

South West Group

**Economic Development Tour
Melbourne**

4 – 6 April 2016

TOUR REPORT





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BACKGROUND

The South West Group Board has undertaken a number of economic development tours since 2012 aimed at examining best practice and innovation across a range of topics and issues. This provides the opportunity for the Board, Councillors and member Council Directors to gain first hand knowledge on the planning, development and implementation of major initiatives and projects relevant to the South West Metropolitan Region.

The tours completed include the following key themes:

- April 2012 – Activity Centres Tour of Melbourne and Sydney
- April 2013 - Economic Development Tour of South East Queensland covering health and knowledge precincts coastal/marina/foreshore developments and civic/library precincts
- April 2014 – Civic precincts and activation through events, mall redevelopment, light rail, major projects, urban renewal and redevelopment in Adelaide, South Australia.
- April 2015 – Climate change adaptation. Innovation and best practice examples in Melbourne and Sydney.

MELBOURNE 2016 – PORTS, TOLL ROADS AND ITS

The April 2016 economic development tour was undertaken in Melbourne, with the key themes of Ports, Toll Roads and Intelligent Transport Systems (ITS). Particular areas of interest include:

- Port of Melbourne and current management arrangements through the Port of Melbourne Corporation
- Port privatisation and implications for efficiency, economy and community
- Planning for overflow harbour and proposed transition arrangements
- Toll roads, their community acceptance and their effectiveness in reducing congestion and changing road user behaviour
- Private sector involvement in toll roads, contractual arrangements and procurement models
- Toll road technologies, charging and their future application
- ITS policies and programs
- Community acceptance of ITS technologies
- Effectiveness of ITS in managing congestion and reducing travel times
- Emerging ITS technologies

The Melbourne Economic Development Tour was a 3 day tour from 4 to 6 April 2016 and involved presentations by leading agency staff from the Department of Economic Development, Jobs, Transport and Resources (DEDJTR), Department of Treasury and Finance, VicRoads and Port of Melbourne.

This report provides a summary of key outcomes and lessons learnt from the tour.

TOUR OVERVIEW, ITINERARY AND PROGRAM

OVERVIEW

The topics of ports, toll roads and ITS is of interest to the South West Group Board and the region

The WA State Government is planning the sale of Fremantle Port via a long term lease arrangement. Being the trade and economic gateway for the State and the region, the privatisation of this critical facility and associated infrastructure has ramifications for the region.

The Port of Melbourne, managed by the Port of Melbourne Corporation, is the largest container port in Australia (catering for over 2.6 million TEUs/year) and is in the process of being privatised under a medium term lease arrangement. The lessons learnt from the Port of Melbourne Corporation in the management of the port and associated intermodal terminals provided useful insights associated with the privatisation process.

Toll roads have been established in the eastern states cities for some time and form an important role in managing congestion and traffic flows on major transport corridors.

The WA State Government is planning to introduce a freight charge associated with the establishment of a freight network stretching from Muchea (Northlink), through Kewdale (Gateway) to Fremantle (Perth Freight Link). The freight network is expected to carry 85% to 90% passenger vehicles, which will not be subject to the freight charge. Gaining a better understanding of the operation of toll roads and their effectiveness in managing traffic demand is of interest to the Board and the region.

Intelligent Transport Systems (ITS) technologies are being utilised world-wide to better manage congestion and traffic flows in cities. ITS offers applications to make better use of existing infrastructure, thereby avoiding or delaying the need for investments and costs associated with major road upgrades and new roads.

The South West Metropolitan Region has more congestion hot spots than other parts of the Perth metropolitan area and the use of ITS is being seen as a way to move vehicles around more efficiently.

The tour site visits included the Port of Melbourne by boat, Fishermans Bend redevelopment site, Dynon intermodal freight terminals, Eastlink Traffic Management Centre and various ITS sites between Ringwood and Melbourne CBD.

The Itinerary summary is provided below, followed by an outline of outcomes and key learnings from the presentations and site visits.

A copy of this tour report is available from the South West Group website via the following link

<http://www.southwestgroup.com.au/south-west-group/publications/economic-development-tour-reports/>

ITINERARY AND PROGRAM

SOUTH WEST GROUP ECONOMIC DEVELOPMENT TOUR 2016

MELBOURNE, VICTORIA

Day 1 – Ports, Intermodals and Toll Roads (Monday 4 April 2016)

Venue: Mercure Melbourne Treasury Gardens Meeting Room
13 Spring Street, Melbourne

Theme 1 - Ports and Intermodal Terminals (9.00am to 12.00pm)

Time	Presenter	Topics/Issues
8.50am to 8.55am	<i>Mercure Melbourne Treasury Gardens is located next to the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) Head Office at 1 Spring Street</i>	
9.00am to 10.15am	DEDJTR Presenters: Brad Richards (Director Projects and Ports) Nick Easy (CEO Port of Melbourne)	<ul style="list-style-type: none"> • Overview of intermodal terminals servicing the port • Role of intermodal terminals and measures to increase freight on rail • Overview and history of Port of Melbourne • Growth, capacity and economic value to Victoria • Current management arrangements through Port of Melbourne Corporation
10.15am to 10.30am	Questions	
10.30am to 11.00am	Morning Tea	<ul style="list-style-type: none"> • Opportunity for delegation, DEDJTR and Port of Melbourne to network
11.00am to 11.45am	Department of Treasury and Finance Presenter: Nick Rizos (Director Port Transaction Unit)	<ul style="list-style-type: none"> • Rationale and progress in proposed port privatisation • Key issues requiring consideration (efficiency, social and community use of the port, future development, interface with intermodal terminals and inland ports) • Transfer process and potential impacts on Port of Melbourne Corporation (operations, staff, regulatory oversight, price setting and competitiveness)
11.45am to 12.00pm	Questions	<ul style="list-style-type: none"> • Overflow harbour and how this is managed through the tender, contract and lease arrangements

