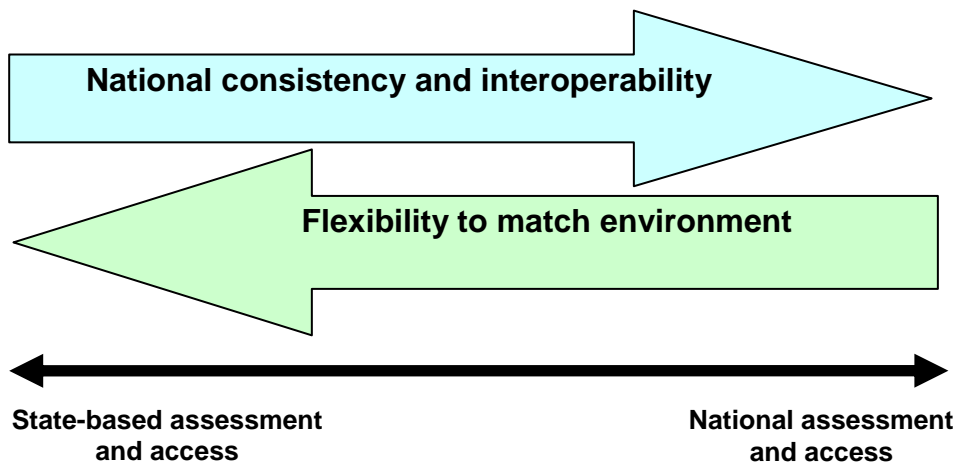
The option of state-based assessment with national access was not considered as a viable option. This would lead to a ‘lowest common denominator’ approach where national access would be expected on the basis of an assessment in the most lenient jurisdiction.

These three options provide a varying degree of:

- national consistency and therefore interoperability of equipment between states
- matching of vehicles to local environments
- certainty of access (see Figure 14).

Although the assumption may be made that the current method of national assessment and state-based access would fall in between these extremes, in reality this has not occurred because the current system tends to edge towards the worst aspects of the two schemes, that is, providing neither a nationally consistent or sufficiently flexible scheme. As a result, road network access is less certain than the other two options.

**Figure 14. Assessment and access effects on vehicle suitability**



This regulatory impact statement reviews these three PBS implementation options with the purpose of deciding on the most suitable means of implementing the PBS scheme.

**Option 1:** Maintain the status quo by keeping the current administrative scheme in place in which PBS acts as a national assessment system requiring state-based permits for road network access.

**Option 2:** Move to a state-based assessment and access system to provide high levels of flexibility and better single-state access assurance.

**Option 3:** Move to a national assessment and access scheme utilising the National Heavy Vehicle Law and National Heavy Vehicle Regulator to improve national consistency and certainty of access.

These options are discussed in detail in the following sections and their relative impact on the objectives is discussed in section 11 – Impact assessment.

For Option 2, it is assumed that states would take on the responsibility of operating and refining assessment and access arrangements. Under Options 1 and 3, the responsibility of operating and refining the scheme would remain with the NTC and in time move to the National Heavy Vehicle Regulator.

The NTC has also highlighted a number of enhancements that could be made to the current PBS scheme in Part 2 of this document. Although these improvements are considered to be most effective under Option 3, they may also be appropriate for Option 1. These improvements are centred on how PBS assessment is made rather than any changes to the principles or standards already accepted.



## 8. OPTION 1: MAINTAIN THE STATUS QUO

### 8.1 Description of option

This option retains the current PBS scheme to function as it was approved by the ATC in October 2007. The NTC conducted a detailed assessment of the effectiveness of this scheme in its PBS Review 2009.<sup>14</sup>

The scheme provides a national assessment method for a SMART vehicle, which is then required to approach each jurisdiction to gain a Class 3 permit for operation in that state. As yet no state/territory has published notices to allow streamlined (as-of-right) access for fully compliant PBS vehicles, although a number of jurisdictions have indicated that prior to the establishment of the National Heavy Vehicle Regulator project they were in the process of drafting such a policy.

Applications for SMART heavy vehicles are considered by the PBS Review Panel. Potential applicants are advised to approach an accredited PBS vehicle assessor to consider design options. Road network access is also required to be discussed at design development stage with relevant state and territory road agencies due to the need to obtain permits to operate. This step is included in the current scheme because PBS approval does not equate to automatic access. Understanding the level of road network access likely to be granted by road agencies for a particular vehicle is crucial to assessing the viability of a logistic operation utilising PBS vehicles.

Under the scheme, applicants are advised that it is very important that both PBS Review Panel approval and road access are confirmed before building a SMART heavy vehicle due to the risk that access may be refused by states/territories.

A detailed description of the operation of the scheme is contained within the PBS business rules; however, the following are, in broad terms, the steps that an applicant is required to go through to register and operate a PBS vehicle under the current scheme:

1. Develop a vehicle concept (in sufficient detail) to discuss potential access with jurisdictions.
2. Contact the relevant road agency about access for the concept vehicle (particularly regarding bridges).
3. Contract a PBS-approved assessor to conduct the engineering assessment and finalise the design.
4. Submit an application to the PBS Review Panel.
5. Obtain a PBS design approval from the PBS Review Panel.
6. Build the vehicle as per the PBS design approval and any operating conditions as required by the PBS Review Panel as a condition of approval.
7. Contract a PBS-approved certifier to assess that the vehicle, as built, matches the design approval and provide a certificate of compliance.
8. Submit the certifier's certificate to the PBS secretariat.

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<sup>14</sup> National Transport Commission, *Performance Based Standards – Review, 2009*

9. The PBS secretariat will issue a PBS ‘final approval’ containing the vehicle identification number (VIN) of the vehicle/s.
10. Contact the relevant road agencies to obtain a permit for each state in which the vehicle is to be run.
11. Make any changes required by jurisdiction access conditions.
12. Register the vehicle.

From October 2007 to December 2010, there were 163 successful PBS design approvals. Allowing for translation rate of approximately three vehicles built per approved application equates to approximately 500<sup>15</sup> PBS vehicles. This number is low, particularly when compared with sales volumes of around 15,000 heavy trucks per year.<sup>16</sup> However, at this point only the early adopters and innovators have utilised the scheme. The majority of industry members have taken a ‘wait and see’ approach to participation. There is evidence that the attitude of industry members towards PBS is improving as approved (and more productive) vehicles are granted access to the road network. It is reasonable to expect that, even under existing arrangements, the rate of participation would continue to rise.

## 8.2 Legislative changes

There are no legislation changes required to action this option. However, the administrative operation of the scheme is expected to be transferred from the NTC to the proposed National Heavy Vehicle Regulator when that body becomes operational.

## 8.3 Strengths

The PBS scheme provides all jurisdictions with a ready-made vehicle assessment process which, through the PBS Review Panel process, is able to draw on the experience and expertise of experts from all states. This process is advantageous for jurisdictions where resources are restricted or stretched and experience in complex vehicle standards is limited.

The current scheme provides greater flexibility for regulators to match access conditions to particular local environments. It allows jurisdictions the opportunity for an additional review of all applications requesting permit access, and assess whether the vehicle is suitable for the locations in which access is requested. This provides the ability to control operating risks and community concerns by applying additional operating and access conditions that are believed to be appropriate.

The ability to restrict access for certain vehicle types can potentially allow jurisdictions to open up greater networks for other ‘preferred’ vehicle types. For example, the Victorian ‘Freight Futures’ trial scheme provides access to 30 m B-doubles based on managing regional risks and community concerns through the application of a number of operating and access conditions.

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<sup>15</sup> Based on current translation rate to date (PRP data).

<sup>16</sup> Federal Chamber of Automotive Industries VFACTS data for heavy truck (> 15 t) sales, 2007 (15,370 units)

## 8.4 Weakness

The key deficiency of the current PBS scheme is in the granting of access. Once the PBS Review Panel has assessed and approved the vehicle it is then up to jurisdictions to provide a Class 3 permit to operate the vehicle. At this point there is no compulsion for the jurisdiction to issue the permit and, as such, some operators have been left with fully PBS-approved vehicles unable to operate.

The current system provides no method of review and no dispute resolution process for vehicles that have failed to be granted access. As many of the vehicles built using the PBS process are unable to be used outside of the PBS scheme, the failure to gain access represents significant losses to the owners of the vehicles, not only in vehicle costs (which may run into hundreds of thousands of dollars) but also in wasted time and PBS assessment and certification fees.

## 8.5 Costs

The current PBS system is seen by operators as having excessive compliance costs, particularly for vehicles that are only marginally different from their prescriptive cousins. Given the scheme is operator driven, generally most operators will need to pay for the assessment of any PBS combinations used in their fleet, along with a per vehicle certification cost. Typical costs for assessment and certification are shown in section 11 – Impact assessment.

Along with the costs of assessment and certification of SMART vehicles, operators need to have the resources and time available to obtain all of the state and local council permits required to operate their intended vehicle. This can be significant, especially if resources are not available to service this initial cost, particularly with respect to manpower and the skills needed to negotiate access with a diverse range of organisations. This reduces the capacity of an operator to introduce more productive vehicles, regardless of the benefits derived by doing so in the long run.

## 8.6 Benefits

The key benefit of the PBS system is that additional productivity may be realised by better utilisation of existing road infrastructure assets. Therefore, the productivity benefits detailed in section 11 assume no additional infrastructure spend other than the standard practice of progressively improving roads on an ongoing basis. Even with the limited take-up of the present PBS scheme, the enhanced capability of SMART vehicles allows for extra volume and/or extra mass to be uplifted, which means fewer trips, thus fewer kilometres and fewer trucks to deliver the same payloads. Operators utilising PBS vehicles will realise a reduction in total network kilometres and the number of vehicles needed to undertake the deliveries.

The key benefits<sup>17</sup> offered by the productivity gains from the adoption of PBS are reductions in:

- total kilometres
- total operational hours
- individual fleet vehicle numbers
- severe accidents
- total fuel use
- carbon dioxide emissions.

## 8.7 Risks

The process of a national assessment with strictly controlled state-based access through permit applications can be seen to provide a high level of confidence that the vehicles permitted to access the road network will be safe to run and appropriate for their environment. This level of confidence is a result of the fact that the current scheme incorporates many points at which a vehicle may be refused access or where additional requirements may be placed on the design and operation of the vehicle. On the other hand, this also means that an operator who has spent a significant amount of money to have a vehicle assessed and built risks not being granted access at many stages of the process. As a result many operators are not willing to risk significant time and resources to undertake this process. This is compounded by the current tough economic conditions where spare resources, either cash or manpower, are scarce. Perversely this is exactly the time in which business most needs to increase productivity and reduce waste.

These factors have led to a low take-up of PBS. Of those that have participated in the scheme to date, a number have indicated they would not be willing to utilise the scheme for any further logistic operations due to the risks and upfront resources involved in obtaining all of the required permissions. This, combined with the already limited and reducing number of approved vehicle assessors and certifiers, may have the effect of reducing the number of PBS applications to the point where the scheme is not viable. Ultimately this could lead to the industry reverting to higher numbers of off-the-shelf vehicles to service the freight task.

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<sup>17</sup> Hassall K, *Forecasting the Benefits of Performance Based Standards for the Australian Road Transport Industry, 2011 to 2030*, 2009

## **9. OPTION 2: STATE-BASED ASSESSMENT AND ACCESS ARRANGEMENTS**

### **9.1 Description of option**

This option recognises that a national PBS heavy vehicle assessment method may limit local productivity and access measures, and puts forward the concept of utilising PBS principles as an assessment tool. This option would involve ceasing formal operation of the PBS scheme as a national assessment scheme, and transferring the regulation of higher productivity vehicles to each state and territory. It must be noted, however, that while the National Heavy Vehicle Regulator is required to allow the continuation of any current state-based productivity initiative, this type of action may be much more difficult to implement once the national regulator is in place.

Alternatives to a formal PBS scheme that may be utilised to provide improved transport productivity include:

- improving national model prescriptive regulations
- improving the permit scheme by using PBS principles.

#### **9.1.1 Improving national model prescriptive regulations**

Without a PBS scheme, traditional prescriptive regulations would continue as the predominant means of governing heavy vehicle access. COAG has agreed to establishing the National Heavy Vehicle Regulator and this new development may pave the way for more effective national prescriptive regulations.

Prescriptive regulations describe particular vehicle types in terms of weight and length, and have traditionally been developed by industry and governments. As such, they lag the development of new vehicles and are not able to readily accommodate advancements in vehicle technology. This system has led to the criticism that prescriptive regulations involve government choosing the combinations that it thinks will best serve industry rather than allowing individual operators to pick the best vehicle for their particular task or operation.

The process of developing a nationally accepted prescriptive vehicle design with consistent access arrangements has proven to be both complex and resource intensive. The following case study describes the difficulties faced by regulators in developing a more productive prescriptive vehicle as compared with the PBS scheme.

**Case study: Higher productivity truck-trailers**

The NTC had attempted to reform prescriptive regulations to allow national access to higher productivity truck-trailers. Despite significant resources being allocated to the project, regulators were unable to reach agreement on a national policy. By the conclusion of the project, regulators predominantly agreed that the PBS scheme was a more effective means of achieving the underlying objectives.

Over the past 18 months, the PBS scheme has provided access to approximately 50 higher productivity truck-trailers and accounts for around 70 per cent of all applications.

A key benefit of this process is that the industry outcomes were able to be met while meeting the requirements of regulators for safety and infrastructure protection.

**9.1.2 Improving the permit system by using PBS principles**

The permit system is a mechanism that enables broader access for higher productivity vehicles. Higher productivity vehicles tend to demand more comprehensive assessment than smaller, less complex vehicles. Historically, this has been undertaken within the permit system.

An important point of differentiation between permits and regulations is that permit vehicles require individual assessment of applications. A major limitation of the permit system is that road agencies may need to individually assess the vehicle and the route to which access is sought (which is often restricted to keep the route assessment task at a manageable level). While some learning efficiencies may result as the volume of permit applications grows, the resource-intensive individual assessment permit process is repeated.

By contrast, a PBS application, which has been demonstrated to comply with the PBS standards, may be granted access to the corresponding PBS level (road network) with a degree of confidence. A PBS network need only be assessed once (and then maintained).

Reverting to state and territory permit systems for the approval of higher productivity vehicles would not necessarily mean a return to the historic and more cumbersome means of assessing permit applications, thereby forfeiting all of the advantages of the national PBS scheme. Instead, an option is for states and territories to adopt PBS principles into their permit schemes.

In this model, the particular jurisdiction can pick all, or a subset of, the current PBS standards and any additional operating conditions that it considers are appropriate for ensuring adequate safety and infrastructure protection for vehicles operating in their state. This process is similar to that used in the European Union with respect to heavy vehicle regulations.

One example of this is the existing Queensland Innovative Vehicle Policy. This scheme operates in parallel with the national PBS scheme and uses a subset of the PBS. A major objective of the scheme is to provide more streamlined assessments of higher productivity vehicles than are sometimes possible under PBS.

This method of providing a compliance path for higher productivity vehicles is the preferred option for a state-based assessment and access scheme. The impacts associated with this proposed system are assessed in section 11 – Impact assessment.

## 9.2 Strengths

An important drawback of national regulation is the frequent difficulty in obtaining agreement between all states and territories. This is often related to the difficulty in developing a single set of regulations that properly account for the needs and circumstances of the different states and territories.

Experience shows that attempts at 'one size fits all' national regulations have been relatively ineffective. Disagreement at the state or territory government level with nationally developed policies has been linked to poor implementation, as has the need to address geographical variations in public perception towards higher productivity vehicles.

State-based solutions can provide the flexibility to tailor the solution to the particular environment, both for infrastructure suitability and community acceptance.

## 9.3 Weakness

To date, participation in PBS has been at a significantly lower level than what would be required to support its objective of substantially enhanced freight productivity. However, with road agencies committing to continued implementation of PBS, the opportunity cost of ceasing the scheme may be significantly higher than the current level of participation suggests. This is due to an inherent inefficiency in duplicating regulatory development, review and assessment processes in each state.

Additionally, as applicants currently bear the cost of a PBS assessment, this tends to reduce the cost of assessment placed on each jurisdiction and reduces the number of 'opportunistic' applications, which can overburden limited road agency resources.

A state-based process may suffer from a shortage of applicable skills and resources in each state, such as the lack of specialised skills available to develop and administer each scheme. The availability of assessors and certifiers, which may be state-specific, will also be affected.

Operationally, a major drawback of developing state-based solutions to freight productivity is the high risk of inconsistent outcomes between states and territories. Inconsistent heavy vehicle regulations impact primarily on:

- interstate (cross-border) transport, in which a given heavy vehicle must comply with multiple sets of regulations
- heavy vehicle design and manufacture
- flexibility of national operators in how they utilise their fleet over time.

In the case of higher productivity vehicles, these impacts are not uniform. Many higher productivity vehicles are granted restricted access to a specific route. Inconsistent regulations do not necessarily impact on this type of operator. However, long-distance line haul companies operating across borders would be heavily impacted. In some cases, it is possible for a given heavy vehicle to comply with multiple, inconsistent regulations. In others, however, it may not be.

Designers and manufacturers of higher productivity vehicles are negatively affected by inconsistent regulations due to the need for them to undertake separate design, development

and manufacturing of state-specific variants of a given vehicle. This will incur higher costs that will be passed on to operators.

#### **9.4 Benefits**

The benefits of adopting state-based assessment and access derived from PBS principles include the potential for more assured road network access. A drawback of the existing national PBS scheme has been some disagreement by certain state and territory policy officers with particular PBS principles and a resulting reluctance to implement them or grant access to specific vehicles. Improved certainty of access will reduce waste incurred as a result of applications that are developed and approved but are not eventually granted network access.

There is a potential for reduced compliance costs for operators. Under the current PBS process, each applicant incurs costs from the individual assessment of all PBS requirements. Additional costs are incurred by government in administering the current system, including resourcing of the PBS Review Panel secretariat and requiring representatives from all road agencies in reviewing each assessment, regardless of whether that vehicle will ever be used in any other state. Streamlined assessments may alleviate costs to operators and will not require resources from states that will not be affected by a particular application.

#### **9.5 Costs**

Reduced national uniformity would cause some heavy vehicle operators, as well as vehicle designers and manufacturers, to incur significant costs for tailoring vehicles and operations to specific areas. Inconsistent state and territory regulations tend to restrict cross-border (interstate) access, with the result of reduced cost savings for long-distance freight.

Increased load on road agency resources is possible where concessional schemes attract high participation. This may be offset by charging a fee for assessment and access reviews; however, this would simply have the effect of shifting this cost to industry.

#### **9.6 Risks**

Adopting this option may place greater pressure on the development of national model prescriptive regulations. A risk is that difficulties with achieving agreement via this process, as has previously been experienced, may undermine it.

