1.0 Project Overview

The Perth Freight Link project will provide a dedicated, high productivity, east-west freight connection.

It will solve the ‘missing link’ in the Perth Urban Transport Corridor and facilitate linkages between Perth’s strategic industrial areas and Fremantle Port.
1.0 Project Overview

The Perth Freight Link Project comprises two components.

The Perth Freight Link Road Works which include an extension of Roe Highway (and a 1km section of pinch-point widening between Tonkin Highway and Welshpool Road), upgrades to Stock Road and Leach Highway, an extension of Leach Highway (parallel to High Street) and upgrades to Stirling Highway – a package of works called the Perth Freight Link. The capital cost of these proposed works is $1,507.9 million.

The introduction of a Heavy Vehicle User Charge to be applied between Muchea and Fremantle.

Funding

The Commonwealth Government has committed $925 million with the State Government committing $650 million towards the Perth Freight Link. The State Government’s contribution comprises $591 million in new funding, plus $59 million which is already committed for upgrades on High Street, Fremantle.

Part of the State Government’s contribution will be recouped from the Heavy Vehicle User Charge collections.

Benefits

The project completion in 2018/19 will deliver critical improvements to the Perth Urban Transport Corridor (PUTC) – which remains a key economic enabler of the State’s $250 billion economy. The Perth Freight Link will facilitate freight movements between Perth’s key industrial precincts, interstate gateways and the Fremantle Port.

The PUTC plays a critical role for the State’s resources sector, facilitating the movement of essential industry supplies for mining and resource processing sites in the State’s North West. This is a massive logistics task that is expected to triple to 14 million tonnes by 2030.

Benefits (cont’d)

The Perth Freight Link is economically viable with a base Benefit Cost Ratio of 2.8.

Construction of the Perth Freight Link will see a 9 ½ minute travel time saving and a $8.15 saving per trip for freight vehicles (Kwinana Freeway to Fremantle).

In tangible terms the purpose built freight route will:

- Bypass 14 traffic lights resulting in less delay and frustration for heavy vehicles;
- Benefit the community by having 500 fewer trucks per day on sections of Leach Highway by 2031, reducing noise and increasing mobility by removing slower vehicles from the road; and
- Improve access to the Murdoch Activity Centre and Fiona Stanley Hospital.
1.0 Perth Freight Link Road Works Project Overview

**$840 million**
Vehicle operating cost savings

**13 km**
Corridor

**$164 million**
in safety benefits

**14 traffic lights**
bypassing

**450,000 tonnes of CO2**
equivalent saved by 2031

**2400 jobs**
created

**$2.5 billion**
travel time savings

**$344 million**
in reliability benefits

**Northlink**

**Northlink Tonkin Grade Separation**

**Gateway WA**

**Perth Freight Link**

**Over 400 environmental offsets**

**An estimated 500 trucks removed per day**

from Leach Highway by 2031

**Estimated heavy vehicle productivity savings/trip**

Kwinana Freeway to Fremantle

**$8.15**
Vehicle operating cost

**9.5 minutes**
Travel time
2.0 Strategic Alignment

The project delivers on Commonwealth and State priorities and policies to support growth, improve productivity and liveability in the State.

The provision of a purpose-built east–west freight corridor is consistent with the Australian Government’s significant road and rail investment programs, as well as both Commonwealth and State government policies that seek to improve freight efficiency, port access and connectivity to metropolitan industrial centres.

The separation of freight and local traffic will enhance the road network’s safety and social amenity, achieving several State and national priorities for improved safety and ensuring consistency with metropolitan planning directions.

The introduction of a user charge is consistent with Commonwealth policy agendas that recommend charges to facilitate more effective and efficient use of the road infrastructure.

