HIGHER PRODUCTIVITY VEHICLES

The next generation in freight transport November 2008



HIGHER PRODUCTIVITY VEHICLES TASKFORCE

VICTORIAN FREIGHT AND LOGISTICS COUNCIL 'Reproduced with permission of Department of Transport, Ministerial Freight Advisory Council' AN INFORMATION KIT DEVELOPED BY THE VICTORIAN FREIGHT AND LOGISTICS COUNCIL'S HIGHER PRODUCTIVITY VEHICLES TASKFORCETO SUPPORT REASONED DEBATEAND PUBLIC AWARENESS

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WHAT ARE HPVS?

Higher Productivity Vehicles or HPVs are truckand-trailer combinations that provide the ability to shift more freight more efficiently, with the spin-off of greater environmental and safety performance.

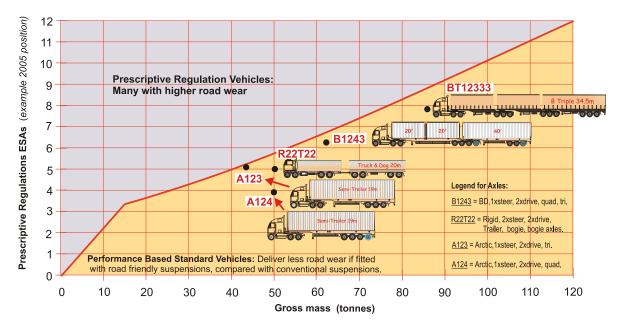
A limited number are already working on Victoria's roads and have been part of an approval and assessment process by VicRoads and other authorities. HPVs have been rigorously trialled and approved under national Performance Based Standards set by the National Transport Commission and thoroughly researched by mechanical, technical and road safety experts. Already 31 different designs have been reviewed and accepted, and access to certain roads granted.

The diagram right, gives a quick comparison of types of freight vehicle to which the NTC's Performance Based Standards apply:

Colourful depictions of HPVs as "monster trucks" are misleading and inaccurate: they are simply different from the B-doubles we are used to seeing. Many of the HPVs have been carefully designed for specific freight tasks, usually high volume transit between two points such as a port and transport hub, between a major industrial area and an interstate site, or between a mine and port. They cannot and never will be used on residential streets and will typically be employed on arterial roads, freeways and designated B-double routes. Even access to local roads would need to be subject to local government approval. HPVs are likely to comprise a quite small but highly productive proportion of the freight vehicle fleet.

Many of the HPVs designed for Victoria's freight tasks have been tested and proven to generate lower or equivalent impact on roads and bridges than existing B-doubles. The bonus with HPVs is their additional safety and handling features and their additional payload, meaning fewer trips are needed to move equivalent volumes of freight. Some tasks are termed "volumetric", meaning the freight takes up cubic space on a truck but is not heavy (eg toilet paper). These tasks are low-impact. Others will need higher mass limits and VicRoads and the Department of Transport have considered where any upgrades to existing infrastructure may be needed.