Where the more objective PBS process is substituted for the traditional (discretionary) permit process, there is a risk that transparency will suffer. Many industry members have nominated this risk as representing the highest cost on the higher productivity vehicle application process.

Any return towards more government-led processes for developing higher productivity vehicle regulations (and specifications) risks stifling innovation and not delivering outcomes that meet industry demand.



## 10. OPTION 3: NATIONAL ASSESSMENT AND ACCESS FRAMEWORK

### 10.1 Description of option

Option 3 is to implement a truly national PBS scheme where both vehicle assessment and access is provided on a national basis primarily through the National Heavy Vehicle Law and National Heavy Vehicle Regulator. The purpose of this implementation option is to promote national uniformity and ensure that the interoperability of a vehicle between states is as simple as possible. Achieving this goal would allow greater cross-border and national operation of higher productivity vehicles.

This option is fully aligned to the agreements made by COAG in endorsing Option 4 of the *National Heavy Vehicle Regulator Regulatory Impact Statement*, which under section 6.5.2.1 'Specific roles' includes the following:

The NHVR would also act as a 'one-stop shop' for heavy vehicle business interactions with government where, for example, applications for access permits that cover a number of jurisdictions could be made and resolved. Section 6.3.2 (Option 2) outlines the kinds of activities the one-stop shop could perform.

It would also manage the PBS initiative on a national basis and the driver fatigue, dangerous goods and accreditation panels.

### 10.2 Vehicle assessment and approval

Under this option the assessment and approval of a PBS vehicle design would remain consistent with the current PBS process. The application would need to be assessed by an accredited assessor and then reviewed by the PBS Review Panel, in which representatives from all states, territories and the Commonwealth are able to assess any issues with the vehicle, including applying operating conditions where appropriate.

It should be noted that the PBS Review Panel resources are to be supplied by the National Heavy Vehicle Regulator once that body is in a position to undertake an operational role.

### 10.3 Access arrangements

This option aims to mirror the current B-double access arrangements, which have delivered excellent productivity improvements in the freight industry while being simple and effective at delivering appropriate network access. B-double combinations have much in common with PBS vehicles in that they are restricted to suitable networks and may be run in a number of mass configurations from general mass limits (GML) to higher mass limits (HML). B-doubles are operated in a similar way to many other generic high-productivity vehicles that are possible under PBS, in that they may be run as a B-double or may be broken down to smaller combinations or vehicles that are fully compliant with prescriptive regulations. Therefore, a similar access arrangement between B-doubles (Class 2 permit) and PBS vehicles appears to be a good fit.

PBS vehicles are currently provided access under Class 3 permits. The definition of a Class 3 vehicle is one that does not meet all of the requirements for normal registration and does not fall within any of the other defined vehicle classes. As the PBS requirements are intended to be an acceptable alternative to the prescriptive mass and dimension requirements of the vehicle standards and mass and loading Regulations, PBS-compliant vehicles should be classified as a fully compliant vehicle class.

This option will treat PBS vehicles as fully compliant so long as they operate within the conditions of the PBS approval, which includes running on appropriate networks at appropriate mass in much the same way as current B-doubles do. The revised legislation is built around the process flow found in Appendix 3, which will be used by the National Heavy Vehicle Regulator to approve applications and register vehicles. The basic elements of the process involve a number of national (Class 2) vehicle notices being set up that describe a PBS vehicle of a certain level (e.g. level 1, 2a, etc.) and allow access to the mapped networks appropriate to that level of vehicle. When a vehicle application is approved, its design is assessed as being compliant under one of these notices, so long as it meets the tier 1 bridge formula. As such, when a vehicle is built compliant to the PBS approval, it is able to be registered and operated under its matching notice.

If a vehicle is not bridge formula compliant then it will not gain access to the as-of-right mapped PBS network because it requires individual bridge assessments to be made. If this is the case then following confirmation from bridge owners that the vehicle is suitable to be run on a particular route, the National Heavy Vehicle Regulator will create a permit for that vehicle allowing the registration and operation of the vehicle on the prescribed route.

#### **10.4 Network classification**

This option allows jurisdictions to control the types of vehicles operating on their networks through the network mapping process and the PBS network mapping guidelines that have already been established.

Robust network mapping is essential to implementing this option and may pose some additional resource strain on jurisdictions during the initial phase; it may also have the effect of somewhat reducing the ‘indicative PBS network’ while developing the as-of-right network. Upfront work will, however, reduce the burden of reassessing routes on a per vehicle basis (as is currently the process in some states) during future years of operation, thus providing an overall saving in resources.

States and territories are not expected to grow their networks immediately; networks will be grown gradually over time, with states and territories determining how much and how quickly they wish to grow their network.

#### **10.5 Operating and access conditions**

Under this option, access conditions required by road managers to address asset condition or community concerns will be applied to road sections rather than individual vehicles on the as-of-right network. This model will ensure that national conformity of vehicle design requirements are maintained. Conditions that road managers may impose on a road or bridge include requirements on how approved vehicles may utilise the asset (examples of this are speed limits and curfew hours). Access conditions for individual assets will be added to the PBS maps as notes for the particular road section.

If a vehicle that is certified under PBS is also running under other concessional schemes then it is intended that the requirements for both schemes shall be met. For example, if a PBS vehicle wishes to operate at HML weights in a state that requires Intelligent Access Program (IAP) enrolment for HML vehicles then IAP shall also apply to that PBS vehicle when operating in that state at the higher weights.

As jurisdictions have generally felt PBS standards do not address all risks adequately, and have in the past required additional design elements to be fitted to vehicles (such as side underrun devices), the NTC has suggested developing a set of national conditions that will allow the

application of design features to vehicles, but will do so in an upfront, nationally consistent way. Should this option be chosen, then the specific requirements are to be developed as a part of the implementation of the reform through consultation with regulators and industry. National operating conditions should strike a reasonable balance between risk and access.

## 10.6 Legislative changes

In developing the legislation for a national assessment and access scheme, NTC used the following objectives derived via substantial stakeholder consultation:

- Legislation to refer to the PBS scheme as administered by the PBS Review Panel and updated from time to time rather than the particular requirements, to allow continual improvement of the scheme as technologies change.
- Vehicles that are approved by the PBS Review Panel have an expectation of access to the networks mapped for that vehicle level, or to a requested and approved route.
- Individual jurisdictions will not apply any additional requirements to an approved vehicle for the purpose of gaining access to the road network, provided that national operating conditions are met.
- Access decisions should be reviewable.
- Vehicles that are approved by the PBS Review Panel and are tier 1 or 2 bridge compliant (bridge formula) should be granted as-of-right access to the networks that match or exceed their PBS compliance level (e.g. a level 3a vehicle shall have as-of-right access to all mapped networks classified as 3a, 3c, 4a, 4b).
- Vehicles that are not covered by the above condition (which require bridge-by-bridge suitability assessment) should seek assessment of, and be granted access to, requested routes unless the jurisdiction can show, within a reasonable timeframe, that the approved vehicle is not suitable for the requested route.

## 10.7 Legislation

The NTC has developed legislation (Appendix 2) to be included with the new National Heavy Vehicle Law being established as part of the national heavy vehicle regulation system. A schematic of the intended operation of the scheme is included in Appendix 3.

## 10.8 Strengths

This option has been developed to align with COAG's objectives and intent for the PBS scheme. It will provide a nationally consistent scheme with improved certainty to network access for compliant vehicles. This will allow better local, cross-border and national logistics operations to be deployed rapidly and with surety.

Manufacturers and operators are far more likely to participate in the PBS scheme if the risk of not being permitted access is eliminated. As has been the experience with the introduction of B-doubles, this will allow industry to, over time, switch its fleets to more productive vehicles.

National consistency will allow manufacturers of PBS compliant equipment to play a bigger role in developing improved vehicles, as a national market is required for this to be viable. Clearly it is in the interest of the industry to have the manufacturers primarily involved with the development and assessment of supplied components so that operators, who may know little about vehicle design and testing, can concentrate on the business of running efficient fleets.

The system of national assessment and approval will also remove the burden placed on jurisdictions due to the need to assess the suitability of PBS vehicles requesting permit access. The exception to this is where vehicles require route approval due to bridge loading concerns (tier 3 bridge assessment).

### **10.9 Weakness**

For this option to work as intended, robust network mapping is required and will necessitate a focused effort from jurisdictions. To date, network mapping for PBS levels has been inconsistent between states. However, there are a number of schemes where robust network maps have been delivered nationally including B-double and, to a certain extent, the HML network.

While the PBS requirements and processes have been agreed to by all states and territories, and the development of national operating conditions will aim to address any concerns that individual states have regarding additional risks posed by higher productivity vehicles, the system will be less flexible than what may be achieved by local schemes. There may still be a need to provide state-based concessional schemes in addition to what may be realised through the PBS scheme to deliver maximum freight productivity.

Some states and territories have shown a reluctance to adopt performance-based assessment and still wish to regulate vehicles based on appearance. This seems to be mainly based on community perceptions about how some vehicles look. An example of this is that a PBS-approved A-double combination has an appearance similar to a type 1 road train. Overcoming this perception issue will need to be addressed during implementation and can be assisted by the NTC providing appropriate information regarding the performance and risks posed by PBS vehicles. Jurisdictions will need to play an integral part in the education of the public and road owners about the benefits of PBS vehicles in the community.

### **10.10 Benefits**

The proposed system is intended to provide a greater level of certainty of national access for higher productivity vehicles. According to industry this is the single key factor in deciding the take-up of the scheme. Not only does it allow operators to plan the most efficient logistics operation with full confidence, it also provides better tools for developing the plan. Currently the state of network mapping for some states makes understanding of the most productive vehicle suitable for a given route difficult, due to missing data and inconsistencies between jurisdictions. Allowing operators to confidently choose the right vehicle for the job will result in real productivity improvements and bottom-line reductions in the cost of goods and services.

Costs to jurisdictions and operators incurred by route assessments for bridge-compliant vehicles should be eliminated once PBS networks are properly mapped, freeing up jurisdictional resources from this repetitive task.

The national approach will allow efficiencies of scale to be realised for equipment manufacturers supplying higher productivity vehicles to a national market. Reducing the cost of more productive equipment can have a positive effect by reducing the age of the vehicle fleet and having safety and environmental technologies filter through the fleet more quickly.

### **10.11 Costs**

The cost to industry of the proposed national assessment and access framework for PBS should be lower than the current scheme. This is because, under an as-of-right system for vehicles compliant with the bridge formula, an operator will not need to gain a permit from each jurisdiction and council as is currently the case.

An as-of-right access system requires that states have robustly assessed their declared road networks. This additional rigour for road network assessments may incur some additional upfront costs for jurisdictions that have not yet completed this task as requested by COAG and the ATC in October 2007. However, as ongoing operator-by-operator route assessment requests will be reduced to only those who have vehicles that require individual bridge assessments, there will be cost savings for jurisdictions in the future.

The proposed legislation is intended to provide a capacity to have access and network assessment decisions reviewed by a relevant third party. This is intended to allow jurisdictions and operators to settle disputes in a timely and efficient manner. This would not substantially increase the cost of the scheme to operators and jurisdictions above the current process.

### **10.12 Risks**

The key change in the operation of the proposed legislation over the current system is that vehicles approved by the PBS Review Panel and compliant with the bridge formula would be presumed to have as-of-right access to mapped network levels without requiring individual state permits.

Risks posed by certain road conditions and bridge capacity issues should be controlled through robust network mapping.

Different road environments pose unique risks that may need to be controlled by access conditions applied to the road section. These access conditions may be applied by the road manager, including both state road agencies and local councils. These conditions will then be noted in the PBS mapping portal so that operators are aware of any restrictions.

## 11. IMPACT ASSESSMENT

### Summary

- National assessment and access (Option 3) is expected to deliver the highest take-up rate for PBS.
- Option 3 is predicted to be able to deliver a total net present value (NPV) of \$2.334b in savings within a period of 20 years using a real discount rate of 7%, with the next best option (Option 1) expected to deliver \$0.735b NPV.
- Option 3 is expected to save more than 80 lives in the 20-year period.
- Option 3 will also deliver more kilometre savings per vehicle than any other option due to the ability to seamlessly cross state borders, providing real benefits for long-distance freight movements.
- Fuel usage and carbon dioxide emissions are directly proportional to kilometre savings, thus Option 3 provides the best solution for the environment.

This section assesses the expected outcomes of each of the three options against the objectives set out for the scheme in section 6. Table 8 provides a summary of the expected impacts of each option on the key criteria. Data is sourced from Hassall (2009) *Forecasting the Benefits of Performance Based Standards for the Australian Road Transport Industry, 2011 to 2030* (Appendix 1 of this document).

A 20-year assessment period was considered the most applicable for this assessment because the assessment was completed in 2009. The notation of 2011 to 2030 was used because the National Heavy Vehicle Regulator was expected to commence within 2011. The start date for the National Heavy Vehicle Regulator has now changed to 2013, however, this will have little impact on the results obtained. Note that all options are considered beneficial over the abandonment of the PBS scheme and principals, thus all options show a positive effect against a ‘do nothing’ baseline.

**Table 8. Summary of option impact against objectives**

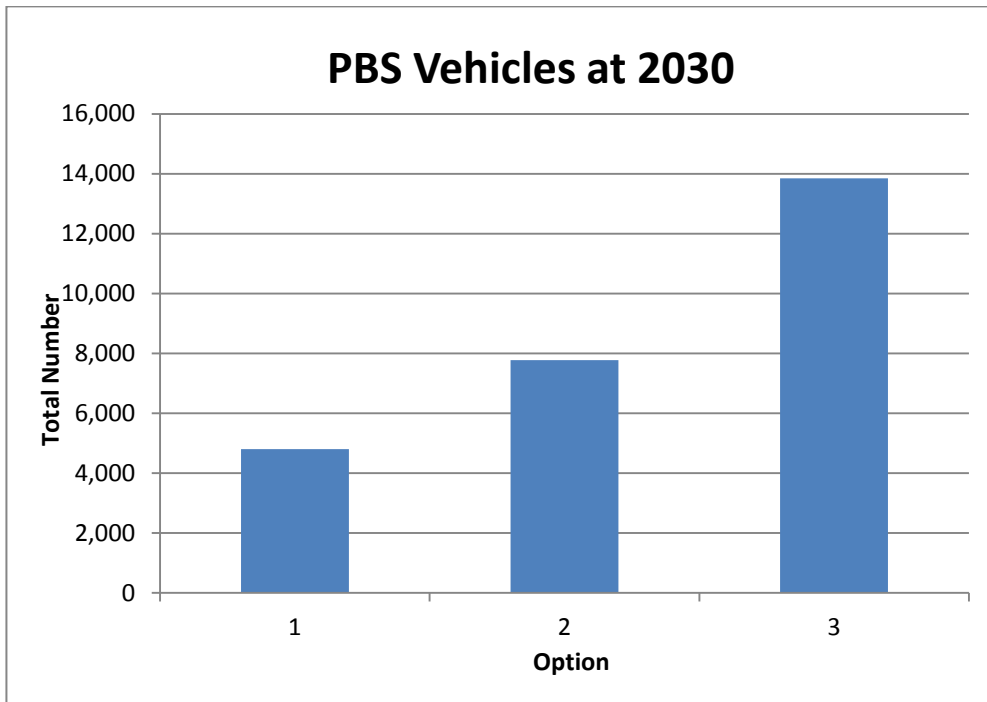
	Option 1	Option 2	Option 3
<b>Improved industry participation</b>	Low	Medium	High
<b>Improve freight sector productivity</b>	Medium	Medium	High
<b>Reduced impact on the environment</b>	Medium	Medium	High
<b>Reduced impact on society (road trauma)</b>	Medium	Medium	High
<b>Certainty of access</b>	Low	High	High
<b>National consistency</b>	Medium	Low	High
<b>Reduced compliance cost</b>	Low	Medium	Medium

### 11.1 Improved industry participation

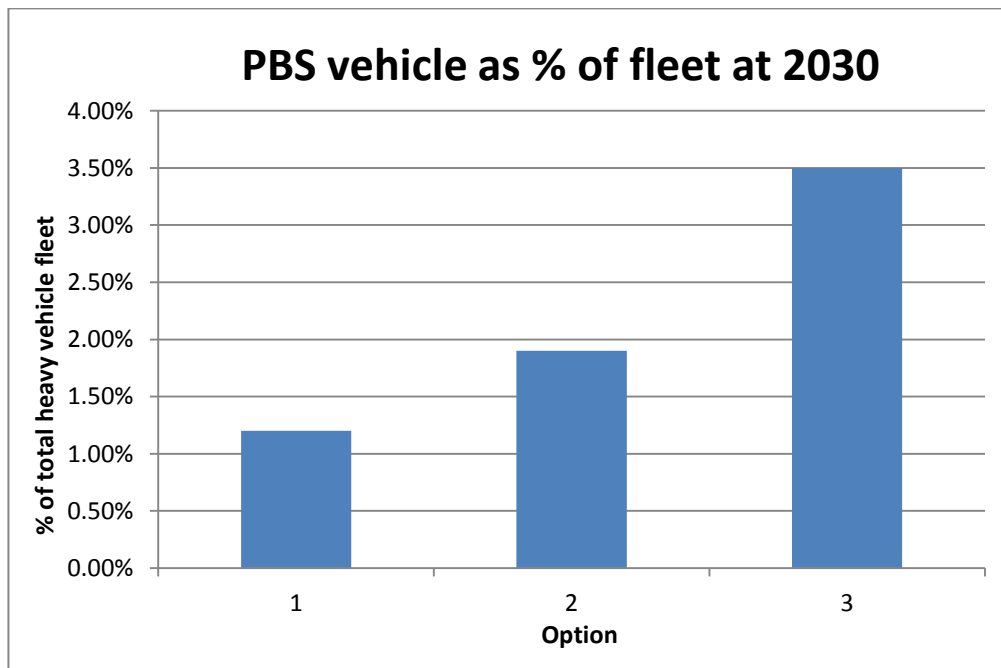
Appendix 1 contains a full description of the methods used to derive expected productivity benefits for each option. The benefits that can be expected are based on the level of industry participation, the types of vehicles used and the flexibility of operating those vehicles.