Figure 1: Strategic alignment of project objectives with policy

<table>
<thead>
<tr>
<th>Commonwealth Policies</th>
<th>Problem Statement 1:</th>
<th>Problem Statement 2:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Road and Rail Investment Programmes</td>
<td>Growth in freight traffic on mixed-use routes is adversely impacting public safety and social amenity in the southern suburbs.</td>
<td>Suboptimal access to the port and to key strategic industrial areas is leading to reduced freight efficiency.</td>
</tr>
<tr>
<td>National Infrastructure Plan</td>
<td></td>
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<tr>
<td>National Land Freight Strategy</td>
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<tr>
<td>National Ports Strategy</td>
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<tr>
<td>National Road Safety Plan</td>
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</table>

<table>
<thead>
<tr>
<th>State Planning Policies</th>
<th>Problem Statement 3:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directions 2031 and Beyond</td>
<td>Fiscally constrained government resources are limiting the ability to address the freight efficiency and productivity issues.</td>
</tr>
<tr>
<td>Draft Moving People Network Plan</td>
<td></td>
</tr>
<tr>
<td>WA Regional Freight Transport Network Plan</td>
<td></td>
</tr>
<tr>
<td>Draft Perth Freight Transport Network Plan</td>
<td></td>
</tr>
<tr>
<td>Draft State Port Strategic Plan</td>
<td></td>
</tr>
</tbody>
</table>

Infrastructure Australia Strategic Policies

- Increasing Australia’s Productivity
- Building on Australia’s Global Competitive Advantage
- Developing Australia’s Cities and Regions
- Improving Social Equity and Quality of Life in Our Cities
The strategic urban transport corridor has a ‘missing link’ between Fremantle Port and Roe Highway at Kwinana Freeway.

Currently freight vehicles are using fragmented and inefficient sections of the network (e.g. Leach Highway, Kwinana Freeway and High Street).

They are mixing with commuter, arterial and local traffic contributing to an already acute congestion problem at peak periods while diminishing community amenity and road safety.
3.0 Current Challenges

The State’s rapid economic and population growth over the last few years has exacerbated the problems.

Western Australia has experienced significant economic growth and development in the 18 years to 2012-13. Long-run growth in Gross State Product has averaged 4.5%, outstripping the national rate in all but 4 of the past 18 years (Figure 2).

Overall business investment in Western Australia peaked in 2012-13 at $74.7 billion. While there has been a softening in the prices paid for Western Australia’s natural resources, the outlook for production is positive. The resource sector is moving from the construction phase to production phase.

The shift from construction to operations will curb some growth in business investment. The projections for business investment is for a tapering off at a relatively orderly rate by 2017/18 (Figure 3). However overall real level of business investment is still expected to remain high relative to previous years.
3.0 Current Challenges

WA’s recent economic performance has brought with it strong population growth and increased road congestion.

Western Australia’s population growth has considerably outpaced the national rate over the past decade. State population growth averaged 2.6% per annum to June 2013 compared to the national average of just 1.6% (Figure 4).

Perth’s southern Local Governments, in particular, have experienced solid population growth, averaging above 2% per annum over the past decade and collectively representing over 17.4% of the population of the greater metropolitan region as at June 2013.

Road congestion, measured using motor vehicle registrations has increased by over 17% between 2009 and 2014 (Figure 5). This represents the second highest rate of growth in the country.

Given the nature of the State’s growth profile, the transport and logistics sector has had to expand significantly to support these economic drivers.

8 Perth Freight Link Executive Summary
3.0 Current Challenges

The State’s rapid growth has placed pressure on the transport system.

Increasing demand for goods and services has seen the volume of containers imported and exported through Fremantle grow. Overall, the volume of container traffic has seen throughput increase by almost 70% between 2003-04 and 2013-14 (Figure 6).

Rail is currently handling 14.2% of the freight transport task from the port. Even if rail continues to grow its market share and reaches the State Government’s target of ‘30% allocation of the freight task’ it is evident that a sharp increase in the road freight task is required to meet the projected trade volumes.