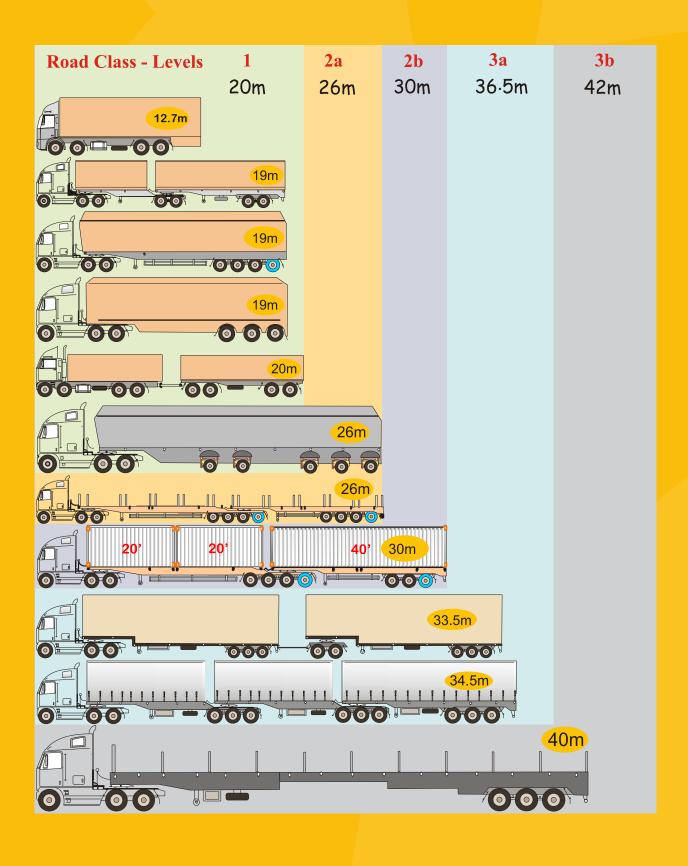
In a comparison of different truck types moving 1,000 tonnes of typical freight, HPVs enable significant savings to be made, through reduced fuel consumption, driver demand, road impact, pollution emissions and truck trips, and increased payload (see diagram, page 10).



Source VFLC 2008, based on earlier research conducted by ARRB 2005-06

HIGHER PRODUCTIVITY VEHICLE CASE STUDIES: EXAMPLES A TO N.

Performance Based Standards Road Class Clasifications:



TRIPLE BOTTOM LINE BENEFITS OF HIGHER PRODUCTIVITY VEHICLES

Social Benefits

Less traffic congestion through fewer truck trips

In 2007 the NTC published a case study about the productivity benefits of using B-triples on

inter-capital routes. The study pointed out that a national line-haul operator with 60 B-doubles and semi-trailers could use B-triples to reduce the number of trips by one in four, reduce operating costs by 22% and save 3.7 million kilometres of truck travel per year.

Natural growth in local and international supply and demand will see the Port of Melbourne handling increased volumes of cargo (see chart below). Combined with urban freight deliveries, this will generate significant growth in vehicle movements through the inner west of Melbourne.

Prudent management is needed to ensure port terminals and roads can accommodate this growth. This includes optimal use of existing infrastructure to maximise efficiencies and

PORT OF MELBOURNE CONTAINER GROWTH TO 2035

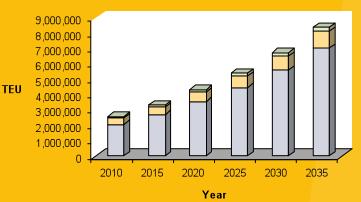
reduce congestion. Port infrastructure and road space are finite physical assets, so the best possible use must be sought.

To help meet these goals the Port of Melbourne's Development Plan outlines a strategy for increasing truck utilisation by encouraging use of HPV-type vehicles, encouraging cargo handling systems and practices that drive efficiency and increasing inbound and outbound load-matching through integrated supply chain systems.

□ Mainland

Bass Strait

International



Container Forecast 2010–2035

Source: Port of Melbourne Corporation



Keeping costs of products down

Real road freight rates have been declining for decades due to improved trucks, roads, information technology, logistics management and competition. Fuel efficiency and labour productivity have both steadily improved.¹ Wider use of HPVs is the next evolutionary step.

Increasing professionalism in the transport industry

Australia's road safety record is good compared with most OECD countries, especially considering the high proportion of undivided roads. While 10% of Australia's road deaths involve large trucks, government figures and accident research shows that the truck driver is not usually responsible.² Australian Transport Safety Bureau statistics show that 80% of fatalities between cars and trucks are the fault of the car driver.³ (In 75.2% of serious truck crashes in 2005, no other vehicle was involved.⁴)

HPVs are operated by highly experienced professional drivers. They are specifically trained for these vehicles. To find out more about their training, see www.deca.com.au

High safety standards for HPVs lower risks on the road

HPVs are required to have the following safety features -

- Front, side and rear underrun protection devices;
- Spray suppression on all axles so passing vehicles are not affected by water spraying up in wet weather;
- Euro 4 & 5 standard engines, with reduced noise and particulate emissions;
- ABS, which prevents the wheels from locking while braking;
- Electronic Braking System, which improves stopping distances and braking performance;
- Electronic Stability Control, active roll stability systems fitted to each trailer to reduce the potential for roll overs;
- Strengthened truck cabins;
- Intelligent cruise control;
- Lane recognition technology that warns the driver of the vehicles deviation from its lane when travelling at speed.