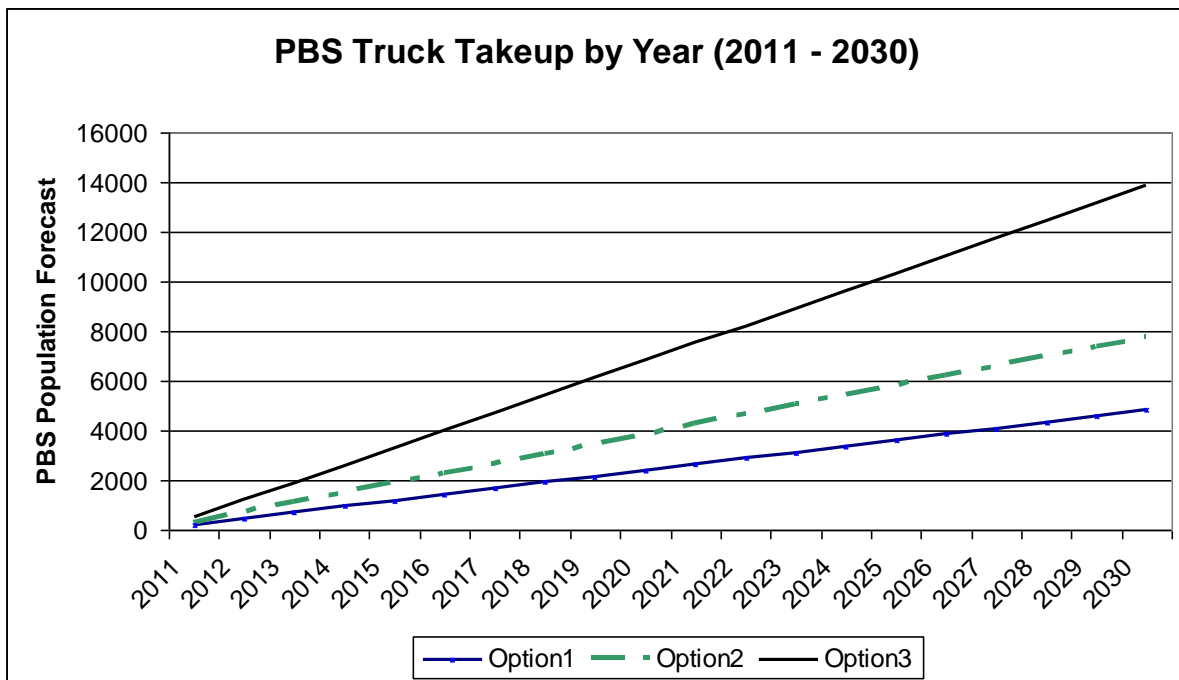
Under a continuation of the current scheme, industry participation is expected to be roughly similar to the current uptake and utilising similar vehicle types (see Figure 15). Option 2 assumes that states will continue to assess and approve PBS combinations; however, the state-based nature will dictate different take-up rates and different vehicles in each area. Under Option 3, take-up rates are expected to be the highest and reach around 14,000 vehicles, or about 3.5 per cent of the total fleet by 2030 (see Figures 16 and 17). Option 3 expects that take-up of level 3 vehicles for line haul operations will be greater than Option 1; however, level 4 vehicles will still be very rare within the timeframe.

**Figure 15. Total PBS vehicles by 2030, by option**



**Figure 16. PBS vehicles as a percentage of the fleet in 2030, by option**



**Figure 17. Vehicle take-up, by option, 2011–2030**

## 11.2 Improved freight sector productivity

Productivity benefits for each type of vehicle were calculated by exploring case studies of each of the key vehicle types. Productivity benefits are not only gained by absolute volumetric or mass increases but also in the way that more flexible vehicles may be deployed in complex logistic networks. By multiplying the productivity benefits of each truck type by its expected take-up rate, it is possible to predict the number of kilometres of truck travel saved (Figure 18) and the reduction in the number of trucks required to service a freight task.

Note that while take-up rates are expected to be higher for Option 2 in comparison with Option 1, the types of the vehicles, mainly short-haul and urban, which are expected to use this option, do not provide as much benefit per vehicle as inter-capital vehicles, which are expected to be more prevalent in a national system (see Figure 19).

A sensitivity analysis was undertaken to understand the range of possible outcomes for Option 3; the overall range of financial benefits are shown on Figure 21.



Figure 18. Expected kilometre savings by deploying PBS vehicles, by option

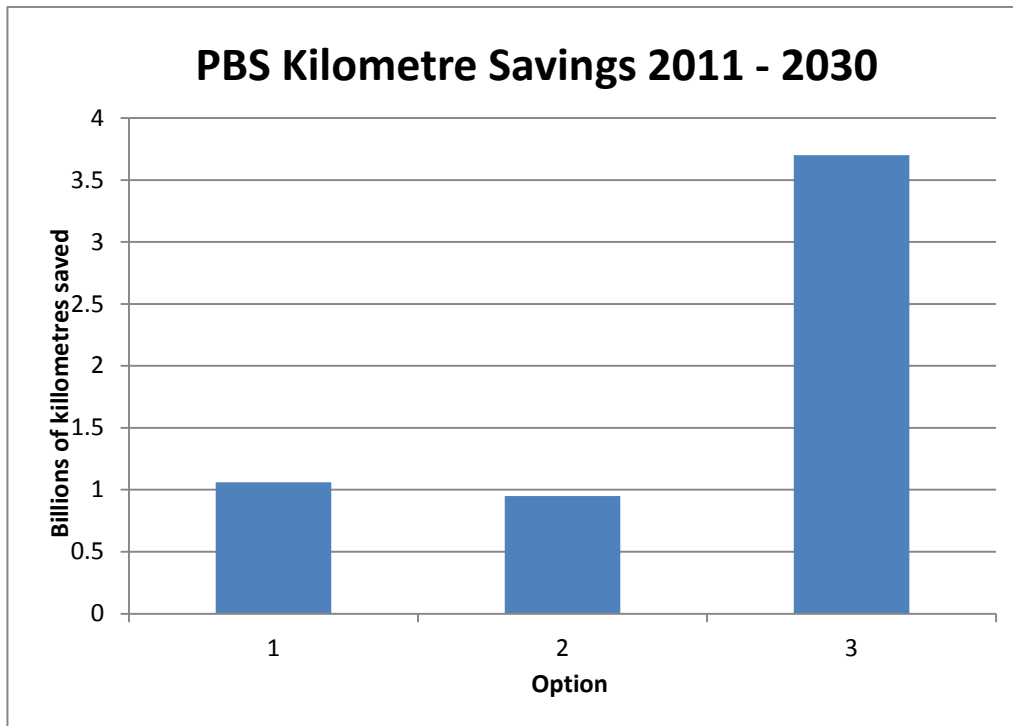
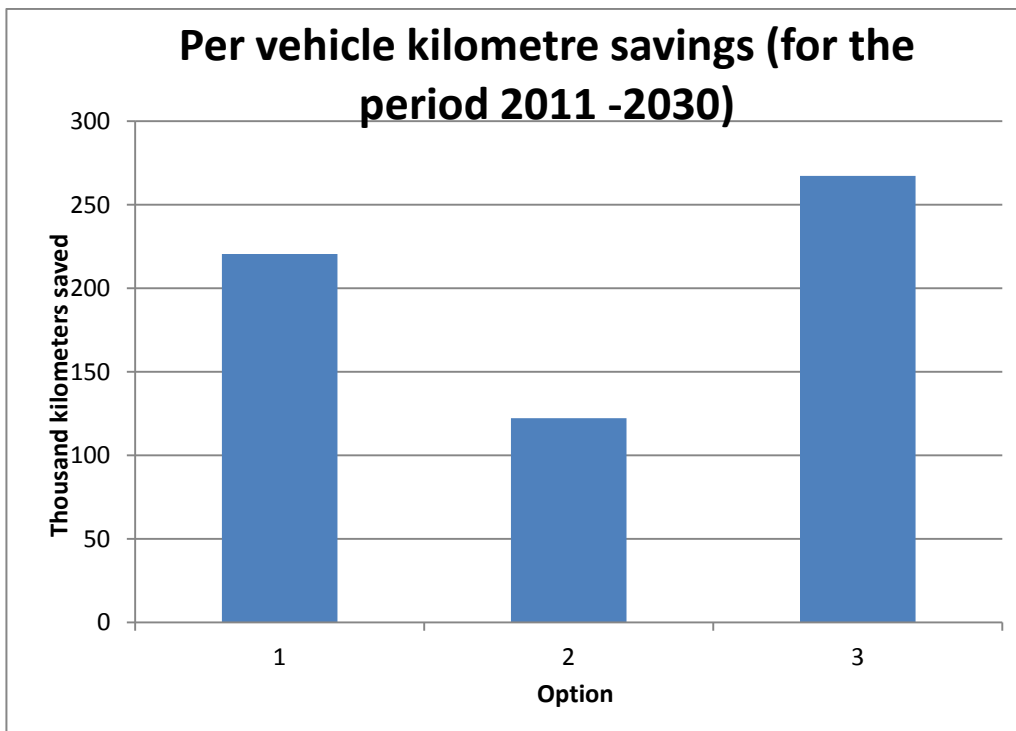
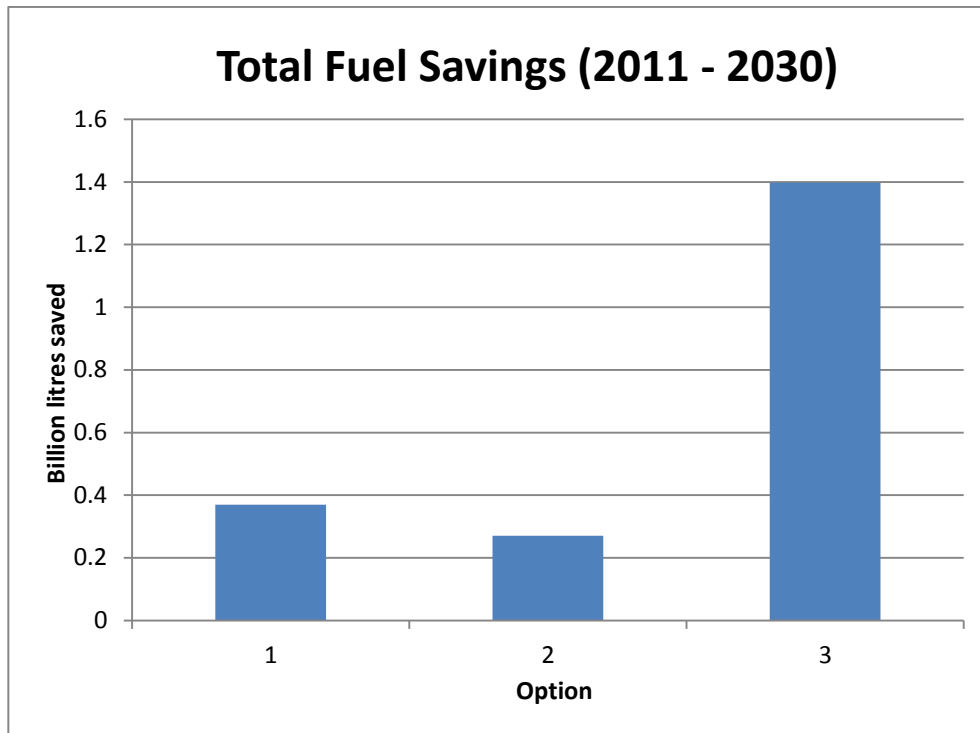


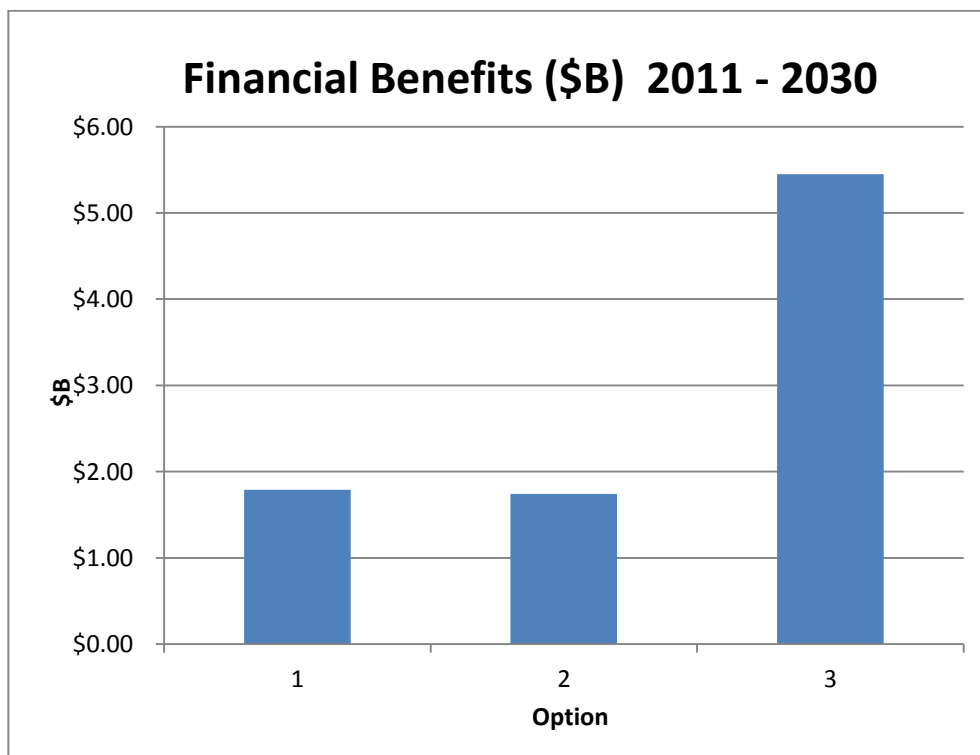
Figure 19. Expected kilometre savings per vehicle, by option



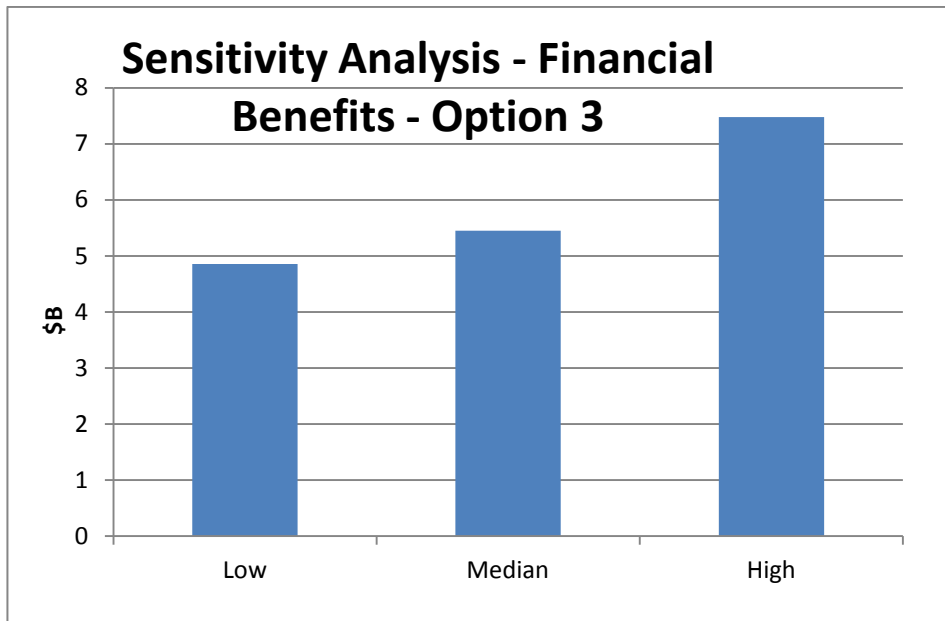
**Figure 20. Expected fuel savings by deploying PBS vehicles, by option**



**Figure 21. Expected financial benefits (nominal) by deploying PBS vehicles, by option**



**Figure 22. Sensitivity analysis for Option 3**

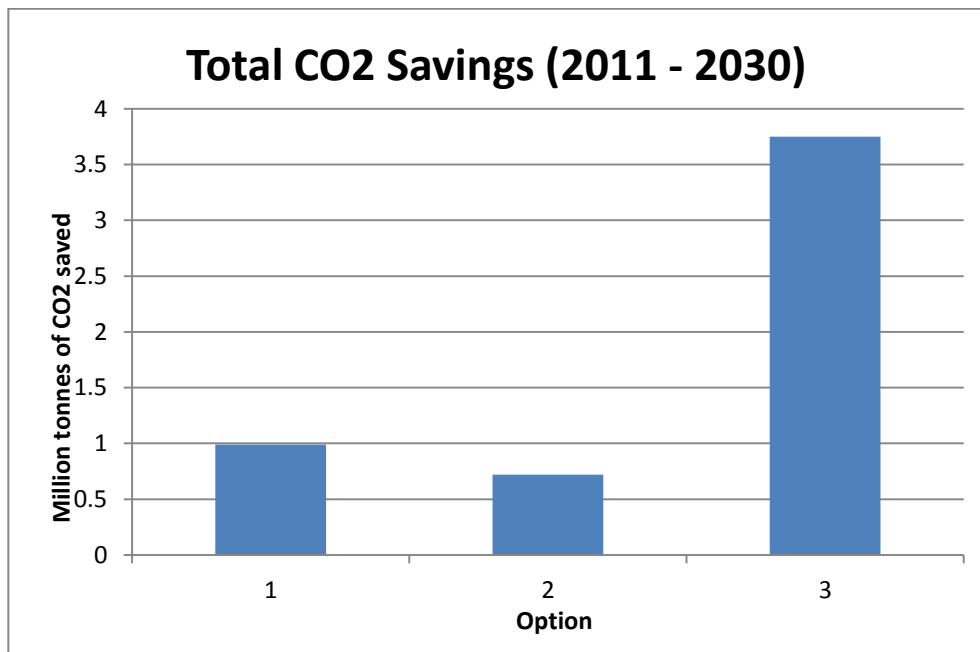


### 11.3 Reduced impact on the environment

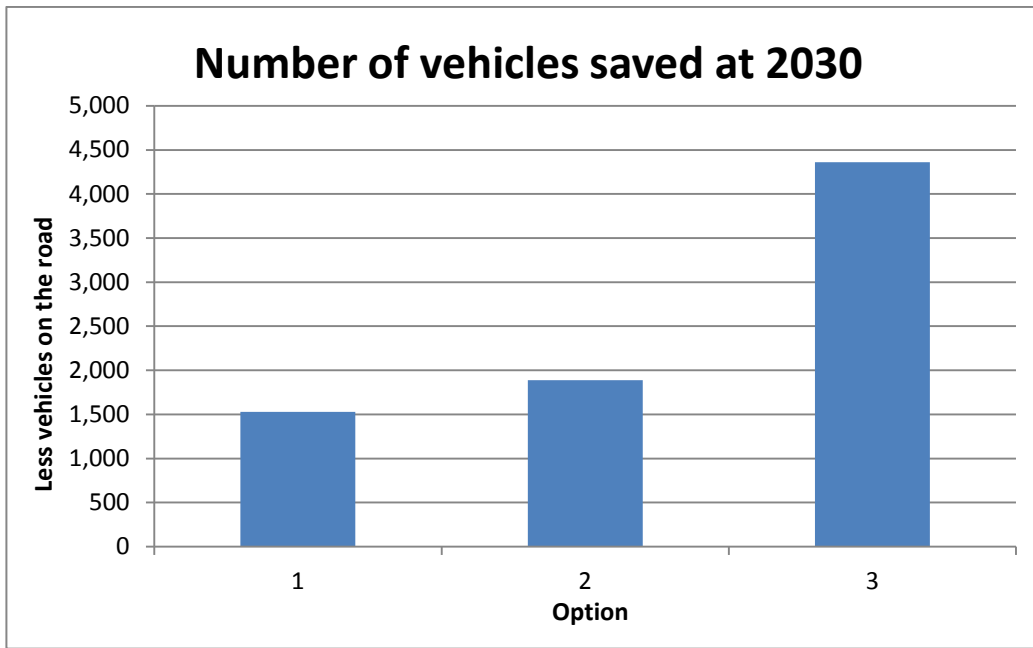
The environmental impact of emissions of greenhouse gas (primarily CO<sub>2</sub>) (see Figure 23) is based on the kilometres saved by utilisation of PBS vehicles. However, as PBS vehicles will generally be larger or heavier than the alternative prescriptive vehicle, this will be slightly offset by the higher fuel use for the PBS vehicle. Environmental improvements can also be derived by reductions in the overall number of vehicles (see Figure 24) required to service the freight task, relating to congestion, noise, road wear and emissions (nitrogen and sulphur oxides and particulates).