As an overall solution to this challenge rail is not well suited to the short haul distances that are required between Fremantle and Kewdale. Rail is most effective over long haul or with bulk commodities where the impost of the double handling for the ‘last mile’ delivery by road transport does not represent as higher proportion of the overall transport costs.

The projections of the freight task show a rapid rise in volumes (Figure 7). For rail to be effective requires the coordinated investment of Government, rail operators and terminal operators. Experience in other jurisdictions where investment has been made to lift rail productivity and capacity have unfortunately not delivered the results that are required to address the freight problems in Perth.
3.0 Current Challenges

The State Government’s strategic direction is to maintain the inner harbour and optimise its capacity.

While the location of the port presents challenges for the facilitation of freight movements it will continue as a working port to support the State’s development. The State continues to invest in the development of the inner harbour to increase and optimise the inner harbour’s capacity (Figure 8).

As with many major cities, the community has ‘grown up’ around the port, leading to conflicting priorities between community amenity and freight and industrial efficiency considerations. There is a need to develop a solution that ensures efficient port access while at the same time managing the community amenity issues.

As the Inner Harbour reaches capacity the new container port facilities in the outer harbour in Cockburn Sound will be developed as the second location for container handling facilities. The transport challenge is to ensure that:

- The continued investment and growth in Inner Harbour is supported for the short, medium and long term; and
- The new container port facilities in the outer harbour in Cockburn Sound have efficient transport linkages.

Perth Freight Link fully addresses the first challenge. The Roe Highway extension section will be required to service the outer harbour in the longer term.
### 3.0 Current Challenges

The Perth Freight Link Project and Heavy Vehicle User Charge will resolve three fundamental problems that currently face the freight industry, the local community and Government.

<table>
<thead>
<tr>
<th>3.1 Growth in Freight Traffic on Mixed Use Routes</th>
<th>3.2 Reduced Freight Efficiency and Productivity</th>
<th>3.3 Fiscal Constraints</th>
</tr>
</thead>
<tbody>
<tr>
<td>Growth in freight traffic on mixed-use routes is adversely impacting public safety and social amenity in the southern suburbs.</td>
<td>Suboptimal access to Fremantle Port and key strategic industrial areas is leading to reduced freight efficiency.</td>
<td>Fiscally constrained government resources are limiting the ability to address the freight efficiency and productivity issues.</td>
</tr>
</tbody>
</table>
3.0 Current Challenges

3.1 Freight Traffic on Mixed Use Routes

Growth in freight traffic on mixed use routes has resulted in poor outcomes for public safety and social amenity for the community. In conflict with the prevailing residential land use the number of heavy vehicle trips has substantially increased over the past seven years; as shown in Figure 9.

Figure 9: Heavy vehicle traffic volumes at continuous traffic monitoring locations in project area – average weekday movements (heavy = classes 3-12)

- **A: Roe Highway west of Willeri Drive**
- **B: Kwinana Freeway South of Roe Highway**
- **C: Leach Highway West of Stock Road**
- **D: Stirling Highway, North of Canning Highway**
3.0 Current Challenges

3.1 Freight Traffic on Mixed Use Routes

The higher concentration of heavy vehicles, combined with the sustained heavy vehicles growth, is compromising the appropriate land use activities adjacent to the road network, local access to activity centres and the efficiency of the freight and logistics chain.

The adverse impact on public safety from the mix of heavy and light vehicles (Figure 10) is demonstrated by the high percentage of crashes involving heavy vehicles (Figure 11).

There are a higher proportion of crashes involving heavy vehicles in the southern suburbs than the 5.4% metropolitan average (Figure 11).

Furthermore, community concerns over noise, air quality and safety around Leach Highway and High Street are long running and well documented with the inefficient heavy vehicle bans being instigated to remove conflicts.
3.0 Current Challenges

3.2 Reduced Freight Efficiency and Productivity

The high volume of freight traffic along Leach Highway is constrained by regular 'stop-start' traffic as a result of the large number of traffic lights. Freight efficiency and reliability is a problem as illustrated by the variability in average driving speeds, increasing delays and flow breakdown.