Fewer drivers needed in an industry facing shortages

Research into truck driver employment levels shows that the road transport industry is faced with a critical shortfall in truck drivers within ten to twenty years, though qualitative research concludes that some states such as Western Australia and South Australia are already experiencing a shortage.⁵ Utilisation of HPVs means less drivers are required for the freight task.



5. Truck Driver Recruitment, Retention and Retirement Research Project, www.advancerecruitments.com.au

^{1.} Trucking – Driving Australia's Growth and Prosperity, A report prepared for the Australian Trucking Association, August 2004,ACIL Tasman Pty Ltd

^{2.} Trucking – Driving Australia's Growth and Prosperity, A report prepared for the Australian Trucking Association, August 2004,ACIL Tasman Pty Ltd

Australian Transport Safety Bureau, www.atsb.gov.au
Analysis of serious Australian truck accidents recorded in 2005, National Centre for Truck Accident Research, May 2007, Author: Owen P. Driscoll

Lower emissions from more efficient engines

Emissions of the noxious pollutants known as nitrogen oxides (NOx) and particulate matter (PM) from diesel vehicles are currently four to five times higher than for petrol vehicles. A new standard known as the Euro 5 Directive aims to make diesel engines bridge the gap. Euro 5 limits will reduce emissions of particulates from diesel engines by 80% compared to Euro 4. HPVs must comply with Euro 4 and 5 standards.

Greater concentration means less community impact on inner Western suburbs

The ability of HPVs to handle greater volumes will increase efficiencies at designated freight hubs. This will encourage companies undertaking storage and distribution activities to co-locate at these hubs, which are separate from residential areas and accessed via purpose-built rail and road links.

Environmental Benefits

Fewer truck trips per freight task reduces emissions

According to the Victorian Freight and Logistics Council's HPV case studies of 14 transport companies, the introduction of HPVs – by just this small sample of operators - would result in an estimated 300,000 fewer truck trips each year to complete the allotted freight tasks. This represents payload (deadweight or cube) improvements of between 12% and 50% per vehicle.

Energy consumption per tonne kilometre reduced

In its study of the energy and emissions impacts of operating HPVs, the American Transportation Research Institute concluded that significant percentage increases in fuel efficiency (measured in ton-miles per gallon) were observed for nearly every higher productivity vehicle configuration at various weight increases under a weight-limited scenario. Increases in fuel efficiency were also observed for longer combination vehicle configurations under a cube-limited scenario.⁶

Cleaner engines generate fewer emissions

Trucks account for only 21% of Australia's greenhouse gas emissions by road vehicles and produce just 2.6% of total greenhouse gas emissions. Greenhouse gas emissions from heavy vehicles on a billion tonne-kilometre basis are forecast to decline by approximately 30% over the next 20 years.

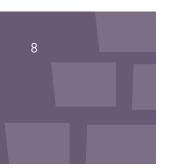
In relation to the freight task, emissions have been steadily declining due to better engines and greater use of larger trucks. Truck engine emission and diesel fuel standards are steadily tightening in order to further reduce pollutant emissions. These standards will eventually produce smokeless emissions.⁷(ACIL Tasman)

Supports growth for rail to intermodal terminals

HPVs have the potential to build up capacity along dedicated routes, which will encourage the development of intermodal (rail-serviced) hubs.

Rail infrastructure and equipment has a high capital cost. But widespread, targeted use of HPVs will enable growth in volume and capacity to provide the increased scale economies to underpin greater rail investment.

Both modes will benefit from efficiencies of shared costs and operational infrastructure.