Theme 2 – Toll Roads (1.30pm to 4.00pm)

Time	Presenter	Topics/Issues
1.30pm to 2.15pm	VicRoads Presenter: Peter Holcombe-Henley (Acting Project Director CTW Project)	<ul style="list-style-type: none"> • History and issues that led to introduction of toll roads • Overview of toll roads operating in Melbourne • Community acceptance • Effectiveness in addressing congestion • Behaviour change and increased use of public transport and other modes of transport (cycling, walking) resulting from tolls
2.15pm to 2.30pm	Questions	
2.30pm to 3.00pm	VicRoads Presenter: Zara Fox (Acting Director Commercial Roads)	<ul style="list-style-type: none"> • Private sector involvement in toll roads • Procurement and management models • Contractual arrangements - Transurban (CityLink) and Connect East (EastLink)
3.00pm to 3.15pm	Questions	
3.15pm to 3.45pm	VicRoads Presenter: Peter Holcombe-Henley	<ul style="list-style-type: none"> • Charging tolls and the use of technology • The future of tolls and other routes where tolls are being considered (e.g. Western Distributor)
3.45pm to 4.00pm	Questions	

Day 2 – Site Tours (Tuesday 5 April 2016)

Ports and Intermodals (*Tour Lead – Melissa Poon, General Manager Trade and Marketing, Port of Melbourne Corporation, Tour Lead Fishermans Bend Urban Redevelopment Project - Neal Giles Department of Environment, Land Water and Planning (DELWP) Senior Project Manager*)

8.30am to 9.15am – Travel to Docklands for Port of Melbourne tour

9.15am to 10.45am - Boat tour and briefing by Port of Melbourne Corporation

10.45am to 12.00pm – Visits of Dynon Interstate Rail Intermodal Terminal and Fishermans Bend urban redevelopment area.

Toll Roads (*Tour Lead – Peter Holcombe-Henley*)

1.00pm to 1.30pm – Travel to Eastlink Operations Centre in Ringwood

1.30pm to 3.00pm - Tour and briefing at EastLink Operations Centre

Intelligent Transport Systems (*Tour Lead – Peter Holcombe-Henley*)

3.00pm to 5.00pm – Travel to ITS location to view operation of ITS technologies during PM peak (Eastlink to M1, M1 to Citylink, Citylink to CBD, including Monash overhead gantry and Bernley interchange)

**Day 3 – ITS
(Wednesday 6 April 2016)**

Venue: VicRoads Office – 60 Denmark Street, Kew – 5th Floor Boardroom

**Theme 3- Intelligent Transport Systems (ITS)
(9.30am to 1.00pm)**

Time	Presenter	Topics/Issues
9.00am to 9.30am		Travel to VicRoads Kew Office
9.30am to 10.15am	VicRoads Presenter: Nicholas Fisher Acting Director Road Operations	<ul style="list-style-type: none"> • Overview of Vic Roads Strategic Plan and direction • ITS Policies and Programs • Decision making that have influenced ITS investments • Community acceptance of ITS
10.15am to 10.30am	Questions	
10.30am to 10.45am	Morning Tea	
10.45am to 11.15am	VicRoads Presenters: Wayne Harvey Manager ITS Keith Weegberg	<u>Wayne Harvey</u> <ul style="list-style-type: none"> • Key ITS initiatives tested and currently in operations <u>Keith Weegberg</u> <ul style="list-style-type: none"> • Traffic flow and capacity improvements • Cost benefit factors • Changes in driver behaviours
11.15am to 11.45am	Questions	
11.45am to 12.30pm	VicRoads Presenters: Vincent Vong Steve Bean	<u>Vincent Vong</u> <ul style="list-style-type: none"> • Emerging technologies • The future of ITS and other technologies (e.g. driverless vehicles)
12.30pm to 1.00pm	Questions	<u>Steve Bean</u> <ul style="list-style-type: none"> • Tour of Traffic Management Centre

Port of Melbourne

BACKGROUND

The Port of Melbourne is Australasia's largest maritime hub for containerised, automotive and general cargo <http://www.portofmelbourne.com>

It is a key economic asset for businesses and people across Victoria and south-eastern Australia. The Port of Melbourne has five main operating areas as outlined below.

Current facilities

Port of Melbourne has five main operating areas:

- **Inner Yarra berths** – Swanson Dock, Appleton Dock, Victoria Dock, Coode Island terminals, Southbank terminal
- **Outer Yarra Berths** – berths and terminals that handle liquid and dry bulk products
- **Webb Dock** – East Webb Dock (Tasmanian and general freight) and West Webb Dock (dedicated to vehicle imports and exports).
- **Station Pier** – located at the Port of Melbourne as a multipurpose facility used by cruise ships, visiting navy ships and passenger freight vessels (travelling between Melbourne and Devonport)
- **Gellibrand Pier** – located at Williamstown and dedicated to bulk imports of petroleum products



Terminals

The Inner Yarra berth of Swanson Dock (established in 1969) is primarily a container port and the leading international container terminal in Australasia. It handles around 36% of Australia's container trade, which equates to around 2.6 million TEUs (twenty foot equivalent containers) from 3,000 ships per annum.



Swanson Dock looking toward the mouth of the Yarra River at Williamstown

Australia's largest automotive trade terminal is at the port (Webb Dock) and typically handles up to 1000 new motor vehicles per day.

Multipurpose terminals handle a variety of non-containerised pack types. These include farm equipment and machinery, and breakbulk commodities like timber, paper, iron and steel.

Port precinct

Overall, Port of Melbourne Corporation owns and manages around 510 hectares of port land.

The port precinct, with most of its related infrastructure:

- extends west from the Bolte Bridge to the west bank of the Maribyrnong River
- south of the West Gate Freeway (M1) around Webb Dock.