At present, pricing carbon dioxide is difficult due to the lack of clarity around what price should be used and the future value of carbon credits. As such it was decided to leave this value out of the cost benefit equations. It should be noted that this will tend to make the benefit of the scheme seem less than if carbon dioxide was priced.

**Figure 23. Total carbon dioxide savings, by option**



**Figure 24. Number of vehicles saved, by option**



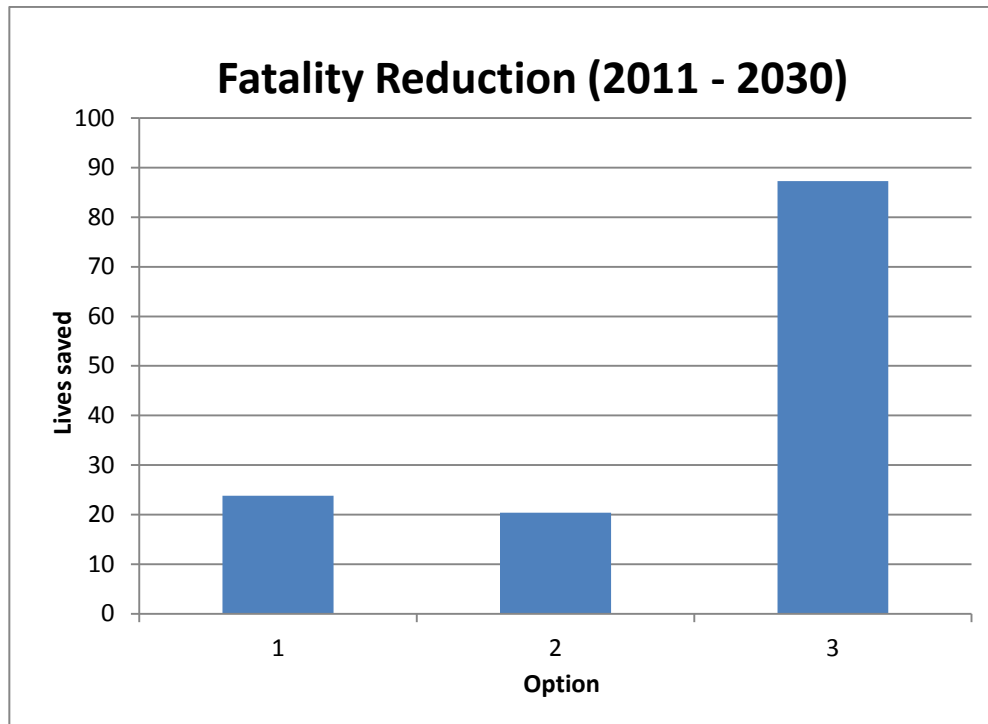
**11.4 Reduced impact on society (road trauma)**

The achievable decrease in road trauma (fatal accidents and fatalities) (see Figure 25) has been conservatively estimated by multiplying the savings in kilometres travelled by the current average crash rate per kilometre for that vehicle class shown in Table 9. This number is conservative because it assumes that the current heavy vehicle crash rates will be constant throughout the 20-year period, where recent trends show a reducing crash rate for heavy vehicles. In addition it does not take into account that PBS vehicles are typically safer than their prescriptive alternatives, particularly with respect to roll-over risk.

**Table 9. Fatal crash and fatalities rates, by vehicle type**

Truck type	Fatal crashes per 100m km	Fatalities per 100m km
Rigid heavy vehicles	0.9	0.96
Articulated trucks	2.09	2.55

**Figure 25. Total lives saved, by option**



**11.5 National consistency**

National consistency is a function of the acceptance of a common set of requirements across all states, including agreement on the assessment method, the vehicle design requirements, the operating requirements, mass allowances and bridge compatibility.

		Vehicle safety assessment	Addition design requirement requests	Operating requirement requests	Pavement assessment	Bridge assessment
Option 1	National	Yes	Yes (by panel)	Yes	Yes	Yes
	State-based		Yes	Yes	Yes	Yes
Option 2	National					
	State-based	Yes	Yes	Yes	Yes	Yes
Option 3	National	Yes	Yes (by panel)	Yes	Yes	Yes
	State-based			Yes		Yes for tier 3

Option 3 contains the least state-based variability and then only regarding how a vehicle is run and for tier 3 bridge compliance. This ensures that a common vehicle is able to be run in all states. Options 1 and 2 allow design requirements to be added on a state-by-state basis, thus diminishing the capacity of a single vehicle design to be operated efficiently in all states.

**11.6 Certainty of access**

Certainty of access under the three schemes was rated as high for Options 2 and 3, and low for the current process. As discussed at length in previous sections, the major feedback received from industry regarding the current operation of PBS is that possessing a PBS approval does not provide assurance of vehicle access or consistent access across jurisdictions.

Under Option 2, the certainty of access on a state-by-state level would be improved because each state is specifically controlling the access arrangements. It is expected that if a state develops an access method it will honour its own processes. Certainty of interstate operation of the same vehicle type is, however, likely to be reduced compared with the current system.

Option 3 would assume full national access to vehicles that pass the PBS requirements and do not require individual bridge assessments (tier 3 bridge compliance) and thus is rated high for certainty of access. Vehicles requiring individual bridge assessments would have an expectation of access unless a jurisdiction shows that the route selected is not suitable due to bridge strength issues.

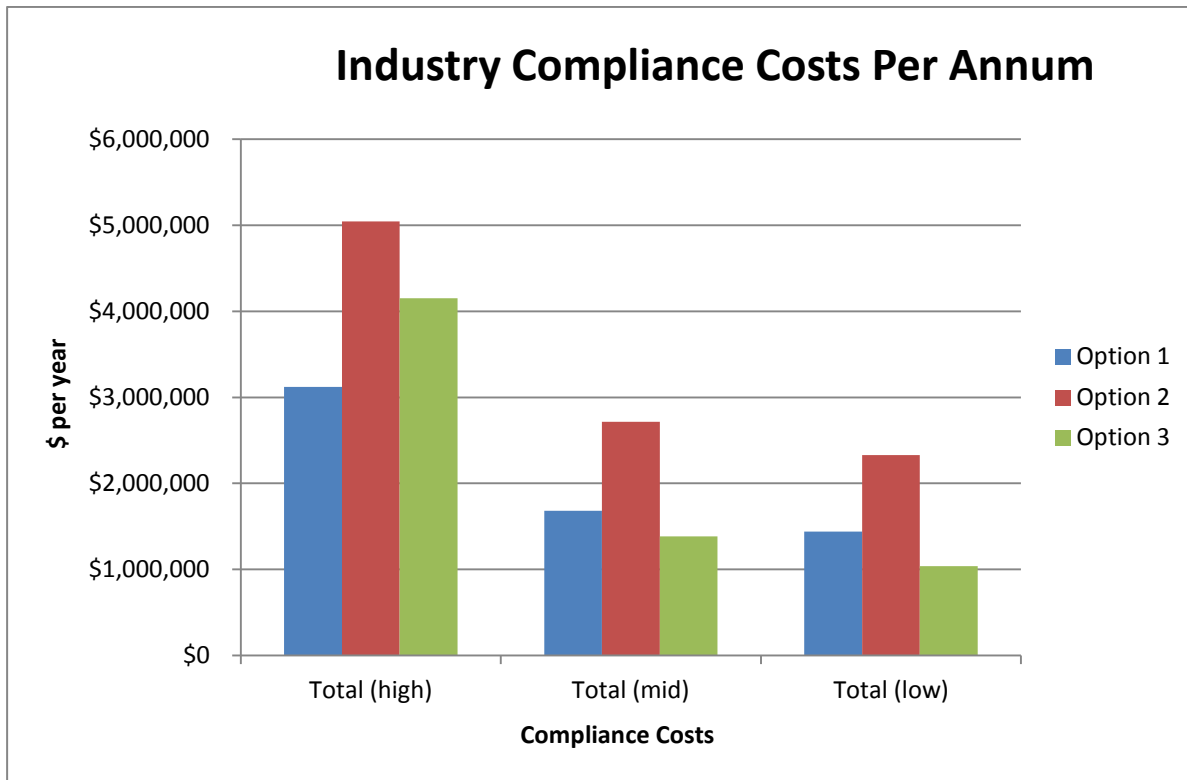
### **11.7 Industry compliance cost**

To estimate the direct compliance costs to industry on a per-year basis, a sensitivity analysis was conducted (see Appendix 1). This section reviews the costs associated with assessing designs and certifying vehicles. The main driver of variance within each option is the number of real vehicles built per design assessment and application.

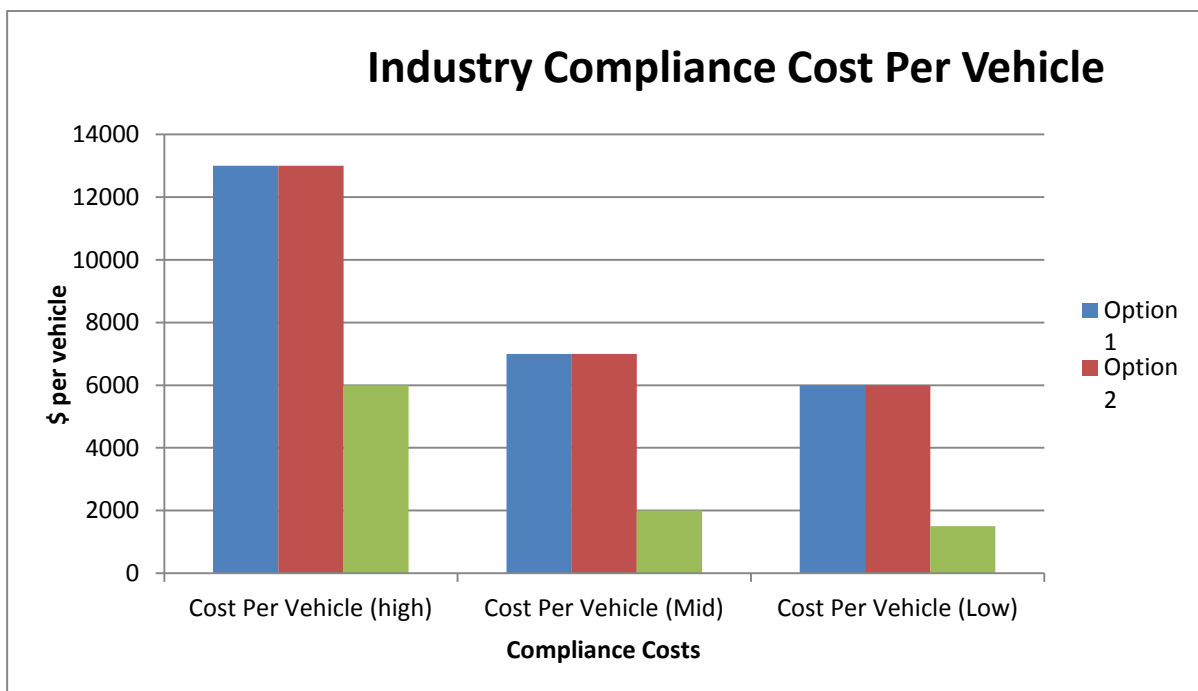
Under Options 1 and 2 each application for assessment is generally made by a vehicle operator. Current numbers of applications and vehicle registrations under the scheme indicate that there are three vehicles built per approval. This is, however, likely to increase slightly because most approvals are relatively new. The modelling of compliance costs for Options 1 and 2 therefore assumes that the average number of real vehicles built per application is four, with a possible high of eight and a minimum of one vehicle per application.

Under a system where the majority of applications are made by a vehicle manufacturer, it is expected that the number of vehicles (trucks or trailers) built per application will be much higher because they are supplied to multiple customers. This is accounted for under Option 3 by modeling a high of 20, a medium of 10 and a minimum of two vehicles per application. Under the modular approval model each combination vehicle will require two certifications for a combination vehicle, which accounts for certifying the truck separately to the trailer set.

**Figure 26. Industry compliance costs per annum, by option**



**Figure 27. Per vehicle compliance cost, by option**



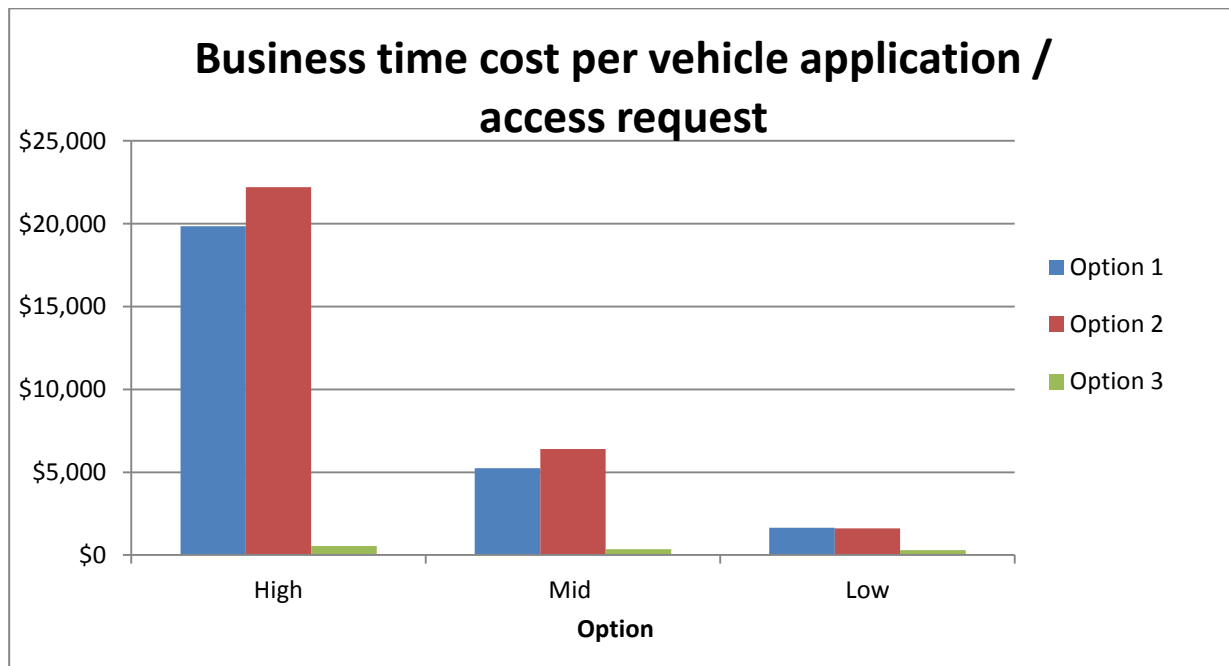


### 11.8 Additional business costs

Under current arrangements, over and above the cash cost of having a vehicle assessed and certified there are additional costs to businesses resulting from the time required to ensure that the assessment is completed, certifications are in order and requesting the appropriate access approvals from state and local council road managers.

The time spent on these activities may vary by a large degree based on the experience of the applicant, the complexity of the vehicle design and the number of access agreements that need to be finalised. As a rough assessment of the time cost, typical activity times were estimated (based on PRP secretariat feedback) across the three options (see Appendix 1). The highest cost case for all options is the case where an operator is required to work across states and in many local council areas (six states and 20 councils); in addition, this case also includes some route assessment activities. The mid case looks at an operator working in two states and four council areas and the lowest cost case is where an operator needs only access from a single state authority. A per hour cost of employee time to conduct these activities was estimated at \$50 per hour.

**Figure 28. Business time cost per vehicle application, by option**



The time cost figures relate to a per operator cost for a particular vehicle design. Translating these costs into yearly costs is difficult because an operator may operate for many years without needing to gain additional access approvals, while others may add additional designs and areas of operation to their business on a regular basis.

## 11.9 Administrative costs

Administration of the PBS scheme under the status quo (Option 1) is considered to require no additional resources to what is currently in place. Administration of the scheme is generally carried out on a jurisdictional level by staff who administer PBS applications in addition to any other heavy vehicle permit applications. As each jurisdiction's resources and workload in this area are different, it is difficult to estimate the exact incremental cost imposed by the PBS scheme. While all states currently assess each PBS application in preparation for PBS review panel voting, some jurisdictions that have a higher number of PBS vehicles operating in their state will incur higher costs through the need to resolve a greater number of access requests. Per-year cost estimates have been averaged based on information provided by jurisdictions; these estimates are provided below. Staff time cost is estimated at the level of an average market engineer wage.

Activity	Days	Number of states	Total days
PBS vehicle application assessment	25	8	200
Processing access requests (high take-up state)	75	3	225
Processing access requests (low take-up state)	20	5	100
<b>Total days</b>			525
\$/day			\$304
Time cost			\$159,600
PRP budget			\$260,000
<b>Total Option 1 administrative cost/year</b>			\$419,600

Option 2 could be seen as imposing a higher administrative cost on jurisdictions than any other option, as each jurisdiction would be required to administer a complete system. Costs to run a state-based PBS-style system have been estimated by jurisdictions as being in the order of \$200,000 per annum for a medium-sized scheme, which represents one full-time senior engineer and adequate administrative resources. States with fewer applications may be able to reduce this cost by using an appropriate engineering resource on existing tasks. This reduction has been simply estimated at half of that for a high take-up state because the actual time required is unknown.