^{6.} American Transportation Research Institute, http:// www.atri-online.org

^{7.} Trucking – Driving Australia's Growth and Prosperity, A report prepared for the Australian Trucking Association, August 2004,ACIL Tasman Pty Ltd

Economic Benefits

Increased investment by transport companies in new equipment

Trucks provide nearly all urban freight transport and are the only mode available in many country areas. Only about 15% of road freight is contestable (i.e. could also be carried) by rail. Even where other modes (rail, sea or air) are used for part of the journey, trucks provide the connection at one or both ends. Trucks are, and will remain, an integral cog in Australia's domestic and international trade and commerce. Transport operators will always pursue the most efficient performers of the freight task, such as HPVs.

Innovation in vehicle design supports Victoria's role as the leader in this field in Australia

HPVs' TrackAxle, road-friendly, steerable axles are an example of Victoria leading the way. The wheels of the semi-trailer steer to follow the path of the prime-mover: the vehicle tracks along a much narrower path in a corner without any side stress on tyres or pavement.

Another example is the Haulmark extendable trailer, a steerable trailer with the capability to extend to more than double its length, from 17.5 m up to 40 m.

Productivity gains averaging 20%-30% on current transport operations

The table below developed by the Australian Trucking Association illustrates the higher productivity achieved by the use of HPVs to shift 1000 tonnes of freight.

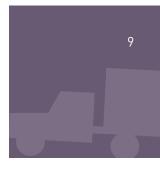
Keeping transport costs down and avoiding inflationary pressures from network congestion and inefficiency

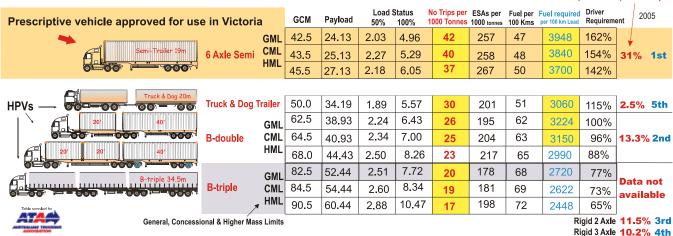
Although Victoria is a compact state transport costs can be a significant part of business, whether local or global, for state-based companies. In turn these costs flow on to the community in the price of goods and services. HPVs access world-leading technology and 'next step' efficiency to keep transport costs low and Victorian businesses competitive.

Extending the productive life of Victoria's assets, including ports and rail yards

Over 150 years of investment has been made by Victorians in State-owned assets such as the port of Melbourne and the Dynon rail yards, as well as our road networks.

HPVs are effective at providing high-volume land transport to service port and rail facilities, ensuring the value of past and future investment is maximised. While some proposed HPV routes will require improvement to extend their capability to handle higher mass limits. greater volumes of freight will be able to be transported more efficiently.





Australia - Annual Laden Kms of Travel (Million-Km) % x Group

HOW DOES DEPLOYMENT OF HPVS RELATE TO GOVERNMENT POLICY?

Leadership in transport and logistics

The transport and logistics sector represents 15% of Gross State Product (GSP). Thus enhanced efficiencies have the potential to represent significant economic impacts.

We compete on our supply chains as much as on the product itself, so any efficiency in the supply chain that can reduce costs will enable capacity for economic and social benefits.

Regional development

Many of the freight tasks best suited to HPVs are goods movement between sites of primary production, regional manufacturing facilities and the ports and major cities, here and on the eastern seaboard. Examples of such goods are timber, dairy, mineral sands, grains, wine, meat and fruit.

The Victorian Government has set an ambitious export target for the state's Food Industry (\$12 billion by 2010) and food industry companies have identified HPVs as playing a major role in delivering this target.

For instance in the grains industry changes to market structure mean that all-year-round deliveries are replacing seasonal peaks. This will generate a dependency on road transport for smaller loadings.

Manufacturing

Victoria produces 65% of Australia's dairy products⁸, particularly for export. Efficient transport options from regional factories to major distribution centre and port are crucial to competitiveness.