Earlier locations

Earlier riverside quays for unloading and loading cargo moved downstream along the Yarra River for over a century as the city grew. This process got faster with the development of former port areas into today's Docklands precinct.

Primarily a container port, Melbourne has wide ranging facilities:

- 34 commercial berths
- 7 kilometres of quayline
- around 510 hectares of land.

Heritage listed Station Pier, Victoria's cruise shipping gateway, is also managed by Port of Melbourne Corporation



Station Pier cruise ship terminal

Webb Dock

The Port Capacity Project reconfigured and redeveloped Webb Dock, returning it to its original role as an international container handling facility. The new container handling terminal will be capable of handling the equivalent of at least 1 million containers per annum.

Other works around the Webb Dock precinct include additional screening and landscaping, dock deepening, minor modifications and improvements to nearby parklands, provision for on-site empty container stacking at Webb Dock and construction of noise walls to reduce the impacts of the operations on nearby communities.



Webb Dock, showing north dock in foreground (left) and adjacent west dock vehicle import area (right)

Automotive facilities

An automotive facility has been created on the western side of Webb Dock.

This state of the art facility will deliver additional dock capacity for vehicle export and imports. The works will expand the automotive capacity to handle in excess of 600,000 vehicles annually and will also deliver on-site pre-delivery inspection (PDI) facilities where vehicles can be fitted with custom options and prepared for dealerships.

The Webb Dock redevelopment will directly create around 700 full time jobs and provide a broader competitive environment in the container stevedoring market. It also opens the way for improvements in container handling and transport logistics through automation.

Traffic and transport

In order to facilitate the increased capacity and efficiency of the docks and movement of containers, a key focus is to improve transport links and redirect port traffic away from residential streets.

At Webb Dock, direct road connections onto the M1 West Gate Freeway will be created by closing Williamstown Road to port traffic, west of the intersection of Todd Road and Williamstown Road. According to detailed traffic studies, even with an extra 1 million containers, traffic from the port using the M1 will only account for around 5% of the total traffic.

As part of appointing an operator for the new Webb Dock terminal, the port is planning to implement ways to further reduce the impact of port traffic as well as a range of other productivity improvements including truck scheduling and dedicated port access roads.

Parks and buffers

The Project is committed to the retention of open spaces and improving buffering around the working port.

Upgrade works have taken place at Perce White Reserve in Port Melbourne including new boardwalks and a more family-friendly environment. Some minor modification works are necessary at Westgate Park adjoining the Webb Dock precinct.

There have also been improvements to the port's other 'buffer' zones such as along Todd Road and the Webb Dock perimeter. The creation of a new 'linear' park on port land creates a continuous path which runs from the Yarra River near the West Gate Bridge, through Westgate Park along vacant land near Todd Road and joins up with Perce White Reserve and the Webb Dock trail to a new observation platform at Webb Point.

Funding and performance

The value of the works undertaken in connection with the Webb Dock redevelopment, together with additional investment by the private sector, has been estimated to be in the order of \$1.6 billion dollars.

This amount is fully funded, at no cost to the taxpayer, by Port of Melbourne Corporation.

Environmental management

The Project is being carried out in accordance with a stringent Environment Management Plan (EMP).

The EMP sets out controls and safeguards to protect local port communities along with the natural land and marine environments. It considers matters such as flora and fauna, air quality, noise and vibration, marine ecology, visual amenity and waste management.

The appropriate permits and approvals will govern dock deepening at Webb Dock.

Planning approval

Planning approval has been given by the Victorian Government in recognition of the Project's strict environmental and amenity management processes.

For the purpose of allowing an increased maximum height for container stacking at Webb Dock, in visually sensitive areas container stacking will be limited to 5 containers high while in a less visually sensitive empty container park area the limit will be 7 containers high.

Using on-site land for empty container storage will assist in reducing demand for additional off-site container storage arising from the growth in trade.

Dock deepening

It is necessary to deepen parts of Webb Dock so modern vessels can berth and manoeuvre with sufficient water depth. The deepening works will predominantly occur within the dock area between Webb Dock East and Webb Dock West, and in parts of the dock entrance where ships are turned around (this area is commonly referred to as the 'swing basin').

The works and monitoring of operations will be overseen by a most rigorous EMP.

Project Liaison Group

As part of the Project, a formal Project Liaison Group (PLG) has been established to consult directly with the Project Team and provide an important forum for information exchange. The PLG consists of members who represent a wide range of interests including industry, shipping, community groups, peak bodies and councils.



Webb Dock Operations Areas

PRESENTATION

The Port of Melbourne was established in 1877 and now manages 37% of national container trade, with 2.6 million TEUs per year. Its total annual trade value is around \$96 billion and occupies an area of 510 hectares.

The Port of Melbourne Corporation is responsible for the strategic management and development of the port and reports to Ministers being the Minister for Ports and the Treasurer.

The port is a government owned but self-funded business that returns 50% of earnings (\$33 million last financial year) as a dividend to government.

There are 7 intermodals at or near the port, with 14 empty container parks located in the metropolitan area. Trade has been growing at 6%pa and recent expansion works at Webb Dock will enable the port to handle up to 5 million TEUs, with an optimum capacity of 7 to 8 million TEUs should this be required.

Legislation regarding the sale of the port has been recently passed and this was preceded by a Upper House Parliamentary Inquiry that gathered information and identified issues from a range of stakeholders with an interest in the sale of the port.

The port lease arrangements have built in time frames that provide certainty for prospective investors, as well as flexibility to the State Government should there be a need to intervene (e.g. bringing forward the development of an overflow port). Compensation clauses have been built into the lease contract should any major initiatives impact on the port operators within the initial 15 year term of the 50 year lease.