Activity	\$/year/ state	Number of states	Total \$/year
State-based assessment scheme (high take-up state)	\$200,000	3	\$600,000
State-based assessment scheme (low take-up state)	\$100,000	5	\$500,000
<b>Total</b>			\$1,100,000

Option 3 utilising the National Heavy Vehicle Regulator is expected to reduce the burden on road authorities by shifting most of the administrative, access negotiation and customer relations tasks to the regulator. Additional savings will be made by having a single point of

contact for customers, jurisdictions and local councils. States will still incur the time cost of assessing vehicle applications in order to participate in PBS Review Panel voting.

This option will impose administrative costs on the National Heavy Vehicle Regulator and, as such, the budgets for staffing should be developed to take this into account when the regulator is being formed. It is expected that there will be little impact imposed by PBS because the regulator will be responsible for issuing heavy vehicle permits and, in the absence of the PBS scheme, the large majority of applications would be substituted by other Class 2 and 3 permit applications, which may require greater administrative and engineering effort to address. As a rough estimate the current PRP budget has been doubled to allow for the increased scope of work that is expected to be undertaken by the National Heavy Vehicle Regulator in administering the scheme.

Activity	Days	Number of states	Total days
PBS vehicle application assessment by states	25	8	200
<b>Total days</b>			200
\$/day			\$304
Time cost			\$60,800
PBS Review Panel / National Heavy Vehicle Regulator budget			\$520,000
<b>Total</b>			\$580,800

### 11.10 Network costs

The key benefit of the PBS system is that additional productivity may be realised by better utilisation of existing road infrastructure assets. Interim infrastructure requirements were approved by the ATC to limit the impact of PBS vehicles on the road network. There are ongoing efforts to develop and evaluate a new performance-based pavement loading requirement. A formal acceptance procedure (regulatory impact statement) will evaluate which standard provides the best asset protection while affording the highest tangible productivity benefits. For the purpose of this evaluation it is assumed that the interim standard will limit road wear from PBS vehicles such that there are no additional pavement wear costs over prescriptive vehicle levels.

This assumption is justified given the mix of PBS vehicles to date. While the level 2 55.5 tonne truck trailers cause more wear than the prescriptive equivalent, the overall quantum of this effect is small, between \$5m and \$15m per annum nationally (assuming all existing 50 tonne truck and dogs move to 55.5 tonne capacity in all states according to the calculations shown below).

- The 55.5 tonne truck and dog causes approximately (35 per cent) higher road wear costs compared with 50 tonne truck and dog combination.
- Currently the total pavement wear costs associated with heavy truck trailers is approximately \$116m per annum (PAYGO).
- If the entire fleet were to shift to the heavier truck and dog trailer then the additional road wear cost per annum would be \$40.6m.

- However, these vehicles would not be taken up in 14.7 per cent of the country (e.g. the Northern Territory, Tasmania and Western Australia). Therefore, the maximum amount would be \$34.6m.
- Given the nature of the task these vehicles perform and the that it only applies to level 2 routes, the fleet vehicle kilometre tonnes operating at 55.5 tonnes would be between 10 and 40 per cent (\$5.2–13.8m) or approximately \$5–15m.

However, this additional wear is offset by PBS vehicles that do less damage than the prescriptive vehicles they replace such as quad-axle semitrailers, quad-axle B-doubles, A-doubles and tri-axle truck trailers. In addition, the reduction in travelled kilometres (as shown in Figure 18) will lead to a reduction in pavement wear due to less vehicle trips.

Where older bridges on key freight networks are required to be upgraded to current standards to facilitate improved networks for longer vehicles there is expected to be some ongoing costs involved. However, the operation of PBS as a system is not contingent on all bridges being upgraded before it can be utilised because network mapping allows inadequate infrastructure to be bypassed until upgrades are completed.

Future expansion of PBS networks is expected to occur progressively based on government land transport planning schemes such as the national AusLink approach and state and territory transport planning schemes, for example, Victoria's 'Freight Futures' network strategy.

## 11.11 Summary of benefits by option

**Table 10. Summary of financial, social and environmental benefits, by option**

Selected PBS metrics	Option 1	Option 2	Option 3
1. PBS kilometre savings 2011–2030	1.06 b km	0.95 b km	3.7 b km
1a. Direct financial savings 2011–2030 (\$ nominal)	\$1.79b	\$1.74b	\$5.45b
2. Fatality savings to 2030	23.8	20.4	87.3
2a. Fatality savings (\$ nominal)	\$0.083b	\$0.071b	\$0.305b
Total savings (1a+2a) nominal	\$1.873b	\$1.811b	\$5.755b
4. Compliance costs (\$ nominal)	–\$0.084b	–\$0.136b	–\$0.112b
5. Administration costs (\$ nominal)	–\$0.011b	–\$0.029b	–\$0.016b
Total costs (4+5) nominal	–\$0.095b	–\$0.165b	–\$0.128b
<b>Net direct savings PBS 2011–2030 (nominal)</b>	<b>\$1.788b</b>	<b>\$1.646b</b>	<b>\$5.627b</b>
Carbon dioxide savings (Million Tonnes)	0.99 mt	0.72 mt	3.75 mt
<b>Net present value (NPV)</b>			
Discount rate			
3%	\$1022.7m	\$945.6m	\$3245.1m
7%	\$735.7m	\$680.2m	\$2334.5m
10%	\$590.7m	\$546.2m	\$1874.5m

Source: Industrial Logistics Institute and ESAC estimates (see Appendix 1)

## 12. CONSULTATION

This document has been developed on a foundation of continuous consultation with stakeholders and draws on previous papers released by the NTC:

- *Performance Based Standards – Discussion Paper* (NTC, December 2008)
- *Performance Based Standards – Review* (NTC, July 2009)
- *Performance Based Standards – Draft Regulatory Impact Statement* (NTC, March 2010).

The NTC has consulted widely with key government and industry stakeholders on the issues presented in the draft regulatory impact statement. This included conducting several rounds of face-to-face meetings before and after receiving written submissions, conducting a workshop, and surveying attitudes towards the scheme within the general public, which had more than 1500 respondents.

Regular updates on the proposed changes were provided to industry associations such as the Australian Road Transport Suppliers Association, which includes PBS assessors and certifiers.

Written responses to the draft PBS regulatory impact statement were received from the following organisations:

- Australian Logistics Council
- Australian Trucking Association
- Department of Infrastructure, Energy and Resources, Tasmania
- Department of Infrastructure, Transport, Regional Development and Local Government (DITRDLG)
- Department of Lands and Planning, Northern Territory
- VicRoads
- Department of Transport, Planning, Energy and Infrastructure, South Australia
- Elphinstone Engineering Australia Pty Ltd
- Main Roads, Western Australia
- Roads and Traffic Authority, New South Wales
- Territory and Municipal Services, Australian Capital Territory
- The Commercial Vehicle Industry Association of Australia
- Transport and Main Roads Queensland
- Truck Industry Council.

## 12.1 Issues raised during consultation

### 12.1.1 Jurisdictions' right to control access

Some jurisdictions have noted that they should retain the right to control the access of restricted access vehicles, which includes PBS-approved vehicles.

#### **The NTC response:**

The ATC, in its meeting on 13 October 2006, decided the following:

If the vehicle meets the PBS standards then decisions will be mutually recognised by governments and access will be provided within a statutory timeframe. Individual States and Territories however will retain the right to determine the level of access to their road systems.<sup>18</sup>

Importantly, jurisdictions will have total control of networks through the use of PBS maps that allow jurisdictions to determine which roads PBS vehicles can travel on. In addition to this, the legislation contains provisions that if a state transport minister has specific objections to a particular design of vehicle then that design may be restricted from being permitted access in the objecting state.

It should be noted, however, that PBS vehicles should not be classed the same as other 'restricted access' vehicles. Most restricted access vehicles are not fully compliant. PBS vehicles by virtue of PBS approval (which has been stated as an optional equivalent to Australian Design Rules mass and dimension limits) should be viewed as fully compliant vehicles.

### 12.1.2 Road managers' right to control access conditions

Jurisdictions have questioned the ability of road managers to apply certain access conditions under the new scheme to address community concern and provide greater access for PBS vehicles. The following comment is representative of these concerns:

The RIS is critical of jurisdictions applying conditions in addition to those approved by the PBS Review Panel. I understand the need for consistent vehicle operating conditions to provide certainty in design and on-going in-service compliance for PBS vehicles, but reserve the right to set access conditions to manage local, amenity and environmental issues in an effort to secure the best available access for the prevailing freight task with the existing network standard at the time. This will include schemes such as the National Heavy Vehicle Accreditation Scheme (NHVAS), Mass and Maintenance Modules and Intelligent Access Program (IAP). These access conditions, as distinct from PBS vehicle operating conditions, apply to both regulatory and PBS route networks. Their application will also vary between jurisdictions due to the significant differences in the road system across Australia.

#### **The NTC response:**

A key aspect of the proposed Option 3 is to ensure that an approved vehicle design may be used anywhere in Australia and may freely cross state and local council borders. In this way, consistency is achieved, vehicles have more flexibility to be deployed where needed to address freight tasks and compliance costs are reduced. Additionally, any requirements that affect the design of the vehicle need to be upfront, reasonable and nationally consistent. This is being addressed through a set of national vehicle (design) conditions, the development of which will

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<sup>18</sup> Australian Transport Council – Communiqué 13 October 2006, Canberra (<http://www.atcouncil.gov.au/communique/atc24.aspx>)

be coordinated by the NTC and will be conducted in a cooperative manner with jurisdictions and industry.

The NTC does, however, recognise the need for road managers to be able to control risks on their roads and this is intended to be conducted through road-level access conditions that shall apply to all PBS vehicles using that particular road and shall be structured around how a vehicle may be used on that asset, for example, curfew hours or speed limits. These issues have been clarified in their respective sections of the regulatory impact statement.

The NTC wishes to clarify that if a vehicle that is certified under PBS is also running under other concessional schemes then it is intended that the requirements for both schemes shall be met. For example, if a PBS vehicle wishes to operate at HML weights in a state that requires IAP enrolment for HML vehicles, then IAP shall also apply to that PBS vehicle when operating in that state at the higher masses.

The NTC agrees that schemes such as NHVAS and IAP can, when applied correctly, be powerful tools to address risks. The NTC considers that NHVAS and IAP do not affect the design of a vehicle and are therefore allowable access conditions that may be imposed by road managers; however, this should be applied in a consistent manner and should be spelt out so that all participants are aware of the requirement. It is intended that the PBS mapping portal will be used to display any access conditions applicable to mapped roads for the purpose of informing vehicle operators.

### **12.1.3 Infrastructure standards**

Consultation has raised concerns with the infrastructure standards currently in use. The following comments are representative of comments received regarding the current bridge formula: ‘The existing PBS bridge formulas are not appropriate for certain axle configurations that have emerged through PBS’ and ‘Given the complexities with route assessments, it would be prudent for the National Transport Commission to revisit the adequacy of the existing PBS infrastructure standards to meet these challenges’.

Similarly, the pavement vertical loading standard’s effectiveness in controlling pavement wear has been questioned by some jurisdictions and a request has been made to update the standard to include the results of the Austroads ‘green line’ pavement wear project.

#### **The NTC response:**

This regulatory impact statement deals with the administration and legislation of the PBS scheme in the future and sets out to provide access to vehicles that meet the package of technical standards that are approved by the ATC for the PBS scheme. As such is it not appropriate to include the technical development and verification of new standards in this document. However, the NTC is aware of the need to ensure that the package of standards are kept up to date and relevant so as to provide the greatest level of access and improvement to vehicle productivity.

With this in mind the NTC has agreed to review both the bridge formula and pavement vertical loading standard as separate projects. It is intended that these projects will be resolved prior to commencement of the PBS scheme under the National Heavy Vehicle Regulator in 2013 and will be added to the NTC work program.

Both standards will undergo technical development by Austroads technical groups consistent with agreed regulatory objectives, after which a cost-benefit analysis and regulatory impact statement will be submitted to the ATC for inclusion in the PBS standards, subject to a business



case. This will give all parties the ability to consult on the proposed standards and will provide a rational basis for inclusion in the scheme.

#### **12.1.4 Cost-benefit analysis**

Some respondents felt that the benefit derived for Option 3 in the cost-benefit analysis was overstated, particularly given that key infrastructure for very high productivity vehicles is not yet in place.

##### **The NTC response:**

The cost-benefit analysis was conducted by an independent transport expert, and is presented on the basis of outcomes derived over a 20-year period. PBS works by fitting the appropriate vehicle to the appropriate road network. The NTC recognises it would be unrealistic (and there is no expectation) to have a vast high productivity (level 2b–level 4) PBS network available immediately. It is expected the PBS network would expand over time as capital expenditure and maintenance programs allow infrastructure improvements to occur.

It must also be noted that to date most of the PBS vehicles that are in use are smaller level 1 and 2 vehicles that already have extensive networks in place (general access and the B-double network). No additional road modification with its associated funding is needed to deliver benefits for these vehicles.

So while it can be seen that the benefits derived from PBS are not dependent on a large infrastructure spend to be realised, with improved networks the benefit of PBS will be increased. In this way it is expected that the PBS network will be developed in the same way as the B-double network has expanded, gradually over the next 20 years.

#### **12.1.5 High cost of route assessments and industry expectation**

The cost of completing route assessments for PBS vehicles is seen as prohibitive. One jurisdiction made the comment that ‘the time and total cost of route assessments are borne by state and local government road agencies, which have implications for addressing future assessments and may impact on industry expectations for network access for PBS vehicles, and in the longer term, the take-up of PBS nationally’.

##### **The NTC response:**

The NTC acknowledges that route assessments can be costly and take time. The NTC also acknowledges that complete as-of-right networks may not be in place by the commencement of the National Heavy Vehicle Regulator; however, this should not affect the acceptance of the overall concept that vehicles meeting the required standards should be provided with access to the roads that have been agreed as suitable for that class of vehicle. Jurisdictions are encouraged to plan for key freight routes and prioritise the assessment of these networks. In this way the PBS networks may be built up incrementally.

To assist local councils and reduce the cost of route assessment the NTC is working with the Victorian Freight and Logistics Council (VFLC), Municipal Association of Victoria (MAV) and VicRoads to develop a route assessment tool for local councils to reduce the time and cost of route assessment. This is expected to be completed by late 2012 and will be available for local councils to use nationally.

#### **12.1.6 Issues with the draft legislation**

The draft legislation that was provided with the draft PBS regulatory impact statement was seen as overly complex and the concept of ‘type 1’ and ‘type 2’ vehicles was confusing. The draft

legislation was also written as model law and there was confusion over whether states were expected to implement this in their own law prior to the commencement of the National Heavy Vehicle Regulator.

There were concerns raised by jurisdictions regarding the review process for vehicle and access approval for PBS vehicles.

**The NTC response:**

At the time of drafting the model law for PBS, the National Heavy Vehicle Law had not been drafted and the functions of the National Heavy Vehicle Regulator were not clear. The draft legislation was built around state jurisdictions registering PBS vehicles, as per current arrangements. This increased the complexity of the legislation as some components of PBS combinations may be registered as normal, as-of-right, prescriptive vehicles, such as prime movers, where other components, such as special trailers, may have only been registered as a part of a PBS combination. This led to the confusing type 1 and type 2 designations for vehicles.

There is now more clarity around the functions of the National Heavy Vehicle Regulator and its intended ability to register heavy vehicles for use on the road. This has allowed a simplified process to be followed due to the NHVR having the details of the PBS approvals at hand when registering vehicles. Appendix 2 contains the revised legislation that is intended to be a part of the National Heavy Vehicle Law and is drafted to be in a similar format to the emerging law.

The revised legislation is built around the process flow found in Appendix 3 that will be used by the National Heavy Vehicle Regulator to approve applications and register vehicles. The basic elements of the process involve a number of national (Class 2) vehicle notices being set up that describe a PBS vehicle of a certain level (e.g. level 1, 2a, etc.) and allow access to the mapped networks appropriate to that level of vehicle. When a vehicle application is approved, its design is assessed as being compliant under one of these notices, so long as it meets the tier 1 bridge formula. As such when a vehicle is built compliant to the PBS approval, it is able to be registered and operated under its matching notice.

If a vehicle is not bridge formula compliant then it will not gain access to the as-of-right mapped PBS network because it requires individual bridge assessments to be made. If this is the case, then following confirmation from bridge owners that the vehicle is suitable to be run on a particular route, the National Heavy Vehicle Regulator will create a permit for that vehicle allowing the registration and operation of the vehicle on the prescribed route.

Review processes for PBS are intended to follow the same processes as used for all other vehicles under the National Heavy Vehicle Law. Decisions made within the National Heavy Vehicle Regulator will be subject to both internal and external review, while road access decisions made within jurisdictions and local councils will be subject only to internal review by those organisations.

Provision is made within the legislation for a ministerial veto of an approved vehicle compliance approval. This is provided to allow, in exceptional circumstances, the prevention of a particular approved vehicle type on the as-of-right network for the vetoing state. Should a veto be lodged then the compliance approval will not be allocated to one of the as-of-right notices and will instead be provided with a permit allowing access to all appropriate approved roads in all states and territories, with the exception of any vetoing jurisdiction.

## 12.2 PBS regulatory impact statement workshop

On 18 May 2010 the NTC held a workshop to discuss the recommendations made in the draft regulatory impact statement. Participants were drawn from state road jurisdictions, local government bodies and industry.<sup>19</sup>

**Table 11. Workshop participants**

<b>Participants at the PBS Draft Regulatory Impact Statement Workshop (18/05/2010)</b>
<b>Road authorities/government</b>
Ian Mond, Manager Heavy Vehicle Policy, VicRoads
Ron Smith, Policy Analyst, VicRoads
Parry Serafim, Senior Policy Manager, Department of Transport, Victoria
Don Geering, Manager Access and Pricing Policy, NSW RTA
Kevin Loftus, Manager, Heavy Vehicle Transport Compliance, Main Roads Western Australia
Mark Elford, Director, Road Transport Policy and Planning, Department of Transport, Planning, Energy and Infrastructure, South Australia
Rod Paule, Manager Transport Regulation, Department of Territory and Municipal Services, Australian Capital Territory
John Hennessey, Sector Development Consultant, Municipal Association of Victoria
Apologies were received from Queensland, Northern Territory and Tasmanian representatives.
<b>Industry</b>
Paul Walsh, Australian Trucking Association
Michael Kilgariff, CEO, Australian Logistics Council
Darren Whyte, General Manager Fleet, Kalari Transport
<b>PBS Review Panel</b>
David Anderson, Independent Chair, PBS Review Panel
<b>NTC</b>
Ian Hunter, Project Director
Kristian Cook, Manager Productivity
Frank Muller, Commissioner
Jose Arredondo, Senior Policy Analyst Productivity
Marcus Coleman, Manager Engineering and Productivity
George Konstandakos, Senior Manager Productivity and Technology
Lynne Habner, Chief Officer Corporate
Eliza Stephens, Communications Officer

<sup>19</sup> The full report is available on the NTC website at <http://www.ntc.gov.au/filemedia/Reports/PBSStakeholderWorkshopMay2010.pdf>.