Distribution from major manufacturing plants to interstate wholesalers and distributors can be achieved using fewer trucks on linehaul tasks with HPVs.

Innovation

Victoria's transport industry is renowned for its innovation in technology (eg TrackAxle; taxi GPS systems; the International Food Chain Integrity and Traceability Project) and HPV technology will enhance this reputation.

Congestion Management

The VCEC Inquiry into traffic congestion in Melbourne confirmed the large cost burden generated by congestion. Deployment of HPVs is one part of the strategy to manage freight movement in Melbourne.

^{8.} Department of Primary Industries, www.dpi.vic.gov.au. Victoria dominates the Australian dairy industry producing around 6.6 billion litres of milk in

^{2004/05 (}Dairy Australia, 2005). This represented 65% of Australia's milk production and 84% of Australian dairy exports in 2004/05 (Tradedata International).

Infrastructure Capacity

HPVs will support the strategy of gaining greater capacity from existing infrastructure. For instance, an HPV can transfer two FEU (forty-foot containers), which are the dominant import container supplied to Australia, on the one vehicle. This could avert the need for 150,000 truck trips each year. If higher mass is allowed on selected routes, this could rise to over 300,000 truck trips. With growth of container traffic set to double over the next two decades, this is a very important benefit to gaining capacity at the Port of Melbourne and across the road network. This can also be enhanced by off-peak operations and increased load matching.

Deployment of HPVs responds to

- The Victorian Innovation Statement 2008
- Victoria's Next Generation Food Strategy
- Moving Froward in Provincial Victoria
- Meeting our Transport Challenges
- Making the Right Choices: Options for Managing Transport Congestion
- Victorian Ports Strategic Framework
- Investing in Transport: East-West Link Needs Assessment

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WHAT ARE THE RISKS OF NOT PROCEEDING WITH HPVS?

- Foregoing productivity improvements
- Increasing vehicle emissions
- Ageing of fleets and equipment
- Bottlenecks at our ports and rail terminals
- Increasing cost of fuel passed on to customers, reflected in retail prices
- Labour shortages exacerbated, pushing up driver costs9
- Increasing traffic congestion

9. Truck Driver Recruitment, Retention and Retirement Research Project, www.advancerecruitments.com.au "In 2005/2006 employment experienced a decline. If the road transport industry is unable to recruit and retain truck drivers there is potential that in less than twenty years time the workforce will have halved."

WHO HAS BEEN CONSULTED?

Regulators and government bodies such as VicRoads and the National Transport Commission have undertaken various consultation initiatives regarding HPVs.

The Victorian Freight and Logistics Council's own HPV Taskforce consists of transport companies, freight customers, equipment suppliers, regulators, technical specialists, local government representatives and unions.

However, the VFLC recognises there is community concern about large trucks and a low awareness of the facts associated with these vehicles. We believe the community would benefit from greater effort to explain the freight task and how it relates to the everyday experience of Victorians. The HPV Taskforce has set up a website www. hpvtaskforce.com.au through which community, industry and any interested party can question experts about any aspect of HPVs. The website also provides a blog and forum for commentary on issues regarding HPVs, and a range of information gathered on HPVs as a resource for Victoria.

Investment in efficiency generates ongoing confidence and growth. Buyers of HPV

equipment will look to optimise that investment, increasing outputs and profitability. Benefits are

not only captured by the transport operator, they

are shared with Victorians through externality benefits (fewer accidents, emissions, trucks on

the road)

Peak bodies are planning seminars and opportunities to experiencing HPVs (real and simulated), to meet driver trainers and transport companies, and for the experiences from other Australian jurisdictions to be canvassed.

IT'S NOT ABOUT TRUCKS

It's about jobs, quality of life, sustainability and delivering the goods. We are at a watershed in relation to transport in Victoria.