Further information and background documents on the Port of Melbourne lease can be found via the following link <http://www.portofmelbournelease.vic.gov.au/>

TOUR

The tour was initiated from Docklands and travelled to the mouth of the Yarra River and the Webb Dock area under construction. With 34 berths and over 3,000 ship visits each year, the Port of Melbourne is Australia's largest container port and also handles over 1,000 imported vehicles per year.

Swanston Dock is the main container facility and is well serviced by nearby intermodal terminals and rail links.



Swanston Dock is the Port Melbourne's main container facility



A departing container ship leaving Swanston Dock

The Bolte Bridge and Westgate Bridge provide vital road links for freight transport into and out of the port, as well as cross river links for commuters.



The Westgate Bridge looking north

The Webb Dock is ideally positioned at the mouth of the Yarra River to handle roll on roll off (RORO) trade and is set to be the main car importation facility when completed. Webb Dock is also expected to manage up to 1 million TEUs through a fully automated and state of the art loading/unloading facility.



The completion of construction of Webb Dock will provide additional container capacity and become the main car import facility for the port

LESSONS LEARNT

- The Port of Melbourne has undertaken a transparent and collaborative port sale engagement process that included an Upper House Inquiry that gathered important information for consideration in the sale arrangements and lease agreement
- Careful analysis of port capacity and opportunities for future upgrades and expansion are critical inputs into the sale process and will assist in identifying lease timeframes and conditions, as well as timeframes for the need for transition to an overflow port if required
- Bi-partisan support for the sale of such a significant economic asset and revenue generation facility for the State Government is essential and needs to be undertaken in an open and transparent manner
- The privatisation process provides the opportunity to increase port efficiencies through automation and private sector investment, but needs to ensure that the port remains competitive and positioned for growth in trade from the global context

Fishermans Bend Urban Renewal Area (FBURA)

BACKGROUND

Fishermans Bend is the largest urban renewal area in Australia <http://www.portphilip.vic.gov.au/fishermans-bend.htm>

Plan Melbourne identifies Fishermans Bend as a key part of an expanded central city. The Victorian Government has announced details of the recast and improved Fishermans Bend precinct, putting people back into the decision making process while ensuring the area becomes a vibrant and sustainable community, supporting jobs and economic growth.

The recast will see the urban renewal area of Fishermans Bend almost double in size with a large new employment precinct in addition to Fishermans Bend's four distinct neighbourhoods.

Recasting Fishermans Bend will deliver much needed clarity, certainty and reassurance to surrounding communities and industry, and protect Fishermans Bend from over development while ensuring the provision of community infrastructure such as schools and services reflects best practice urban renewal. New governance arrangements have been put in place for Fishermans Bend.

Over the next 40 years, Fishermans Bend Urban Renewal Area (FBURA) is expected to be home to approximately 80,000+ residents and 60,000+ jobs, representing one of the largest urban renewal projects in the world.



Artist's impression of FBURA

Fishermans Bend Urban Renewal Area is located to the south-west of Melbourne's CBD and covers an area of approximately 455 hectares. It is bound by Williamstown Road and Boundary Street in the south, City Road to the east, the Yarra River to the north, and Westgate Freeway and Todd Road to the west.

The area has five precincts:

- Montague
- Wirraway
- Sandridge
- Lorimer
- Fishermans Bend Employment Precinct

A taskforce of cross-government resources from the Department of Environment, Land, Water and Planning (DELWP), the Metropolitan Planning Authority (MPA), Places Victoria (PV), the City of Melbourne and the City of Port Phillip has been established to lead the planning and infrastructure development of FBURA.

Three of the precincts; Montague, Wirraway and Sandridge are located in the City of Port Phillip. Two precincts, Lorimer and Fishermans Bend Employment precinct are located in the City of Melbourne.



An independent Ministerial Advisory Committee was announced on 21 July 2015 to advise the Minister for Planning on Fishermans Bend.

The Fishermans Bend Ministerial Advisory Committee has reviewed the planning process to date for the Fishermans Bend Urban Renewal Area and provided a report to the Minister for Planning in October 2015. The report includes 40 recommendations, 34 of which have been adopted in full and six in part. Please see the report, summary of the recommendations and the Minister for Planning's response below.

The Ministerial Advisory Committee will also be producing further reports to provide independent advice on the planning and future of Fishermans Bend as the taskforce progresses through their recommendations.

The taskforce will work together with the Ministerial Advisory Committee and the community to develop a blueprint for Fishermans Bend that will transform it into a place for everyone.

The taskforce is developing:

- four detailed Neighbourhood Plans for Lorimer, Montague, Wirraway and Sandridge
- a Fishermans Bend Employment Precinct Plan and overarching Infrastructure Plan for the entire Fishermans Bend area, including transport infrastructure, community infrastructure and open space, environment and water sensitive urban design responses and development contributions
- a draft planning scheme amendment and any proposed implementation actions arising from the development of the plans
- a draft Community Engagement Plan.

Further information is provided in the link below.

<http://delwp.vic.gov.au/planning/policy-and-strategy/recasting-fishermans-bend-for-the-communityace>

LESSONS LEARNT

- The redevelopment of areas in close proximity of a working port requires careful planning and development to minimise conflicts between port operations (a major economic generator for the State) and other uses (residential, commercial, public purposes)
- Fishermans Bend is not only the largest redevelopment precinct nationally, but is also one of the most complex areas with extensive landowner interests, sub-precincts with different objectives and a high level of stakeholder expectations on the scale and form of proposed future development
- There are a number of commercial success stories emerging around niche markets becoming established in the precinct (e.g. skateboarding and clothing industries) which generate other uses (e.g. café's, independent retail outlets) aiming to capitalise on the level of activation
- Limited existing public open space within the previously industrial precincts creates challenges for redevelopment and the provision of adequate future open space for residents and other uses (e.g. schools) through the redevelopment process
- The Metropolitan Redevelopment Authority (MRA) is working closely with the Cities of Melbourne and Port Phillip to facilitate the timely development of the FBURA, however most landholdings are in private ownership and therefore require investment commitments to initiate the redevelopment process

Intermodal Terminals

An intermodal terminal is a location for the transfer of freight from one transport mode to another: for example between road and rail.