This is affecting productivity with the value of output per urban road freight per tonne travelled in WA having fallen by 4% in real terms between 1990-91 and 2011-12, which is in stark contrast to the rest of Australia whose freight per tonne travelled increased by 5%.

Figure 12: Reliability of travel speeds – Kwinana Freeway (Berrigan Drive to Leach Highway)

Figure 13: Cost and time of acceleration from traffic lights

Figure 14: Average delay at major intersections along Leach Highway in morning (AM) peak
3.0 Current Challenges

3.3 Fiscal Constraints

Fiscally constrained Commonwealth and State governments have limited capacity to provide the required interventions. In particular, both levels of government have seen increased levels of net debt and a deterioration in actual and expected operating balances. Given these constraints, any intervention will need to consider the minimisation of implementation and whole-of-life costs. This is limiting the required investment in economic infrastructure such as ports, railways and roads.

The historical trend has indicated a relative decline in funding of road-based infrastructure compared to other modes. There has been a shift to fund transport infrastructure that provides strong opportunities for cost recovery and revenue generation, such as ports and railways.

There has been limited opportunity within Western Australia to recover costs from public road infrastructure projects.

The Perth Freight Link project will see both the private sector through the Heavy Vehicle User Charge and Government funding being used to deliver much required road infrastructure.
3.0 Current Challenges

The drivers to these problems are expected to continue and will exacerbate safety, amenity and freight efficiency issues.

The Western Australian Planning Commission (WAPC) expects an additional 50,000 people to reside in Perth’s southern suburbs between 2014 and 2026, with an extra 436,000 people residing in the metropolitan area over this same period.

In line with this growth in population, motor vehicle registrations are expected to increase by 1 million to 3.1 million by 2020 (a 50% increase from a baseline of 2.1 million in 2012) and the road freight task to also increase by 70% between 2012-13 and 2026-27 to service Fremantle Port (Figure 17).

The sum impacts will result in unprecedented demand for the road network. As modelled by Main Roads WA’s regional operational model (ROM), significant increases in heavy vehicle numbers are expected on key parts of the road network by 2021 and 2031 (Figure 18).

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3.0 Current Challenges

The forecast increases in heavy vehicle volumes will outstrip growth in light vehicle volumes and will impinge upon network capacity.

Table 1 outlines the worst performing links where volume is close to, or exceeds capacity during both peak periods in all forecast years. Several links were operating above the theoretical capacity in 2011 and the data indicates the situation deteriorates by 2021.

Furthermore, Table 2 shows the intersection performance of the Leach Highway/Stock Road intersection which would incur a significant worsening in forecast performance. This is illustrated by much higher average delays, longer queue lengths along Leach Highway (well over 1 km in some instances) and a degree of saturation well over 100%.

### Table 1: Traffic volumes as a percentage of theoretical capacity at key points on the freight network – 2011, 2021 and 2031, peak periods