The pressures

Declining workforce Loss of manufacturing Constrained infrastructure Energy supply

traffic congestion population port container trade freight volumes



Carbon cap and trade system Global trading competition Search for transport efficiencies



Innovation/improved technology Productivity – more with less Improved industry practices Investment in infrastructure and equipment Economies of scale Multi-modalism Customer fulfilment

LOCAL GOVERNMENT AND HPVS

Local government understands the productivity benefits of increased payloads on heavy vehicles. Councils with bulk freight, such as timber products, mineral sands and grains, are particularly conscious of the importance of efficient transport for export markets.

The prospect of deployment of HPVs in Victoria has raised a number of concerns expressed by local government representatives. The following material reflects concerns raised with VFLC to date.

Impact on local infrastructure for first and last kilometre access

Councils in Victoria experience a widening asset-renewal gap, as asset lifecycles expire and rate income is insufficient to catch up with replacement schedules. The concern is that deployment of HPVs will decrease the lifespan of assets such as local bridges and exacerbate the problem.

Where higher mass limits are needed for a freight task, upgrades of local roads and bridges to cater for local access will necessitate funds which local councils do not have available or in prospect. Funding programs either require fund matching, or are exhausted/fully committed.

Amenity and public safety concerns

Local councils are the representatives of local communities. In recent years, some local communities have experienced the impact of heavy vehicles accessing industrial sites, on-farm grain storages, cool stores and transport depots along roads lined with residential properties. Noise, dust and fear of collisions affect local people. The media image of larger vehicles plying these roads has local people concerned.

Improved capacity for land use/freight transport planning

Many land use planners advising local councils have a focus on residential development planning and few have expertise in land use/ transport integration for freight movement. A need has been identified for greater guidance and access to expertise in this area for local government staff across the State.

Education for local decisionmakers, advisers and investors

Higher productivity vehicles are not all B-triple vehicles. They are not all larger or heavier than B-double vehicles – they are customised for specific freight tasks. Finding out more about these vehicles and their specific tasks is vital, so that local government councillors, staff charged with asset management and planning responsibilities, and local land use developers, investors and businesses can gain a clearer understanding of their role. Local communities need external support to achieve this.

Road transport suppliers and equipment manufacturers and the customers they serve have a great deal of knowledge about these vehicles and their operation in local communities. The experience of municipalities in other jurisdictions where these vehicles are deployed can be drawn on as well.

This education and awareness process needs to be properly resourced and be inclusive of communities across the State.

SOME COMMON QUESTIONS ASKED BY COMMUNITY MEMBERS

"Trucks will come through local residential areas at all hours of the day and night"

- HPVs are designed for "point to point" high volume freight tasks, so they are most likely to move between freight nodes, such as rail yards, ports and major industrial precincts with distribution centres and warehouses
- They prefer to operate on freeways and major arterials
- Any local site access must be approved by local councils and will be limited to suitable truck routes
- It is true that many HPV operators prefer to work at night, away from commuter peak hours, when they don't experience traffic congestion

"Big trucks are intimidating to other road users"

- Not all HPVs are larger than existing trucks or buses on the road
- HPVs are fitted with specialised equipment
 - Spray suppression making it safer to pass
 - Side and rear underrun protection in an accident, the passenger vehicle is not able to drive under the truck
 - Steerable axles and trailer tracking so that the truck stays in its lane and moves around corners and through roundabouts without impinging on other motorists
 - Speed limiters and GPS devices are fitted to enable tracking and speed control to alert authorities if the truck enters an unapproved road or exceeds the speed limit

"How noisy are these trucks?"

HPVs have to pass strict approval processes and must have quieter engines

Drivers must obey rules and restrictions such as bans on air brakes being used in residential areas

"I live in a rural shire. Will these trucks be used on our gravel roads? How will this be safe?"

Your local council will consider suitable routes for HPVs

It is important for the freight owners and transport operators to undertake good operational planning with farmers and residents along those routes, so that communication and cooperation can work. One example is TimberCorp's Transport Operations Management Plan, where SMS messages and driver UHF communications will alert neighbours and school buses on country roads. Agreed routes, times of operation, driver behaviours and monitoring can all be decided by companies, local Police, VicRoads, councils and residents working together

Timber companies accept a road condition audit and will bring the road back to original condition after harvesting occurs

SOME COMMON QUESTIONS ASKED BY COMMUNITY MEMBERS

"Will this mean fewer trucks on the road?"