Intermodal hubs will have a central role to play in easing the burden on the ports and neighbouring areas. They are also essential if rail is to increase its role in the freight transport and distribution system.

There are 7 intermodal terminals at or near the Port of Melbourne that manage intra, inter and international trade.



Intermodal terminals provide efficiency and handling mode shifts for freight

The Victorian Department of Economic Development, Jobs, Transport and Resources (DEDJTR) are working on a range of initiatives that seek to increase the volume of freight carried on rail in Victoria.

These initiatives focus on the three rail markets in Victoria:

- Interstate, mainly inter-capital city freight, which operates over long distances on the ARTC standard gauge network
- Regional, mainly export trade from regional Victoria and southern NSW, which operates over shorter distances on the V/Line controlled broad gauge network
- Metropolitan, which is a prospective market for rail and is currently handled exclusively by trucks on the arterial road network



Intermodals as 24/7 operations

The largest intermodal terminals and operators in and around the Port of Melbourne are as follows:

Locality	Operator
Dynon	QUBE Logistics
South Dynon	Pacific National
East Swanson Dock	Patrick
West Swanson Dock	DP World
Victoria Dock	QUBE Logistics

Dynon and Victoria Dock

<http://www.qube.com.au/logistics/facilities/victoria>



QUBE Logistics operates the Vic Dock (shown bottom right) and Dynon intermodal terminal and empty container park (above)

QUBE Logistics Victoria operates a number of sites which include Vic Dock Intermodal Terminal, Vic Dock Warehouse facilities, Dynon Intermodal Terminal and Dynon Empty Park, as well as the Somerton and Altona terminals. These facilities can store over 13,000 containers combined.

Pacific National, a subsidiary of Asciano, operates the South Dynon interstate rail terminal, with Patrick (also a subsidiary of Asciano) and DP World operating the East and West Swanson Dock intermodals respectively. Further information is available on the links below.

<http://asciano.com.au/pacific-national>

<http://asciano.com.au/patrick>

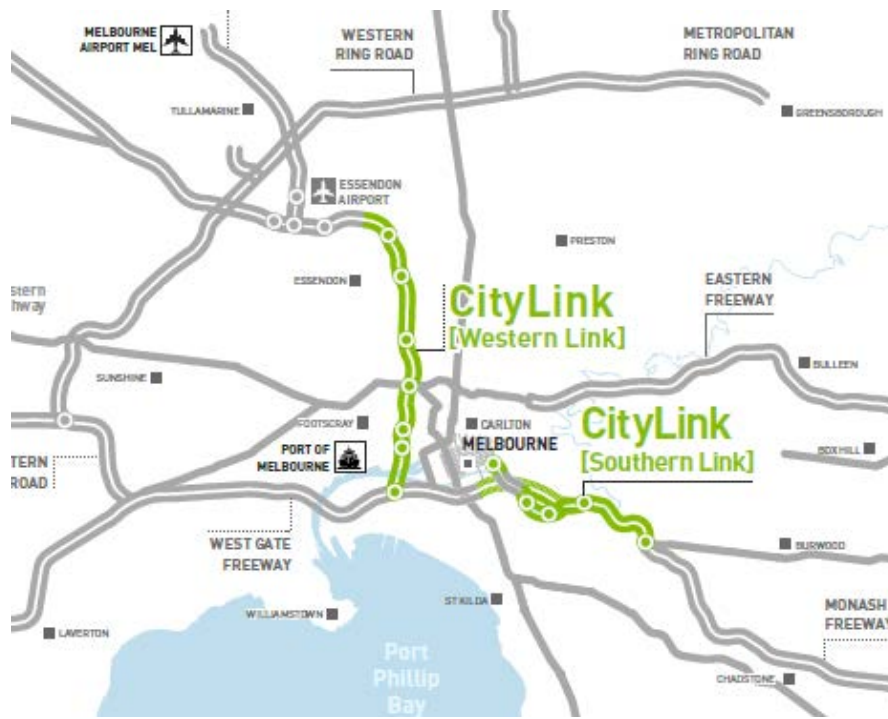
<http://www.dpworldaustralia.com.au/our-locations/melbourne/>

Toll Roads

The CityLink (southern and western link) and EastLink toll roads form the main toll roads in Melbourne, with the planned \$5.5 billion Western Distributor proposing a tolled tunnel to link West Gate Bridge and CityLink as well as other upgrades and connections that will benefit the movement of freight in and around the Port of Melbourne. The Peninsula Link (Southern Way) is a toll-free road, however the State Government provides payments to the operator based on traffic data, thereby sharing the risk.

CityLink

Transurban is an Australian Securities Exchange (ASX) listed company that develops and manages urban toll road networks in Australia and the USA. Transurban operates the CityLink toll road in Melbourne, six toll roads in Sydney and five toll roads in Brisbane.



Melbourne's CityLink showing western and southern links

Opening in 1999 and one of the world's first fully electronic toll roads, CityLink includes 22 kilometres that connects three major freeways being the West Gate, Tullamarine and Monash.

CityLink connects Melbourne's manufacturing hubs and the city centre, port and airport. There are over 2.1 million vehicles registered to use the road.

EastLink

EastLink is the 39 kilometre freeway in Melbourne's east connecting the Eastern, Monash, Frankston and Peninsula Link freeways. EastLink is a tolled section of the M3 freeway linking a large area through the eastern and south eastern suburbs of Melbourne and is part of the Melbourne Ring Road project.