Following presentation of the three options, there was an extensive participant discussion of the issues and challenges.

- Option 1 was not considered to be a viable option because reform was definitely needed.
- Option 2 was not considered to be effective.
- Option 3 was strongly supported, with participants raising some issues for discussion.

The Main Roads Western Australia representative remarked that ‘for the 97 per cent of heavy vehicles managed by the National Heavy Vehicle Regulator under prescriptive arrangements, the NHVR will decide what vehicles can operate and the state will determine which roads they can access and under what conditions’. The Western Australian representative asked the group why it should be different for PBS vehicles.

Most of the issues raised mirrored the concerns received in the written submissions and are responded to in section 12.1; however, the following items were also highlighted.

### **12.2.1 Strategic approach**

A key issue discussed throughout the workshop revolved around the need for a strategic approach to deliver a high productivity vehicle network in order to provide transparency and certainty about what the arrangements will be. A strategic plan and resources are required to roll the process out. Greater integration between stakeholders and stronger partnering opportunities were seen as a way to improve the delivery of the PBS network.

The NTC notes that the PBS scheme is a tool to certify more productive vehicles and not an overall productivity strategy. The NTC is aware that jurisdictions are in the process of planning for freight and PBS is just one of the means to deliver improvements in the national freight network. Issues raised at this workshop need to be addressed in those plans.

### **12.2.2 Industry perspective**

A national approach was strongly supported by industry representatives, with their greatest issue being certainty of access. However, industry representatives commented that they tend to make decisions quickly and if they do not get something that works well they will move on.

### **12.2.3 Local government issues**

The role of local government was deemed to be critical in the delivery of the PBS. Industry participants reported mixed experiences in dealing with local government to obtain permits for route access. Local government needs to be better resourced to deal with the assessment and designation of access routes.

Councils need to be involved in order to understand the impact on their roads. Councils were also expected to take some ownership in engaging with the responsible authorities proactively to address PBS issues they may be experiencing.

In working to educate and build capacity in local government, New South Wales discussed their coordinated process to assist councils in assessing PBS vehicles. A VicRoads representative also discussed the work that had been done with councils, where 40 councils had been visited to further develop local government knowledge.

The NTC is currently working with local government stakeholders to deliver an automated route assessment tool that should ease the burden on local councils and act as an expert system to allow council engineers to assess their assets for suitability, without requiring expert knowledge of the PBS route assessment guidelines. This project is to be run in conjunction with ARRB, VicRoads, MAV and VicRoads.

In addition, the NTC will, as an implementation action, deliver revised and focused information sheets to key government stakeholders (LGAs and jurisdictions) that will provide key information in a format that is appropriate to the stakeholders concerned.

#### **12.2.4 Community perceptions**

In general, councils were perceived to be supportive. However, it was acknowledged that their decisions were not always being made on scientific evidence due to the presence of political overlays. Even while the impact of B-triples as opposed to B-doubles is minimal, community perceptions are a significant factor in local government responses. Participants discussed resolving this issue through gaining a better understanding of community concerns.

In response to this issue the NTC has conducted a community attitudes survey that explores community attitudes to freight, heavy vehicles and the PBS scheme. The research was undertaken by an independent market research agency and involved interviews with 1500 motorists from urban and regional Australia. A summary of outcomes is presented in section 12.3 and the full report contains information regarding key concerns and information that local governments can use to explain the benefits of more productive vehicles to gain community support for improved access for PBS-approved vehicles.

#### **12.2.5 Scheme enhancements (Part 2)**

Part 2 of the regulatory impact statement identified two key changes that may assist the PBS scheme in delivering the productivity, social and infrastructure benefits requested by COAG. They are:

- modular assessment of vehicles (allowing prime movers to be assessed independent of the trailers used)
- removing the reliance on scarce third-party engineering resources by allowing self-certification and wider manufacturer participation.

Workshop participants overwhelmingly agreed with proceeding to develop the two improvements to the scheme but were concerned that care needs to be exercised when selecting manufacturers who will be qualified to self-certify their vehicles to ensure that applicants have an appropriate level of skill and integrity to deliver accurate compliance reports. The NTC will ensure that the current requirements for registration as a PBS certifier will be maintained during the implementation of the change, should it be accepted.

The concept of modularity raises issues with on-road compliance and enforcement. Participants suggested the development of a plating system for PBS vehicles and visible signage to inform the public that a vehicle has passed the PBS standards and is a safer vehicle.

The NTC acknowledges the complex nature of compliance enforcement for PBS vehicles and the particular issues that modular PBS vehicles will create for roadside enforcement. If accepted, the implementation actions to deliver modular approvals will include a compliance and enforcement strategy and information requirements.

### 12.3 Community attitudes towards freight vehicles and the PBS scheme

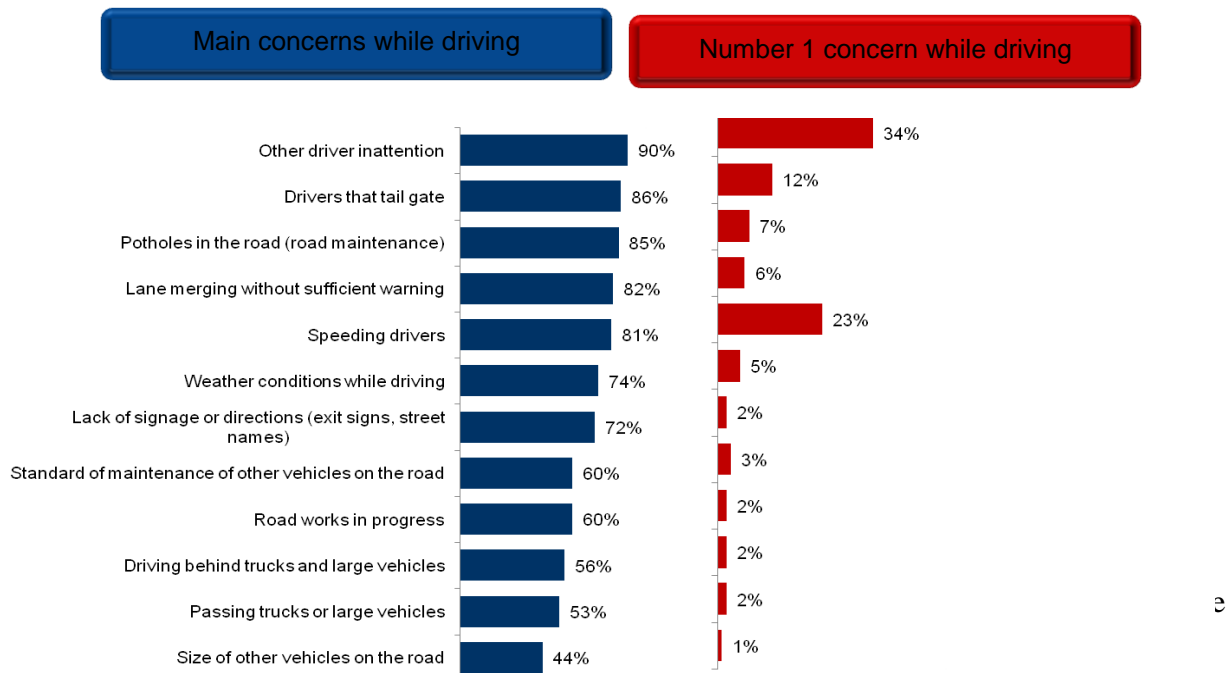
Community concerns about freight vehicles, particularly the larger vehicles possible under PBS, has been raised as an issue in a large percentage of the feedback regarding the regulatory impact statement and the PBS scheme in general. As a result of this, the NTC commissioned a consultant to objectively measure the community attitude towards freight vehicles and PBS. This survey<sup>20</sup> was conducted with 1500 individuals from five states among a mix of urban and regional participants to understand if there were any factors that would become blockers to the wider implementation of PBS.

The survey found that:

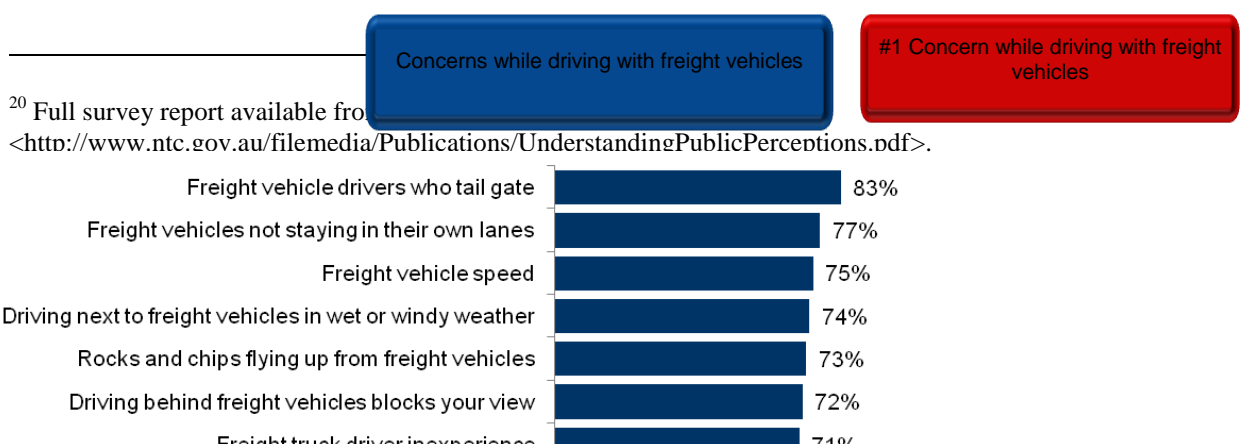
In most cases, trucks are not a ‘top of mind’ concern to everyday drivers and less so for weekend drivers. Freight movement and its importance to the daily lives of Australians and the Australian economy is also not ‘a top of mind’ connection. While concern is raised over the number of vehicles (congestion/traffic flow) on the road, this is not solely related to the number of freight vehicles. Larger vehicles, a more common reference when discussing size of vehicle than the term ‘truck’, includes SUV/4WD vehicles, commercial/delivery vans, people carriers, cars towing caravans or trailers.<sup>19</sup>

The survey found that the size of freight vehicles was not a key concern when driving compared with the way in which vehicles are driven. The size of other vehicles on the road rates very low and is only a top concern for 1 per cent of respondents.

**Figure 29. Hierarchy of public concerns while driving**



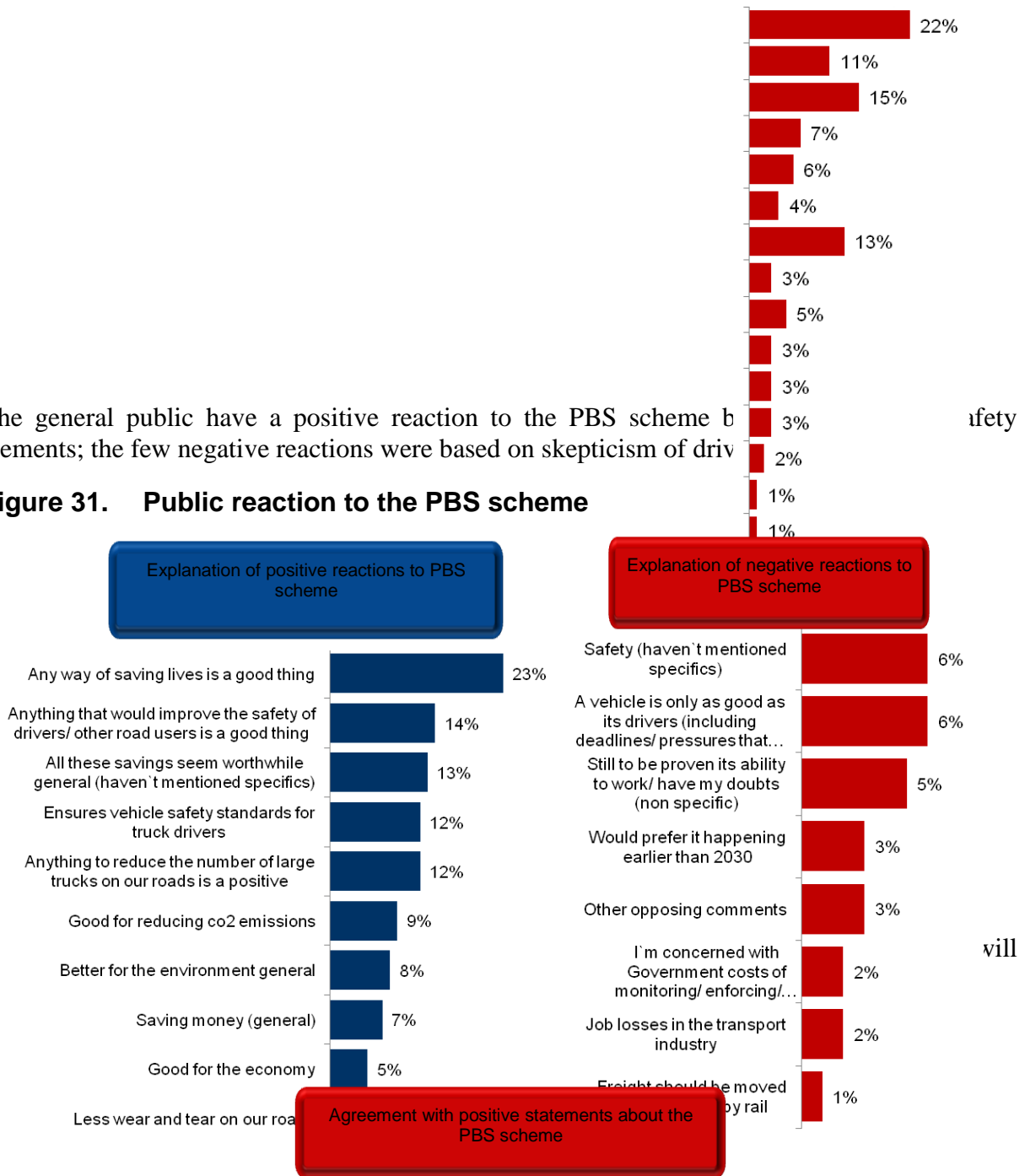
**Figure 30. Main concerns when driving with freight vehicles**



<sup>20</sup> Full survey report available from <http://www.ntc.gov.au/filemedia/Publications/UnderstandingPublicPerceptions.pdf>.

The general public have a positive reaction to the PBS scheme based on the following elements; the few negative reactions were based on skepticism of driver safety

**Figure 31. Public reaction to the PBS scheme**



will

### **12.3.1 Actions arising from the perceptions survey**

The survey, which was conducted nationally, shows that the public is willing to accept larger vehicles as long as they are assured they are safer than current vehicles. This information will be used in the implementation phase to provide jurisdictions with targeted information that can help explain to the general public the benefits of the scheme and help to deliver wider access for PBS-approved vehicles.

The survey highlighted that the public perceives the additional safety standards required by PBS provide improved vehicle design safety. However, because the public is unable to distinguish a PBS vehicle from other freight vehicles, there has been calls to have a branding scheme in place to allow identification of PBS-compliant vehicles on the road. This is being considered through the PBS Review Panel process and may lead to changes in the business rules recommending or requiring branding of compliant vehicles.



### 13. RECOMMENDED OPTION

Based on the impact analysis it is clear that Option 3, the development of a national PBS assessment and access framework, has the most capacity to provide real productivity benefits. While this is not contingent on the acceptance of the PBS scheme, improvements detailed in Part 2, acceptance of the recommended options of allowing modular assessment and self-certification, which are most appropriate for Option 3, will only serve to reinforce the productivity advantages that this option provides.

Option 3 is the only option that will deliver a truly national scheme with national outcomes that mirror the COAG objectives set out for the scheme at its inception. It is therefore recommended that Option 3 is accepted. Further work on resolving 'last mile' issues, including expanding the PBS network and resolving local mapping issues is still required in order to realize the full productivity benefits associated with the PBS scheme.

### 14. IMPLEMENTATION AND REVIEW

Implementation of the reform is to be delivered against milestones set out in a national implementation plan. The NTC will work with the individual state and territory governments to develop the plan, which will be submitted for approval by the ATC. This process will reflect the two-stage reform approval process recommended in the NTC review and endorsed by the ATC.

#### 14.1 Legislation – National Heavy Vehicle Law and Regulator

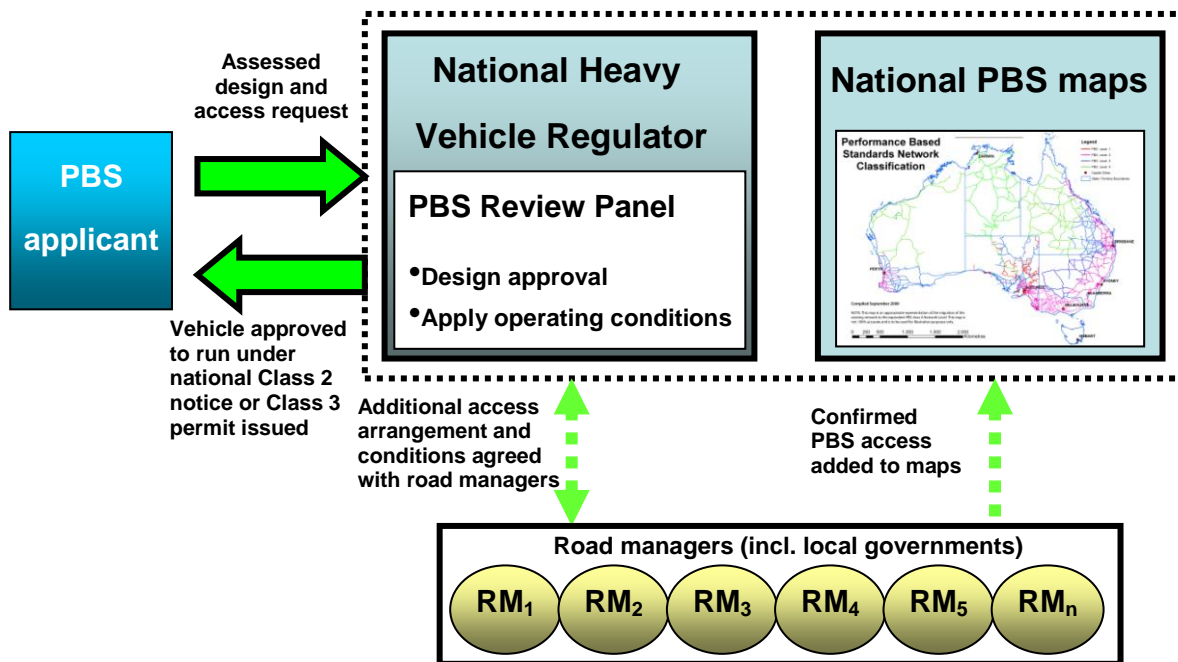
The PBS legislation (Option 3) is intended to be incorporated into the National Heavy Vehicle Law and administered by the National Heavy Vehicle Regulator. This arrangement will provide the best environment for PBS to deliver a clear, nationally consistent scheme for delivering improvements in the road freight industry.