HPVs can deliver an increased payload of up to 25% per truck. So for instance where a B Double truck may take 26 trips to move 1,000 tonnes, an HPV will take 20 trips to move that same tonnage.

However, the freight task is growing along with our population and globalisation of our supply chains. To cope with this growth, HPVs will be a major improvement. In the past decade, B Doubles have helped limit the growth of trucks on the road and we expect HPVs to support this.

Won't HPVs make it harder for rail to compete? Why can't the extra freight go by rail?

HPVs are not competing with rail. The tasks they are applied to are already road tasks- they simply make doing that task more efficient.

Not all freight tasks are suited to rail because origin/delivery points are not located near rail terminals, or a just-in-time logistics operation is demanded by customers. However, many freight tasks are suited or adaptable to rail and this is the reason the freight transport industry is supporting investment in rail and intermodal hubs and terminals.

At the moment, 25% of Australia's freight task is moved by rail and around 15% of containers move to and from the Port of Melbourne by rail. Half of Victoria's rail network is shared between passenger and freight services, so demand for passenger train pathways limits the available paths for freight trains. There simply is not enough capacity to put all our freight onto trains, especially when much of it is moving on the busy metropolitan lines.

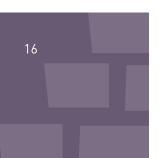
As investment in rail infrastructure and intermodal terminals improves efficiency and reliability of rail, volumes will grow and it will become a more sustainable option.

HPVs play a role alongside rail connecting production sites to railheads and intermodal terminals, helping to grow volume for interstate, regional and port shuttle rail operations.

Westgate Ports has invested in a rail-connected logistics centre at Victoria Dock in the Port of Melbourne, and two intermodal hubs (Altona and Lyndhurst), to deliver a system that will deliver freight efficiently by rail and specialist trucks to intermodal terminals in suburban Melbourne.

"The whole community should support us in using these large vehicles on major arterials at night. They do a point-to-point transfer of freight. They track with GPS, are lit up, and will be safer than any truck on the road. They will reduce congestion, pollution and energy and will improve labour efficiency and safety. The company will increasingly transfer freight to rail once it has built volume, for transhipment to inland hubs."

Michael Haines, CEO, Westgate Ports.



WHAT IS VFLC PROPOSING TO ADDRESS THESE CONCERNS?

- 1. Local road access restricted to the B-double routes (L1, L2A), providing access for HPVs that have no greater impact than a B-double
- Where higher mass limit is sought, a program of asset assessment be undertaken by a State-level body skilled in the task
- 3. A priority list of local access improvements be prepared, based on the size and value of the freight task the infrastructure will support
- 4. A program for asset renewal be developed by the Federal Government through the AusLink program, specifically for first/last kilometre access solutions
- 5. The "First & Last Kilometre Access" fund be targeted to infrastructure where measurable productivity, regional development and congestion reduction benefits can be delivered
- 6. The State Government planning, environment and transport agencies (DPCD, DSE, EPA, DOT and VicRoads) undertake to prepare guidance notes for local council engineers and planning staff on integrated land use and freight transport planning. This would include guides for preparing strategies for freight movement and freight places, protection of local freight access corridors, buffering from adjoining sensitive land uses, and planning for 24/7 transport operations (road, rail, intermodal, sea and air port)

- 7. A bureau of expertise on freight and logistics be established by the State Government to provide advice and guidance to local councils working through issues associated with freight management and associated land use eg: distribution centres, access to retail premises after hours, rail operation noise, hours of operation
- 8. Actions 6 and 7 be undertaken as a priority input to new local strategic plans to be prepared within six months of the 2008 municipal elections
- 9. The HPV Taskforce, supported by State and Federal governments, leads an education and awareness program to provide accurate, balanced information regarding higher productivity vehicles to decision-makers, local communities, freight customers, suppliers and regulators. This will include a suite of initiatives to facilitate informed debate and address community concerns.