EastLink Toll Road comprises a section of the M3 freeway



Connect East Group is the private company undertaking the financing, design, construction, maintenance and operation of the EastLink tollway.

Both the CityLink and EastLink tolls can be paid using a tag or non-tag account or by purchasing passes (periodic or trip passes).

Western Distributor

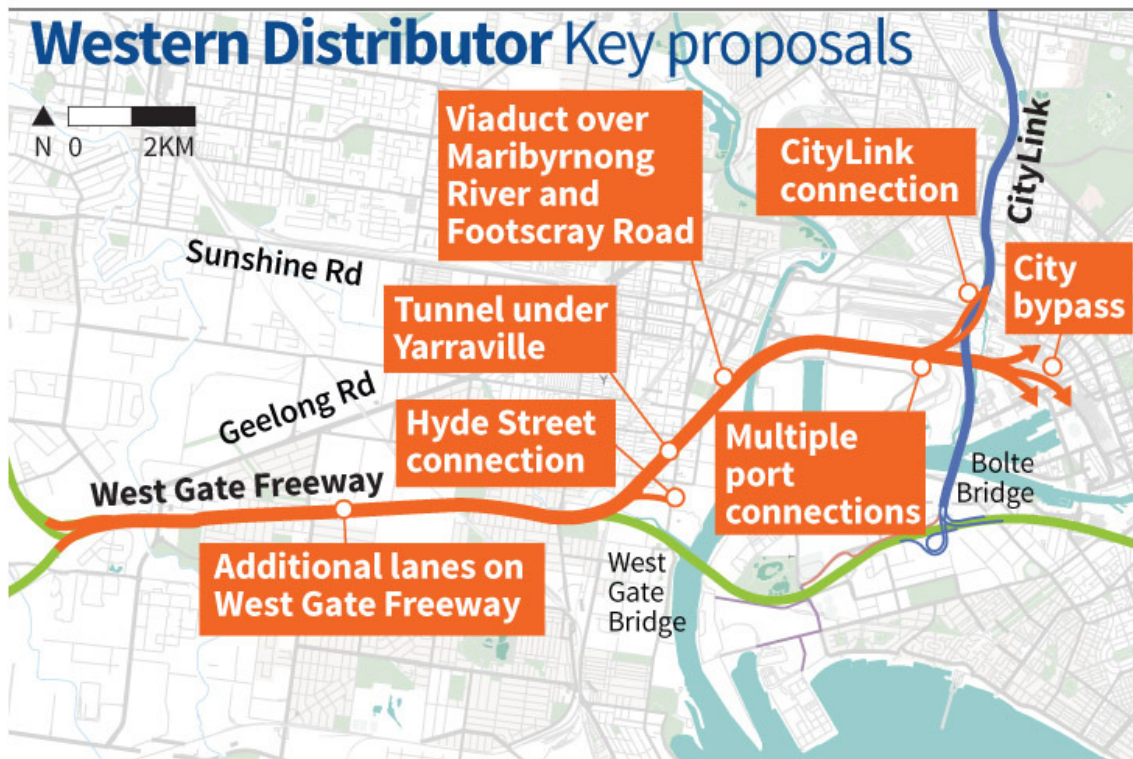
The planned \$5.5 billion Western Distributor was proposed by Transurban to address congestion in the western and northern areas of Melbourne, with the toll being more expensive for trucks (around \$13/truck) compared to cars (\$3/car).

The project will be funded one third by the Victorian Government and includes negotiations for funding from the Federal Government. If successful, the funding for the operator will also be provided through the extension of the CityLink toll concession for a further 15 years.

The unsolicited proposal by Transurban (March 2015) for the Western Distributor involves:

- Upgrade and widening of West Gate Freeway from Wester Ring Road to Williamstown Road
- New connection from West Gate Freeway to CityLink via tunnel at Yarraville and an elevated structure along Footscray Road, including a bridge over the Maribyrnong (second river crossing)
- Tolling plus federal government funding
- Extension of CityLink Concession

<http://westerndistributorproject.vic.gov.au/>



LESSONS LEARNT

- Toll Roads are key components for managing congestion in major cities and provide an opportunity to better align costs with road user funding
- Reduced travel times for road users is a key outcome associated with toll roads
- The expansion of the user pays system for road funding was identified as a key finding and recommendation of the Infrastructure Australia Audit Report 2015
- Declining public sector funding for major road projects and upgrades are Unsolicited proposals for toll road construction and operation are expected to become more common place as the private sector realises opportunities for long term revenue generation associated with toll roads
- The construction standard and the quality of the road user experience for toll roads is generally higher than that provided by publically funded roads, as demonstrated in the EastLink project (northern section) viewed during the tour
- The EastLink Operations Centre in Ringwood and associated traffic control centre uses state of the art technology and advanced communications systems to maximise road user safety, efficiency and travel experience
- The proposed Western Distributor is an unsolicited, private sector bid from an existing toll operator (Transurban – CityLink) involving financial contributions from the Victorian and Federal Governments. The proposed toll will be higher for trucks (\$13/truck) compared to cars (\$3/car) should the project and funding model be accepted

Intelligent Transport Systems (ITS)

ITS, which is a collective term for a broad range of information and communications technology solutions (integrated into road infrastructure, vehicles and public transport networks), work to help reduce congestion, improve mobility, save lives and optimise the value of existing infrastructure.

ITS technologies are becoming an increasingly important component in the management of congestion and road networks.