It is intended that the PBS scheme would continue to be administered in its current form until the National Heavy Vehicle Regulator is able to take over the function, at which point the scheme would swap to the national assessment and access model.

Figure 33 is a graphical representation of how the PBS process is expected to work under this arrangement. The National Heavy Vehicle Regulator will approve assessed PBS designs through the PBS Review Panel. In parallel it will coordinate access as requested by the applicant with the applicable road managers. This may take the form of assessing if the requested access has already been mapped as a road manager's approved PBS network, in which case access can be granted immediately. If the route is not already mapped, or the vehicle requires individual bridge assessments, then the regulator will communicate directly with the road managers to assess and, if suitable, gain access to the requested routes and bridges.

Once the design and access have been approved, the regulator will approve the vehicle to run under a national Class 2 notice or for vehicles requiring bridge assessment; a Class 3 permit will be issued for the application.

**Figure 33. PBS process as administered by the National Heavy Vehicle Regulator**



To facilitate the new process the following processes and resources will need to be developed and implemented through a consultative process:

1. Add the PBS law to the National Heavy Vehicle Law.
2. Complete the technical development of performance-based bridge and pavement loading standards.
3. Complete regulatory impact statements for new infrastructure standards and submit to the ATC for approval.
4. Develop a PBS application lodgement, assessment and approval process (including PBS Review Panel operations) within the regulator environment. The intention is to provide a one-stop shop for applicants.
5. Draft the necessary national Class 2 notices for as-of-right PBS vehicles.
6. Identify appropriate communications channels and assign specific contacts to ensure that the regulator is able to robustly and responsively react to access requests, with particular regard to local government road access.
7. Develop a consistent process by which the regulator will work with road managers to agree access and access conditions. A frequently levelled criticism of the existing system is that the evaluative process and evidentiary basis on which access decisions are made can lack transparency, is sometimes inconsistent with agreed ATC and COAG policy and is not subject to review. Operators seeking a permit may be unclear as to who is the relevant decision-maker and with whom to lodge their application. The form and point of application varies within and between states and it is often difficult to know the status of an application or when a decision will be made. Operators may not be given reasons for decisions that can impede their ability to plan and confidently invest. Furthermore, they may wait for unreasonably long periods of time for determinations. A key feature of Option 3 is creating transparency and certainty of access for both manufacturers and more importantly, operators. The regulator will need

to address this as part of its implementation plan, ensuring access conditions are agreed by the January, 2013 commencement date.

8. Develop staff within the regulator who are able to support local government road managers with information, network assessment help and stakeholder management.
9. Create a process for maintaining and adding to the PBS maps while networks are developed that will ensure that operators are aware of any changes. While jurisdictions will maintain responsibility for determining PBS routes, developing and communicating PBS route expansion intentions will assist in the growth of PBS vehicles. Promotion of intentions to expand the existing mapped routes would lead to greater confidence amongst operators when deciding whether to invest in PBS vehicles. As part of their short and long term capital and maintenance road funding programmes, where appropriate, jurisdictions should consider undertaking analysis to determine whether incremental investment to accommodate PBS vehicles is warranted which would ultimately lead to expanded PBS routes. Ideally, the plans developed to upgrade road networks, including PBS networks should be published the regulator as advised by jurisdictions. To facilitate communication, the regulator would be ideally placed to publish intended upgrade plans. This would enable the development of existing and 'proposed' PBS maps, a useful decision making tool for operators contemplating PBS investment. 'Proposed' PBS route maps should be considered for development by January 2013 to support existing PBS maps.

All means available should be employed to continually expand PBS routes. Australia's efficiency and productivity growth is directly impacted by freight movements. While PBS is not a solution in itself, it will nonetheless make a significant contribution. Routes and mapping are critical to PBS success and jurisdictions and the regulator have vital roles to play in developing and promoting those maps,

10. Develop a dispute resolution process for approval and access decisions.
11. Develop business systems to manage applications, permits and notices.
12. Operators currently apply for improved access through PBS either for dimensional reasons (height, length, etc.) or for weight reasons (example, to gain access to above general mass limits). Under current pricing arrangements, access for dimensional issues is not a significant constraint to getting approval through PBS followed by road agencies, as PBS routes generally don't have dimensional issues. When it comes to local roads, the dimensional issues are also considered minor – an example being a requirement to widen an intersection. However, mass is considered a far greater issue since the pavement gets more damage than usual for the entire length of the trip. Thus, road agencies and local governments want a pricing solution so that the revenue associated with charging for the impact of higher mass on road pavements is returned to them to enable road repairs based on road wear.

Therefore, the lack of efficient pricing signals which charge for road wear and the lack of funding reforms which returns the funds in some way to the road owners is a constraint to improved network access, particularly for weight. The current COAG Road Reform project is investigating the feasibility of alternative pricing models which attempt to more accurately reflect the actual costs vehicles impose on road costs. This project is also investigating reform of the current funding and expenditure model in order to better link heavy vehicle charging revenues to actual road expenditure. The feasibility study is due at the end of 2011.

13. To assist with implementation, a tool to aid the assessment and categorisation of roads and road networks, both state and council owned, into the four basic network levels as described by the PBS route assessment guidelines will be developed. The tool is intended to allow low cost assessment of the suitability of routes by road network managers. This work will be undertaken collaboratively by parties including VicRoads, Victorian Department of Transport, Port of Melbourne, Municipal Association of Victoria, Victorian Freight and Logistics Council and the NTC commencing mid-2011. The objectives of the route assessment tool follow:

- Ability to accurately interpret the route assessment guidelines and provide a suggested suitable network classification for requested roads once appropriate data is entered.
- Ability to be used by road network managers with certain level of engineering experience however not requiring expert level knowledge of PBS route assessment.
- Ability to identify "weak points" in infrastructure which if improved may lead to a higher classification for the road network and thus access being granted to more productive vehicles.
- Ability for road network managers to review the results of the tool and adjust suggested levels based on external factors (such as proximity to schools, noise or congestion issues) if required.
- Ability to effectively interface with National Heavy Vehicle Regulator systems and processes.

Actioning the above will assist in delivering against the key objectives of the PBS scheme i.e.

- improved freight productivity
- reduced impact on the environment in regard to vehicle emissions and CO2
- reduced impact on society in regard to reductions in road trauma and congestion.

## 14.2 Communication

The NTC is to provide user-friendly communication materials and tools to assist both the NTC and road authorities in generating awareness of PBS and effectively communicating the benefits of PBS vehicles to stakeholders (in particular local government groups), with the aim of securing improved access for PBS vehicles.

The NTC will play a coordination and facilitation role, including the production of PBS communication material. It is expected that road authorities will take the lead role on disseminating the information to road managers and the broader community, in support of effective implementation of the reform.

The specific objectives of the PBS communication strategy are to:

- promote nationally consistent messages

- clearly articulate the safety and infrastructure effects of PBS vehicles
- provide targeted messages that are relevant and actionable to specific stakeholder needs
- identify, engage and inform stakeholders, raising their awareness of PBS
- motivate planning to ensure stakeholders identify and implement necessary actions (such as network mapping)
- complement state and territory communication strategies
- manage communication risks.

### 14.3 Mapping

Regardless of the options chosen for the PBS scheme, the mapping of networks, particularly where local council road assets are included, will remain a key component of successful implementation. Road agencies are encouraged to work with local councils to facilitate the accurate sharing of information on the PBS system and to work towards providing viable PBS networks that include the ‘last mile’.

The following actions need to be taken as a part of the implementation:

- ensure that both state and local government are utilising common, up-to-date network assessment guidelines
- ensure there is adequate support available to help smaller road managers with resolving any network assessment questions or issues
- develop a reasonable timing plan and milestones to ensure provisionally mapped routes are reviewed and agreed as suitable
- develop a timing plan and process to allow as many local government roads as possible to be appropriately mapped to reduce last-mile issues for operators requesting non-specific, state or national access (e.g. national level 1 access)
- ensure network assessment guidelines are made available and are maintained as needed.
- short and long term capital and maintenance funding programmes which would ultimately lead to expanded PBS routes should continue to be developed. PBS specific expansions should be published by the regulator as advised by jurisdictions.

### 14.4 Operating conditions

Should Option 3 be pursued, a set of national operating conditions would be developed to ensure that risks inherent with a particular vehicle design are adequately controlled through additional vehicle design requirements. It is intended to use the interval before the operation of the National Heavy Vehicle Regulator to develop these requirements in cooperation with jurisdictions, industry, and vehicle development and safety experts.

## 14.5 Review

The NTC will develop and submit a national reform monitoring plan to evaluate implementation and monitor progress against the reform's intended outcomes using measurable performance indicators. This approach is consistent with the Transport Reform Outcomes Framework developed by the NTC in response to recommendations made by the 2009 NTC review. Metrics to be measured may include:

- take-up rate of PBS vehicles
- number of PBS vehicles as a percentage of the fleet
- rate of growth of the heavy vehicle fleet
- accident rates for PBS vehicles (if available)
- number of PBS design approvals granted
- percentage of total road network mapped as PBS networks
- number of roads added to the PBS network per year
- time from lodgment of design application to design approval
- time from lodgment of access application to access approval.

Implementation of the reform is to be measured against milestones set out in the implementation plan; progress will be reported to the ATC on a regular basis.

## **PART 2: PBS SCHEME ENHANCEMENTS**

In addition to the options for implementing the PBS scheme, the review of PBS noted that some changes may assist the PBS scheme in delivering the productivity, social and infrastructure benefits requested by COAG.

Two key changes identified in the PBS review and supported by industry are modular assessment of vehicles (allowing prime movers to be assessed independent of the trailers used) and removing the reliance on scarce third-party engineering resources by allowing self-certification and wider vehicle manufacturer participation.

### **1. MODULAR ASSESSMENT AND USE**

#### **1.1 Background**

The manner in which a vehicle combination performs on the road and its loading on bridges and pavements is affected by each vehicle component within the combination. Therefore, when modelling the performance of a vehicle combination it is necessary to not only understand the trailer set being used but also the prime mover being used to tow the trailers. Thus, only complete vehicle combinations may be submitted for assessment and approval.

Given the transport equipment industry is generally structured around prime mover manufacturers and separate trailer manufacturers, in most cases it is not until an operator has selected both the prime mover and trailer set that they intend to run that the components of the combination are known and able to be assessed. This has led to the majority of applications for PBS approval being developed and submitted by vehicle operators.

#### **1.2 Problem**

The system of only approving complete combinations means that a trailer that has been fully approved with a certain prime mover must be completely re-assessed if used with a different prime mover, even if they are of a very similar configuration. Conversely, the powertrain characteristics of a prime mover that is known to be capable of towing a trailer of certain mass, must be re-assessed if towing a different trailer, even if they are of the same mass.

The current process prevents truck, bus and trailer manufacturers from being able to drive the market towards improved productivity vehicles, as the number of combinations that would need to be assessed to ensure that a particular vehicle component (truck or trailer) is always compliant with the scheme is far too vast.

This system has resulted in a scheme where vehicle operators are the majority of applicants for vehicle assessment and approval. This has generally left manufacturers, who have greater experience and knowledge of vehicle design and certification, unable to provide this service to their customers.

To allow vehicle developers to provide the transport industry with vehicles that are known to be compatible with the PBS requirements, there needs to be a system where manufacturers can assess the standards relevant to their particular vehicle module (e.g. either a prime mover or trailer set), without explicit knowledge of the exact mating components that may be used to form an acceptable combination.

### **1.3 Objectives**

Industry feedback has indicated that the scheme needs to provide a means by which PBS vehicles can be provided to the market and operated in a more flexible manner than what is currently allowed.

### **1.4 Options**

At this stage in the regulatory development process, while significant stakeholder consultation has been completed on the subject of a modular assessment system for PBS, the details of any such system have yet to be considered. Therefore, the options presented at this stage are to either keep the existing system of complete vehicle assessment, or develop a modular assessment and approval system.

#### **1.4.1 Option 1: Status quo**

This option would retain the current process of assessing complete vehicle combinations only. This includes re-assessing the whole vehicle each time there is an amendment to the compliance approval such as when adding additional prime mover specifications.

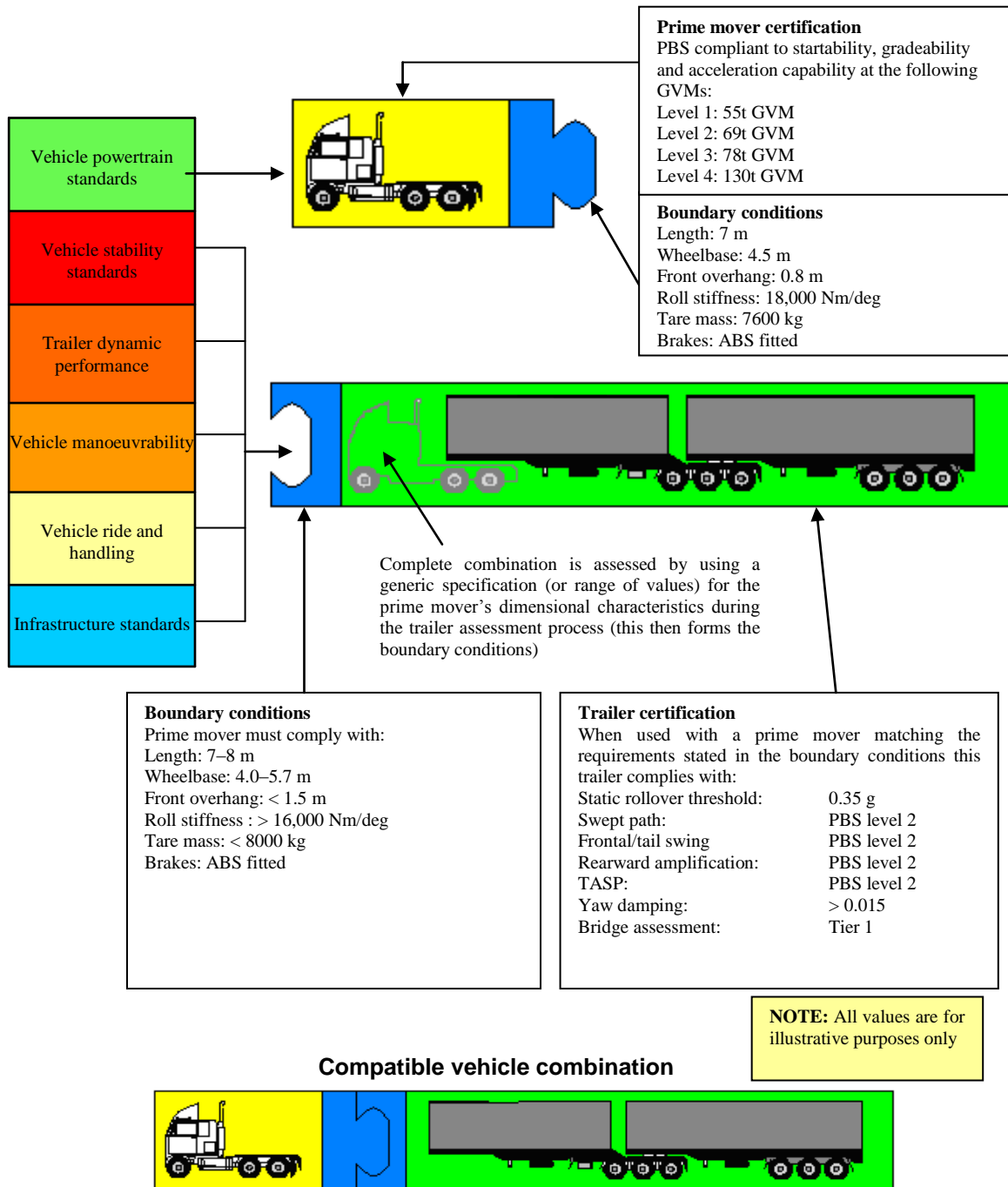
#### **1.4.2 Option 2: modular assessment and approval system**

The basic concept of modular approval is that the prime mover's powertrain may be assessed without knowledge of the trailers being pulled and that infrastructure, dynamic and low-speed manoeuvrability performance of the vehicle combination is not affected by different powertrains. Therefore, a prime mover manufacturer is able to assess the applicable mass at which a particular prime mover is capable of meeting all of the PBS powertrain requirements for each of the PBS performance levels.

The dynamics, infrastructure and low speed performance of the combination is mainly a function of the design of the trailer set. Thus, if some basic geometric limits are prescribed for an applicable prime mover then the performance may be assessed. Once it is known that the prime mover is capable of pulling the mass of the combination, and that it fits within the geometric limits used within the trailer assessment (referred to as 'boundary conditions' in Figure 33), it is possible to conclude that the combination is PBS compliant. If the powertrain and geometric requirements of the prime mover are known for each trailer set, operators can assemble compliant combinations as required.



Figure 34. Modular certification concept



## **1.5 Impact analysis**

### **1.5.1 Costs and benefits**

#### **1.5.1.1 Option 1: Retain status quo**

Costs for this method of assessment are high, and changes to vehicle approvals require full reassessment and panel approval for each addition of possible equipment that can be used in the combination. For example, an operator who utilises specific trailer equipment requested that an additional brand and make of prime mover be added to the approval to provide the operator with a back-up when the originally assessed prime mover was unavailable. In this case the entire combination was reassessed at significant cost to the operator, and the application was required to be presented to the PBS Review Panel for approval even though the prime movers were of very similar construction and performance.

The time required to reassess and have the panel accept additional equipment into an approval is significant and, given that industry is often required to respond to customer contract tenders within defined time limits, potentially limiting to the usefulness of PBS vehicles.

The current system does not allow operators with identical equipment to interchange or mix components because entire combinations must be approved and registered to a single entity. This lack of flexibility was identified by stakeholders as a significant barrier to wider adoption of improved productivity vehicles certified under PBS. In addition, the system is limiting PBS applications to operators who own all of the equipment required. This has the effect of locking out small operators, such as owner-drivers, who may only possess a prime mover, from operating a PBS-approved combination, further reducing their capacity to be competitive with larger operators.