<table>
<thead>
<tr>
<th>Link</th>
<th>2011</th>
<th>2021</th>
<th>2031</th>
</tr>
</thead>
<tbody>
<tr>
<td>PM Peak (4-6pm)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roe Hwy west of Karel Avenue Westbound</td>
<td>83%</td>
<td>101%</td>
<td>113%</td>
</tr>
<tr>
<td>Kwinana Fwy south of Roe Hwy Southbound</td>
<td>109%</td>
<td>111%</td>
<td>98%</td>
</tr>
<tr>
<td>Kwinana Fwy south of Leach Hwy Southbound</td>
<td>67%</td>
<td>107%</td>
<td>115%</td>
</tr>
<tr>
<td>Moolyeen Rd north of Leach Hwy Southbound</td>
<td>105%</td>
<td>109%</td>
<td>116%</td>
</tr>
<tr>
<td>North Lake Rd north of Leach Hwy Southbound</td>
<td>72%</td>
<td>76%</td>
<td>84%</td>
</tr>
<tr>
<td>AM Peak (7-9am)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roe Hwy west of Karel Avenue Westbound</td>
<td>81%</td>
<td>110%</td>
<td>116%</td>
</tr>
<tr>
<td>Kwinana Fwy south of Roe Hwy Northbound</td>
<td>110%</td>
<td>134%</td>
<td>101%</td>
</tr>
<tr>
<td>Kwinana Fwy south of Leach Hwy Northbound</td>
<td>59%</td>
<td>87%</td>
<td>95%</td>
</tr>
<tr>
<td>Moolyeen Rd north of Leach Hwy Northbound</td>
<td>109%</td>
<td>112%</td>
<td>120%</td>
</tr>
<tr>
<td>North Lake Rd north of Leach Hwy Northbound</td>
<td>76%</td>
<td>87%</td>
<td>90%</td>
</tr>
</tbody>
</table>

### Table 2: Leach Highway / Stock Road intersection performance, peak periods – current, 2021, and 2026

<table>
<thead>
<tr>
<th>Year</th>
<th>Period</th>
<th>Vehicles per hour</th>
<th>Overall LOS</th>
<th>Average delay (sec)</th>
<th>Maximum queue length on Leach Hwy / High Street</th>
<th>Maximum DOS on Leach Hwy / High Street</th>
</tr>
</thead>
<tbody>
<tr>
<td>2014</td>
<td>AM peak</td>
<td>5012 E</td>
<td>63.0</td>
<td>439m (Leach Hwy east)</td>
<td>97% (Leach Hwy east)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PM peak</td>
<td>5027 E</td>
<td>55.6</td>
<td>275m (Leach Hwy east)</td>
<td>91% (Leach Hwy west)</td>
<td></td>
</tr>
<tr>
<td>2021</td>
<td>AM peak</td>
<td>5891 F</td>
<td>203.9</td>
<td>1,013m (Leach Hwy east)</td>
<td>127% (Leach Hwy east)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PM peak</td>
<td>5707 F</td>
<td>140.7</td>
<td>565m (Leach Hwy east)</td>
<td>114% (Leach Hwy east)</td>
<td></td>
</tr>
<tr>
<td>2026</td>
<td>AM peak</td>
<td>6246 F</td>
<td>248.7</td>
<td>1,175m (Leach Hwy east)</td>
<td>138% (Leach Hwy east)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PM peak</td>
<td>6023 F</td>
<td>165.4</td>
<td>663m (Leach Hwy east)</td>
<td>121% (Leach Hwy east)</td>
<td></td>
</tr>
</tbody>
</table>
The Perth Freight Link project consists of both a physical road solution and the adoption of a Heavy Vehicle User Charge on sections of Perth’s major freight network.

The proposed roadworks will provide significant improvements in freight transport efficiency, road safety and general amenity across key sections of the Perth Urban Transport Corridor (PUTC).
4.0 Perth Freight Link Roadworks

4.1 Overview

The project’s roadworks consists of the following key elements:

1. an extension of Roe Highway,
2. a 1km section of pinch-point widening between Tonkin Highway and Welshpool Road,
3. upgrades to Stock Road and Leach Highway, and
4. an extension of Leach Highway (parallel to High Street) and upgrades to Stirling Highway.

In conjunction with Gateway WA and NorthLink WA projects, the Perth Freight Link road works will deliver a purpose-built freight route between Muchea and Fremantle which includes 58 kilometres of grade separated highway.

Alternative options and innovation will be explored as part of the tendering process, to seek to improve the route’s operation, reduce property impacts and further enhance community amenity.
4.0 Perth Freight Link Roadworks

4.2 Roe Highway

Central to the Perth Freight Link is the 5.2 km extension of Roe Highway from the current terminus at Kwinana Freeway in Jandakot to Stock Road in Coolbellup.