Real time monitoring supports many ITS technologies

Intelligent transport systems vary in technologies applied, with basic management systems including applications such as:

- car navigation
- traffic signal control systems
- container management systems
- variable message signs
- automatic number plate recognition or speed cameras
- to monitoring applications, such as security CCTV systems

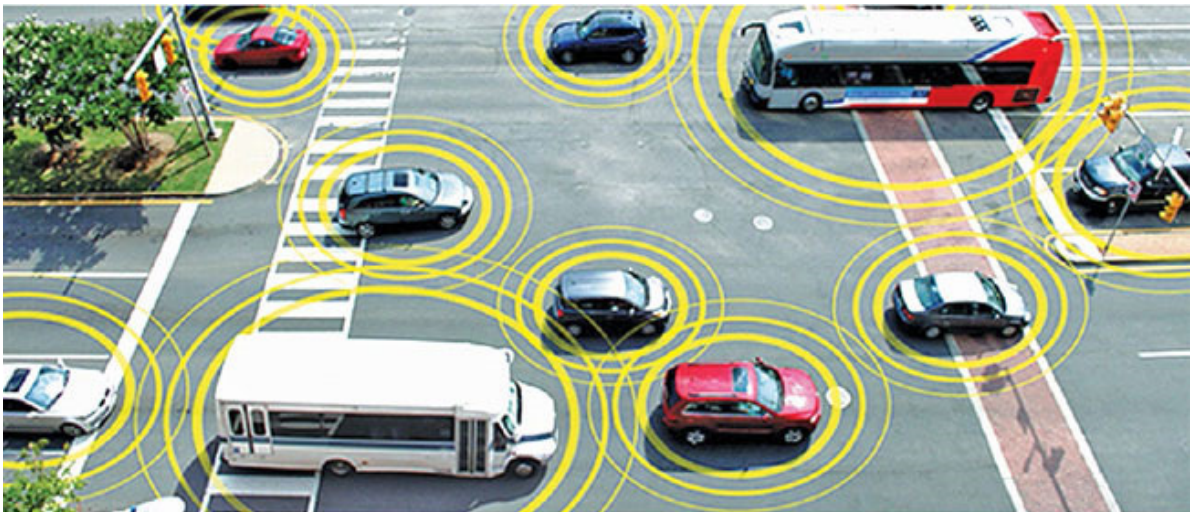
Some of the more advanced applications that integrate live data and feedback from a number of other sources include parking guidance and information systems and weather information.

Additionally, predictive techniques are being developed to allow advanced modelling and comparison with historical baseline data. Some of these technologies include:

- Wireless communications
- Computational technologies
- Floating car data - triangulation for positioning, vehicle re-identification such as toll tags, GPS based methods, Smartphone-based rich monitoring)
- Sensing technologies

ITS technologies include:

- In-vehicle systems – electronic stability control, lane detection, adaptive cruise control, intelligent speed assist etc.
- Vehicle-to-vehicle – intersection arrival, collision avoidance systems and emergency notification systems.
- Vehicle-to-Infrastructure systems – traveller information services (real time navigation, car parking and fuel availability), traffic signal and variable speed control, tolling and freight management systems.



Courtesy: US DOT

In vehicle, vehicle to vehicle and vehicle to infrastructure technologies are likely to be fully integrated in the future

The benefits of ITS include:

- **Improved safety:** Many crashes occur due to the stop-start nature of traffic in congested areas. ITS Technologies can be used to smooth traffic flows and reduce accidents. Information provided through ITS can also be used to direct traffic away from incidents and alert emergency services as soon as an incident occurs.
- **Improved economic productivity, traffic efficiency and reduced congestion:** Congestion lowers productivity, causes flow-on delays in supply chains and increases the cost of business. ITS has the ability to increase productivity, finding innovative ways to get the most out of our existing road infrastructure.
- **Improved environmental quality and energy efficiency:** By smoothing out traffic flows and reducing stop-start conditions, ITS also has the potential to reduce fuel consumption and greenhouse gases.

PRESENTATION

VicRoads provided a number of presentations on ITS from their head office in Kew, Melbourne and included a tour of their traffic management centre.

ITS presents a number of challenges and opportunities for VicRoads, who are planning to increase ITS assets by 30% over the next two years. An expanding road network, ageing assets and systems and reductions in maintenance budgets are key factors that contribute toward ITS decision making.

The development of ITS architecture and associated back end systems are key considerations that need to take into account software and hardware changes over time. ITS has the potential to significantly reduce operational and maintenance costs through performance based contracts and enhanced communication technologies (e.g. NBN fibre, 4G, wireless).

There are significant data management costs and implications associated with ITS and it is important to integrate performance indicators with traffic management controls.

Managed motoways, their integration with arterial roads and monitoring of these systems are important factors that need to combine with enhanced travel planning/information technologies and the expansion of vehicle intelligent systems to be effective.

There are five levels of vehicle automation being:

- No automation
- Driver assistance
- Partial automation
- Conditional automation
- High automation and
- Full automation

The progress in vehicle automation suggest that vehicles are currently between driver assistance and partial automation, however this is expected to change as high levels of automation are introduced and adopted across the industry in the short term.

VicRoads has introduced technologies such as ramp signaling, dynamic speed limits and traveler information as mainstream ITS applications and claims capacity increases/throughput improvements of up to 20% and reliability improvements of between 10% and 50%.

Safety has also improved with vehicle crashes reducing by up to 50%, resulting in lower speeds but improved travel times due to less stop-start traffic conditions.

VicRoads has developed an ITS Road Map to guide activities over the next decade or so. A key driver was congestion, with economic costs ranging from \$1.3 billion to 2.6 billion, and expected to double by 2020. Victoria's Road Safety Strategy 2013 to 2022 has a vision of "zero" deaths and "zero" injuries on their roads. ITS is expected to play an important role in progressing towards these targets.