#### **1.5.1.2 Option 2: Modular assessment and approval**

The cost of powertrain assessment and certification, particularly if completed by the prime mover manufacturer, is relatively low and is well within the technical capacity of manufacturers. As detailed in section 2 (self-certification) it is recommended that the PBS assessment and business rules be modified to allow prime mover manufacturers to assess and approve powertrain requirements, without requiring the knowledge or capacity to complete entire vehicle assessments, as this is unnecessary for modular assessment.

To assess the trailer set, and allow flexibility of applicable prime movers, the trailer may need to be assessed with a range of parameters for the prime mover rather than just the one known configuration used presently. This will require simulation to be carried out for a number of worst-case configurations, thus increasing the cost of the assessment. However, this increased cost, if borne by a trailer manufacturer, may be spread out over the number of trailers made.

Thus the costs borne by an operator are potentially much lower than the current system where each operator is essentially required to pay for their own assessments even if similar vehicles have been sold to other customers.

### **1.5.2 Risks**

#### **1.5.2.1 Option 1: Retain status quo**

Retaining the existing system ensures there is very little chance of a noncompliant PBS vehicle being operated (excluding negligent or illegal operation of a vehicle) because all of the exact components have been assessed together. Compliance is easy to check because approvals will have a list of compliant vehicle identification numbers for each vehicle component.

### 1.5.2.2 Option 2: Modular assessment and approval

As modular approval will allow greater flexibility in the way operators use their PBS-approved components and, because combinations are able to be assembled as required, there is a risk that incompatible components may be used to form a combination.

This issue requires careful consideration, but the NTC and industry believe that the risks can be adequately controlled. A possible solution is to affix a plate to vehicles that are PBS compliant stating the boundary conditions required to ensure compliance. Both trailers and prime movers may be plated such that it is possible, by comparing the boundary condition requirements on each module, to understand whether they may be used to form a PBS combination.

In practice the risk of misassembling combinations will be reduced by operators knowing which prime movers are to be used with particular trailers and developing lists of applicable vehicle identification numbers.

## 1.6 Consultation

While the majority of respondents were very positive regarding the implementation of modular assessment of PBS vehicle combinations, concerns were raised regarding possible brake balance issues that can occur when mixing prime movers with different trailers. One particular response noted:

However, vehicle combination performance can only be properly assessed through assessment of the complete vehicle combination. By allowing hauling units to be assessed independent of trailer use it would not seem possible to properly address each of the performance based standards. For example mixing different braking technologies between hauling units and trailer sets in a combination vehicle may result in acceptable emergency braking performance and poor onset braking balance, or vice-versa. This could result in poor braking performance.

Unfortunately, this area of additional risk is not addressed in the draft regulatory impact statement. The final regulatory impact statement should detail how this risk may be controlled.

### The NTC response:

The braking issues that are noted above are not present as tests within the PBS scheme and therefore not currently tested on actual PBS vehicles. The current brake test that is applied to PBS vehicles is not an emergency stop or a test of onset brake balance. This issue is not a new risk and is in fact present on every combination vehicle on the road today, not just PBS vehicles; therefore, there is no additional risk compared with current practice. Brake balance is controlled by Australian Design Rules 35 and 38, which must be met by PBS vehicles.

Consultation with the approved PBS assessors has not raised similar concerns. The revised PBS blueprints have been constructed around the modular approval concept by an approved PBS assessor and vehicle dynamics expert to show that the vehicle can be adequately assessed in this manner. It demonstrates how a range of compatibility issues can be addressed, in particular: drive-line assessments by truck manufacturers, matching of suspension characteristics, and deemed-to-comply requirements for brake performance (i.e. must have ABS on truck and LPV on trailer as minimum).

Nonetheless, the NTC in association with the Australian Road Transport Suppliers Association has been involved in developing operational guidelines to improve industry knowledge of brake balance issues. This work was undertaken as an element of the NTC's *Heavy Vehicle Braking Strategy* (2008), which acknowledges fleet-wide issues with the mixing of braking technologies and suggests changes to the Australian Design Rules to mandate electronic countermeasures to

wheel lock-up. These actions have been conducted to reduce the risk of brake incompatibility and will flow through to PBS vehicles.

## 1.7 Recommended option

Option 2 is recommended to allow the PBS scheme to become more manufacturer driven, reduce costs and provide more flexibility in the way in which PBS-approved vehicles may be used. Following stakeholder consultation and detailed development of the concept, there may be a need to assess different ways of controlling possible risks. These options will be discussed in detail in the final regulatory impact statement if Option 2 is agreed.

## 1.8 Implementation

Technical work to confirm that the concept of modular certification is robust is currently being conducted by approved PBS assessors. Successful implementation will require that a system for identifying compatible vehicle modules for the purposes of operation and compliance monitoring is developed and robust. This work is expected to be led by the NTC, with input from jurisdictions and industry, should modular assessment be approved.

Implementation of the modular assessment method will require changes to the following PBS scheme rules:

- *Performance Based Standards – Business rules*
- *Performance Based Standards – Standards and vehicle assessment rules*
- *Performance Based Standards – Assessor accreditation rules*
- *Performance Based Standards – Vehicle certification rules.*

Changes to these standards will be required to be approved by the ATC as per the existing process for changing PBS standards.

## **2. SELF-ASSESSMENT AND CERTIFICATION**

### **2.1 Background**

Assessors and certifiers play a vital role in the PBS system by assessing vehicle designs and certifying that actual vehicles are built according to approved designs and specifications. Currently all PBS assessors and certifiers are third parties to the manufacture and operation of SMART vehicles. Assessment and certification under the current scheme is mainly operator driven, with the vehicle operator contracting both the assessor and certifier in order to provide evidence of compliance for their particular vehicle.

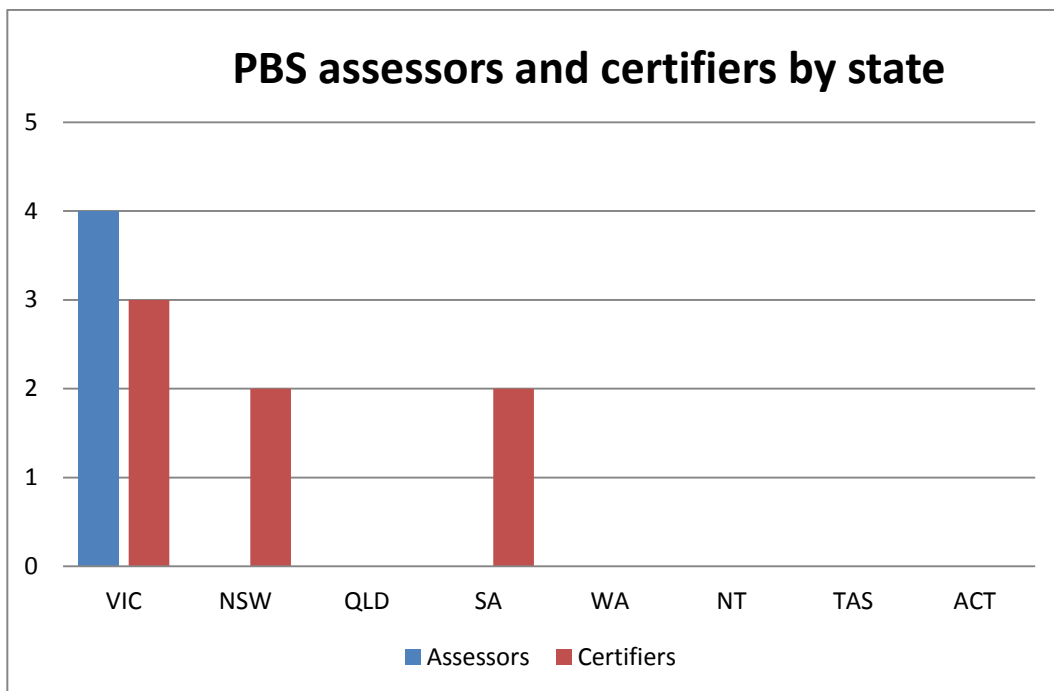
Assessors form a critical component of the PBS approval process, and are commonly one of the first points of contact that potential applicants have with the PBS process. Assessors perform engineering assessment of the vehicle combination against the required standards for safety and infrastructure. In addition, they have the function of guiding the applicant through the PBS approval process, including liaising with the PBS Review Panel and road agencies. Assessors are required to have a good understanding of Australian Design Rules, Australian Vehicle Standards Rules (AVSRs) and international standards. To be allowed to submit a PBS design application to the panel an assessor must be approved by the panel secretariat as being capable of assessing all PBS requirements. While there is scope for individuals to be approved as a 'primary' assessor, who is capable of assessing a limited number of PBS requirements, a primary assessor may not submit applications to the panel.

The role of certifiers is to ensure that the vehicle, as built, matches the design approved by the panel. The certification activities range from taking actual measurements of the vehicle to confirming manufacturer specification and performance to ensure conformance with requirements. The latter is frequently used when checking powertrain requirements (or subsystems, like braking) in which the certifier is not able to independently verify the performance of the component. According to the PBS rules regarding conflict of interest, certifiers must not have been involved in the design or construction of the vehicle that they are commissioned to certify.

### **2.2 Problem – assessment and certification resources**

The current number of approved assessors and certifiers appears insufficient to service higher volumes of assessments should PBS be adopted by a significant proportion of the freight transport industry.

In addition to low numbers of available assessors and certifiers, the geographical distribution of these resources is inadequate to service a national scheme, with all assessors being based in Victoria and the majority of certifiers being located in Victoria and New South Wales (see Figure 35).

**Figure 35. Number of approved assessors and certifiers, by jurisdiction**

While the number and location of third party assessors and certifiers may be market driven, there is little to suggest that, as demand increases, the supply of this much-specialised technical resource will be able to increase to match demand.

It is currently extremely difficult for a new organisation to fulfil the requirements required to become an approved assessor. High barriers to entry into the third-party assessment market include expensive simulation software, access to adequate test facilities, professional insurance and staff experience requirements. These factors will limit the number of independent organisations capable of responding to demand for PBS assessments.

In addition, the current operator-driven focus of the PBS scheme means that similar vehicles are often assessed more than once because each operator of a certain piece of equipment is required to gain compliance for their vehicles. This puts further strain on limited engineering resources and incurs unnecessary cost to industry.

The modular assessment concept detailed in Part 2 (section 1) puts forward a system that would allow manufacturers to be more involved in the PBS scheme and allow them to supply PBS-approved vehicles to the market. It is suggested that for this concept to be successful there needs to be a greater involvement by vehicle manufacturers in the assessment and certification of PBS vehicles. In essence, under the modular concept, the prime mover is only assessed for its powertrain performance, which is well within the capacity of a manufacturer to demonstrate with high levels of accuracy. In this system the requirement that an assessor needs to be able to assess all performance requirements of a combination becomes unnecessary for prime mover modular assessments.

### 2.3 Objectives

The objective of this change is to and improve the quality, distribution and cost of PBS assessment and certification.

## **2.4 Options**

There are broadly three options that may resolve the perceived shortfall of engineering resources required to support a robust national implementation of PBS. These options are detailed below.

### **2.4.1 Option 1: Retain the status quo**

This option would see the system remain unchanged from the current requirements that only allows PBS applications to be submitted by assessors who have been assessed as being capable of assessing all aspects of vehicle performance and are third parties to the design and construction of PBS vehicles.

### **2.4.2 Option 2: Manufacturer assessment and self-certification**

This option would allow and encourage vehicle manufacturers and developers to become accredited assessors and certifiers, able to submit assessments of their own vehicles. This option would be particularly effective when matched with modular assessment.

This change requires the deletion of the conflict of interest rules (clause 6a and 6b of the PBS Vehicle Certification Rules) that prevent manufacturers from certifying designs they have helped develop or produce.

Removing the conflict of interest rules would allow accredited personnel within vehicle design and manufacturing companies to provide evidence of compliance for their own vehicles, further encouraging manufacturer and developer participation in the PBS scheme. Once these companies establish the facilities, processes and experience for PBS certification they may be in a position to offer their service to third parties.

### **2.4.3 Option 3: Manufacturer assessment, retain third-party certification**

This option allows manufacturers to become primary assessors, able to submit assessment of their own vehicles or modules in the case that modular assessment is accepted. It would, however, retain the conflict of interest clauses in the certification requirements, thus requiring manufacturers of PBS equipment to seek third-party certification of vehicles.

## **2.5 Impact analysis**

### **2.5.1 Costs and benefits**

#### **2.5.1.1 Option 1**

This option assumes that increased demand for assessment and certification is able to be met simply by free market forces. However, high barriers to entry into this market mean that there is not perfect competition.

There are limited organisations that have the skills, experience and resources that make them capable of becoming approved assessors and certifiers. Assessors in particular require specific skills that are generally only found in vehicle development or very few third-party, independent research organisations. Since the commencement of the PBS scheme, there has been little

interest from industry in becoming approved assessors or certifiers beyond the organisations that were involved in the development of the scheme.

If demand for PBS engineering services increases while the resources available to provide that service remain stable then it can be expected that the costs of compliance will remain stable or increase.

### **2.5.1.2 Option 2**

The vast bulk of experience, simulation and test capacity reside within the vehicle manufacturers' test and development organisations. Unlocking this capacity could provide a relatively low cost method of increasing the number of vehicle assessors and certifiers available to produce PBS applications and certify vehicles. Consultation with industry has been generally positive, with a number of high-volume truck manufacturers stating an interest in becoming approved assessors if this change is made.

An obvious advantage of manufacturer assessment of a vehicle design is that the manufacturer can amortise the cost of assessment over the entire production run of the vehicle in question, whereas an operator may only amortise the cost of assessment over the number of vehicles in their fleet.

Manufacturers are in a position to change the configuration of their designs before manufacture to better meet the PBS performance requirements. An operator has little leverage to change a vehicle design, and incurs significant additional cost if an existing vehicle is required to be modified to comply with PBS.

Having a vehicle assessed only once by the manufacturer, rather than each time it is used in a combination, would see a reduction in the cost of assessment to operators, reduce assessment load on the PBS Review Panel and cut the time required to get a PBS vehicle on the road.

Manufacturer self-certification will reduce the unit cost of PBS vehicles through manufacturers can build this step into their normal production system at minimal cost. Third-party certification incurs higher per unit costs, and due to the lack of suitable third-party assessors in the market and their geographical location, can incur additional time delays. Time delays mean that manufacturers need to store produced vehicles until certification can be completed, incurring additional storage costs while operators suffer from unavailability of the required equipment.

### **2.5.1.3 Option 3**

This option could encourage greater participation by manufacturers in the assessment of PBS vehicle modules. However, large-scale manufacturers would be less willing to become involved with the scheme if they are required to incur additional costs to have third parties assess their vehicles. This is seen as an unnecessary step by industry because sophisticated manufacturers have high levels of quality control and repeatability in their production systems that ensure vehicles are built to design specifications.

Given the barriers to entry into the third party certifier market are far less than that for assessors, if industry takes up an increased role in assessments it may be possible to rely on market forces to provide an increase in certifiers. Under this option it is expected that the cost of compliance to the end customer is likely to remain stable or reduce slightly.



## 2.5.2 Risks

There is little justification for imposing much higher levels of scrutiny such as third-party certification requirements on PBS applications than for Australian Design Rule applications, which allow self-certification by suitable personnel and cover safety critical requirements such as braking, occupant restraints and visibility.

Road authorities have, however, approached the concept of manufacturer assessment and self-certification of PBS with mixed views. The outstanding issues appear to revolve around the acceptance of responsibility, quality of assessment/certification, trustworthiness and enforcement.

Under Option 2 or 3 manufacturers wishing to assess their own products would need to apply for, and be granted, assessor (primary or full) accreditation (as per the existing business rules), ensuring a minimum level of competence and quality of assessment. Accreditation ensures that assessors have, and maintain compliance with, a quality system, documentation system, continual training and appropriate insurance. Accredited assessors are also able to have their work audited by the PBS Review Panel or its representatives.

Vehicle manufacturers that do not have the experience, resources or the will to become accredited assessors may still utilise the services of accredited third parties as per the existing system.

Under Option 2, if a manufacturer is approved to certify its own vehicles, the responsibility and liability for correct certification will rest with the certifying entity.

Manufacturers wishing to certify their own products would need to apply for, and be granted, certifier accreditation (as per the existing business rules), ensuring a minimum level of competence and quality.

Current vehicle certification rules have provision for conformity of production audits, which ensures that manufacturers' assessments can be audited for quality and consistency with production. Should manufacturer self-certification be accepted into the PBS scheme, the PBS Review Panel secretariat could be called on to conduct regular conformity of production audits for vehicle assessors while state jurisdictions are able to audit certifiers. This will require the PBS Review Panel secretariat to be sufficiently resourced to carry out this work.

Manufacturer-based assessment and certification and the provisions of accreditation and conformity of production audits will bring the PBS scheme into line with other schemes such as the Australian Design Rules certification system.

## 2.6 Consultation

Allowing suitable manufacturers to certify their own PBS vehicles was widely supported. Jurisdictions noted that the criteria that should be met by manufacturers to be allowed to self-certify should be consistent with those applicable for the self-certification of compliance with Australian Design Rules and fitting identification plates under the *Motor Vehicle Standards Act 1989* (Cth). This is on account that these requirements are administered by the federal government's Department of Infrastructure, Transport, Regional Development and Local Government, and that manufacturers would be very familiar with these arrangements.

### The NTC response:

In response to the highlighted concern, the NTC will, on acceptance of Option 2, add a requirement to the approval of certifiers and assessors rules that should a manufacturer wish to certify or assess their own vehicles then they must meet the requirements of being able to submit Road Vehicle Certification System (RVCS) applications.

## 2.7 Recommended option

It is recommended that Option 2 is pursued because it has the potential to gain the maximum industry participation and will reduce the cost of PBS compliance. Option 2 would be most effective when combined with the modular assessment concept.

Risks will be contained through assessment and accreditation of proposed assessors and certifiers, and through periodic conformity of production audits.

## 2.8 Implementation

Implementation of Option 2 would require changes to the following PBS rules:

- *Performance Based Standards – Assessor accreditation rules*
- *Performance Based Standards – Vehicle certification rules*
- *Performance Based Standards – Business rules.*

To properly action the auditing requirements, the PBS Review Panel secretariat would need to be sufficiently resourced and staffed with individuals experienced in, and capable of, carrying out technical audits. Should the PBS scheme be operated by the National Heavy Vehicle Regulator, these resources would not necessarily be exclusive to the PBS scheme but shared with other auditing functions carried out by the regulator, thus reducing the costs.

Changes to these standards will be required to be approved by the ATC as per the existing process for changing PBS standards.