This extension will complete the freight link between the inner south-western suburbs and key freight networks in the south, east and north of the Perth metropolitan area. In particular, it will provide an appropriate freight connection between Fremantle Port and the primary freight routes along the existing Roe Highway, Tonkin Highway and other highways in the Perth metropolitan area.

The extension will pass through the residential suburb of Bibra Lake to the east, a section of the Beeliar Regional Park between North Lake and Bibra Lake, and the residential suburb of Coolbellup to the west.

Scope of Works

- A 5.2 km extension of Roe Highway constructed to a four-lane dual-carriageway standard from Kwinana Freeway to Stock Road in Coolbellup;
- An upgrade of the existing trumpet-style interchange on Kwinana Freeway to a four-legged systems interchange;
- Construction of a free-flow trumpet-style interchange on Stock Road at the western end of the proposed extension;
- Two additional grade-separated interchanges along the proposed route – one at Murdoch Drive and the other at North Lake Road; and
- Construction of overpasses at Bibra Drive, Progress Drive and Coolbellup Avenue / Sudlow Road to maintain the connectivity between areas north and south of the highway.
- 1km of widening between Tonkin Highway and Welshpool Road to alleviate a pinch-point on the Heavy Vehicle Charging Network.

Direct Benefits

The extension of Roe Highway from Kwinana Freeway to Stock Road will provide a purpose-built freight route which will complete a key transport component of the Metropolitan Regional Scheme.

The extension will provide improved access to the Murdoch Activity Centre, Murdoch University, Fiona Stanley Hospital and St John of God Hospital, ameliorating looming congestion concerns and improving community amenity for residential areas situated on and around Leach Highway.

The new freight route will provide better connectivity and reduced congestion on the regional road network and ensure compatibility between land use and road function. This will deliver an efficiency dividend for the freight industry while at the same time delivering improved amenity on the regional road network for the community.
4.0 Perth Freight Link Roadworks

4.3 Stock Road Upgrade

The base road concept includes upgrades to a 4.3 km section of Stock Road between the Roe Highway extension and Leach Highway to a six-lane urban arterial route. This section of Stock Road is currently a four-lane divided urban arterial road.

The Stock Road and Leach Highway intersection is a critical juncture for freight vehicles travelling to and from Fremantle Port and along Stock Road. It is surrounded by high-value commercial property located within the intersection’s south-west and north-west quadrants.

Scope of Works

- an upgrade of Stock Road between South Street and Leach Highway to a six-lane highway with a median barrier or median treatments;
- construction of an overpass at Winterfold Road and a grade-separated interchange at South Street;
- local road access between South Street and Leach Highway will be rationalised with left-in, left-out access at Garling Street / Stockdale Road, Sainsbury Road and Absolon Street; and
- construction of a new 4 lane connection between Stock Road and Leach Highway which removes the need to pass through the intersection.

Direct Benefits

The proposed works will achieve improved freight travel times and reliability outcomes. The proposed access arrangements will continue to adequately service the O’Connor industrial area while improving safety along the route.

The construction of a new four lane connection between Stock Road and Leach Highway removes the need to pass through the intersection and reduces the grade that heavy vehicles need to negotiate.

The new connection will take-off from Stock Road and re-enter Leach Highway at the median lanes; thus allowing freight vehicles to travel without the need to merge with other traffic and also maintain speeds of around 60-70 km/h through the intersection. The works are expected to result in a significant improvement in heavy vehicle travel times and a reduction in vehicle operating costs, emissions and noise.
4.0 Perth Freight Link Roadworks

4.4 Leach and Stirling Highway Upgrades

This section of the base road concept is 3.9 km in length and includes upgrades to part of Leach Highway, an extension of Leach Highway (parallel to High Street) and an upgrade to part of Stirling Highway. The upgrade of Leach Highway is from Stock Road to Carrington Street. The extension of Leach Highway is in a trench from Carrington Street to Stirling Highway parallel to High Street. The upgrade of Stirling Highway is from High Street to north of Marmion Street.