The road map identifies 48 technologies for implementation over the next 3 to 5 years under seven key focus areas being:

- Freight operations (compliance, truck productivity)
- Intelligent vehicles (automated and cooperative systems)
- Travel information (pre-trip, in trip and third party)
- Traffic management (traffic control, demand management, land use, ramp metering)
- Integrated public transport (level crossing systems, public transport priority)
- Management systems (transport planning and infrastructure management)
- Emergency services (real time messaging, priority setting, incident detection)

VicRoads will adopt various roles to assist in the implementation of the ITS Road Map including public service provider, network investor, network operator, regulation, facilitation/partner and observer.

VicRoads will collaborate with other agencies and stakeholders across a range of areas including policy and programs, road operations, safety and planning, ICT and Austroads.

A detailed action plan to implement the ITS Road Map has been developed across the VicRoads business areas to enable planning to 2020 for required technology.

LESSONS LEARNT

- VicRoads has introduced and manages a range of ITS technologies aimed at improving traffic flows and capacity on major motoways and arterial roads
- ITS is also provided and managed by toll road operators, with communication protocols in place to ensure integration of decision making for the road network
- The VicRoads ITS Road Map is an important plan that was developed involving its business areas and has a high level of organisational support regarding its objectives and responsibilities for implementation. All state road agencies should aspire to prepare a similar plan for evaluation and introduction of ITS technologies
- Collaboration with toll operators on the sharing of data and management of the network is critical for maintaining traffic flows and in responding to emergency incidents
- ITS is an evolving science that will significantly change the ways that technology is used to manage congestion and interact with vehicle applications to achieve safety and mobility benefits
- Integration of ITS technologies with public transport technologies will support road user and traveler decision making on the most efficient and cost effective mode of transport for point to point destinations

SMART ITC REPORT (COMMONWEALTH GOVERNMENT, 2016)

The Australian Government has recently released a report titled “Smart ICT” based on an inquiry into the role of smart Information Technology and Communications (ITC) in the design and planning of infrastructure (House of Representatives Standing committee on Infrastructure, Transport and Cities).

Below is a link to the report and some extracts relevant to transport.

http://www.aph.gov.au/Parliamentary_Business/Committees/House/ITC/Smart_ICT/Report

IBM explained how machine learning can be applied to data gathered via Internet of Things (IoT) to improve transport system.

ICT and the Internet of Things (IoT) empowers us to infuse intelligence into our entire transportation system by instrumenting it with sensors, meters, appliances, cameras, smart phones, biometric devices- giving us the ability to measure, sense and see the exact condition of everything. Instrumentation is about sensing what is happening right now, whether it is the temperature of a train wheel bearing, the location of a misplaced suitcase, metal fatigue in a bridge.

At the same time, sophisticated analytic systems can detect patterns and relationships and enable continuous decision making in near-real time. We can better plan routes and schedules, reduce congestion and optimise vehicles, equipment and facilities to expand capacity. These new traffic systems can improve drivers' commutes, give better information to city planners, increase the productivity of businesses and raise citizens' quality of life.

In a submission to the inquiry, Associate Professor Hussein Dia (Centre for Sustainable Infrastructure, Swinburne University of Technology) discussed the potential offered by intelligent transport systems (ITS):

We have ITS, which have been around for 20 years. I think they are very well accepted in the industry and acknowledged as a means to reduce our reliance on building new roads. Again, roads are limited even by physical space in some cases.

The main issue is how we actually do this paradigm shift into the technology space. So far the approach has been on a project-by-project basis. In Melbourne, we have a number of exciting projects. We have the Monash Freeway, which is a fully managed, or controlled, motorway.

The benefits have been around 42 per cent reduction in travel times, 11 per cent reduction in greenhouse gas emissions, and more than \$2 million savings per day in reduced travel times and delays

Transurban explained how ITS can be used to make a ‘smart’ road:

Smart roads use a freeway or lane-use management system with variable speed signs, overhead lane use signs and ramp metering to ensure traffic is moving as safely and efficiently as possible.

The Queensland Department of Transport and Main Roads (TMR) provided an example of its current efforts in ITS:

Managed Motorways, an operational management program that is being rolled out across Southeast Queensland, employs smart technology to reduce stop-start

travel, improve safety and provide more predictable travel times. Managed Motorways technologies include:

- *Variable speed limit and lane control signs to manage the flow of traffic, improving safety and fuel efficiency;*
- *Coordinated use of traffic lights on motorway on-ramps (ramp signals) to control the rate at which vehicles merge onto the motorway in order to maximise traffic flow;*
- *Travel time and electronic messaging signs to provide drivers with real-time advice about travel conditions*
- *Roadside data systems such as traffic detectors and closed circuit television cameras to quickly detect and respond to incidents and built intelligence on the operation of Southeast Queensland's motorway network; and*
- *Arterial traffic signal optimisation (including interfaces with other systems, such as emergency vehicle pre-emption*

The South Australian Department of Planning, Transport and Infrastructure (DPTI) is also actively using ITS to improve transport networks:

- *DPTI's state-of-the-art Traffic Management Centre (TMC) enabling management of one of the most sophisticated traffic signal systems in the world, and is responsible for the smooth flow of traffic through more than 850 sets of coordinated traffic lights and pedestrian crossings, as well as Adelaide's expressways. The TMC is central to managing traffic impacts from road works, incidents and planned on-road events, using 500 closed circuit television cameras, and automated and/or remotely controlled road signs, such as variable speed limits along the South Eastern Freeway and land use management on the South Road Superway.*
- *Real-time public transport information from Adelaide Metro providing commuters with information on bus arrival times as well as notifications of interruptions to the system, such as major event services, service changes and temporary outages.*
- *Traffic SA website showing real-time road works, incidents and planned events across the state, as well as 45 remotely controlled outback road condition signs across the remote far north of the state.*
- *The Safe-T-Cam system for enforcement of heavy vehicle driving hours.*
- *In-vehicle technologies such as navigation systems, electronic stability control, adaptive cruise control, intelligent speed assist, tyre pressure monitoring etc.*