Scope of Works

- a new fully grade-separated four-lane arterial road from Leach Highway east of Carrington Street to Stirling Highway north of Marmion Street; the road will pass under Carrington Street into a trench to the south of the existing High Street. The trench will continue under the existing High Street and Marmion Street without connection, tying-in with Stirling Highway north of Marmion Street;
- minor changes to High Street for non-freight traffic which will run parallel with the extended new grade-separated Leach Highway; and
- conversion of the existing signal-controlled intersection of High Street/Leach Highway and Carrington Street into a roundabout with High Street connecting from the west and east-facing ramps onto Leach Highway.

Direct Benefits

The proposed upgrade works along Leach Highway (High Street) are expected to see a substantial reduction in traffic volumes along High Street. Noise mitigation measures to reduce the impacts of heavy vehicle traffic will directly benefit residents of High Street. The removal of large freight vehicles from Leach Highway (High Street) will improve traffic safety, free up capacity and facilitate the redesign of the road to better cater for local road access, direct property access and pedestrian activity.

This will also enhance the amenity of local residential areas to the north and create a safer environment for the Frank Gibson Park sports centre.

The trench solution will deliver improved levels of service for all freight and other traffic bound for Fremantle Port and destinations north of the Swan River.
4.0 Perth Freight Link Roadworks

4.5 Managing environmental impacts

The Roe Highway extension passes through a section of the Beeliar Regional Park between North Lake and Bibra Lake.

The current concept design replaces the local road that currently runs through the residential suburb of Bibra Lake to the east and a section of the Beeliar Regional Park between North Lake and Bibra Lake. This section of the Perth Freight Link will be impacting around 100 hectares of native vegetation. These areas are considered high value environmental and Aboriginal heritage areas. Consequently the Roe Highway extension is going through an extensive environmental review process.

The development of the Roe Highway extension has been based on the output of a number of environmental and planning studies. This has resulted in an optimised design concept that minimises construction impacts.

There has been extensive consultation over many years to work with community groups. Main Roads will continue to consult with stakeholder and community groups and complete a Public Environmental Review.

Environmental offsets and benefits

Main Roads proposes to procure a number of significant environmental offsets to meet environmental requirements. These are:

- Transferring 14.5 hectares of Metropolitan Region Scheme road reserve into the Beeliar Regional Park;
- Restoration of 8.4 hectares of Horse Paddock Swamp; and
- The purchase of over 400 hectares of high quality black cockatoo habitat to be protected as a conservation reserve.

More broadly the Perth Freight Link also delivers a saving, estimated at around, 450,000 tonnes of CO₂ by 2031.
5.0 Heavy Vehicle User Charge

A distance based Heavy Vehicle User Charge will be applied across a larger section of the metropolitan freight network which will be 85 kilometres in length.

The broader heavy vehicle charging network recognises the significant productivity benefits available to the freight industry with completion of the Northlink WA, Gateway WA and Perth Freight Link Projects.

The broader Heavy Vehicle User Charge is about sharing the benefits on a ‘win-win’ basis and contributing to an even more effective transport system.
5.0 Heavy Vehicle User Charge

Cost recovery for road infrastructure has received increasing attention in the past decade in Australia. Existing government funding and financing approaches are unsustainable because of a broad shift towards more fuel-efficient vehicles, increasing use of alternate fuel types, the fall in the relative value of the fuel excise revenue and the existing fiscal/debt constraints of government to meet competing infrastructure needs.

Furthermore, the introduction of user charging is also expected to encourage greater efficiencies on the part of freight transport operators who now have a greater incentive to maximise spare capacity.

The application of the Heavy Vehicle User Charge provides an opportunity for industry to contribute towards a proportion of the productivity gains and assist in making the Perth Freight Link a reality.

The distance based charge recognises that the freight industry is a major benefactor of the Perth Freight Link project.

5.1 Scope

The Heavy Vehicle User Charge will be applied across the ‘Heavy Vehicle Charging Network’, which will be approximately 85 km in length and extend from Muchea to Fremantle Port and include sections of Roe Highway (Kwinana Freeway to Tonkin Highway), Gateway WA and NorthLink WA in addition to the Perth Freight Link.

The Heavy Vehicle User Charge will be applied to all Austroads vehicle classes 3-12 on the network, excepting buses. (see Figure 21 on the next page).

Management of access to the Heavy Vehicle Charging Network will be cognisant of WA’s Restricted Access Vehicle (RAV) permit system and current restrictions on Leach Highway and South Street.

The rate of the distance based charge is yet to be formally established but the principle of the charge is that it will be on a ‘win-win’ basis.

That is that the charge will be less than the productivity benefits available from the Heavy Vehicle Charging network.
5.0 Heavy Vehicle User Charge

5.2 GPS Technological System

The preferred solution is a GPS-based system to enable road user charging. This approach enables road charging based on location, distance and time. It will require the installation of in-vehicle equipment to detect and store trip information which is then wirelessly transmitted to ‘back office’ operations. This will also provide reliable and accurate traffic data that can be used to optimise the performance of the road network for all road users. The real-time data will assist transport users to make informed decisions and increase resilience by improving incident management and post-incident recovery. The next steps will require the development of a detailed Heavy Vehicle Charging Strategy.
6.0 Project Assessment

Perth Freight Link will cost $1,575 million to build. It will deliver total benefits of more than $3.92 billion for the State and the nation as a whole which equates to a benefit-cost ratio of 2.8.

To get the project moving the State will initially provide the private sector contribution. This will be recovered from the Heavy Vehicle User Charge Revenue.

Once the Heavy Vehicle Charging has been established Government will review whether to continue to operate the system or sell the rights to the private sector.
6.0 Project Assessment

6.1 Funding Perth Freight Link

The 2014/15 Commonwealth Government Budget highlighted the decision to invest $925 million in the Perth Freight Link project.

This funding is contingent upon a State Government contribution of $275.5 million and a private sector contribution by way of a user charge.

The joint decision making process reflects the significant contribution of both Governments: 59% capital contribution by the Commonwealth Government and 17% capital contribution plus demand risk by the State Government.

Excess revenue – any revenue received from private sector contributions after operational costs – will be re-invested back into the urban freight road network.

6.2 Perth Freight Link Costs

Perth Freight Link will cost $1,575 million to build which includes $1,507.9 million in costs associated with the roadworks and $67.1 million associated with the heavy vehicle charging infrastructure.

Operational costs for the roads works is estimated at 1% of capital expenditure for the project. The estimated capital costs are $15.0 million per annum from 2019/20. These costs are for maintenance and upkeep of the infrastructure, and include sinking funds for infrastructure replacements and refurbishments.

With respect to the heavy vehicle charging infrastructure, the operating and maintenance cost in 2014 dollar terms is $13.7 million per annum and includes a 50% contingency. This includes maintenance costs, data communications and back office processing.
6.0 Project Assessment

6.2 Economic Appraisal

Perth Freight Link will deliver benefits of more than $3.92 billion to WA with a benefit-cost ratio of 2.8.

The economic appraisal in the business case was based on standard WA and Commonwealth guidelines for the consideration of major transport projects.

Identified benefits include:
- travel time savings,
- travel time reliability improvements,
- savings in vehicle operating costs,
- reductions in air pollution, greenhouse gas emissions, noise pollution,
- reductions in road accidents, and
- residual value of assets.

The appraisal highlights the benefits across the Perth urban road network, both within the immediate corridor and across the wider region through improved travel times and reliability.

Table 3: Benefit Cost Analysis Results

<table>
<thead>
<tr>
<th>Benefit – Cost Outcomes</th>
<th>Discounted ($m)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Benefits</strong></td>
<td></td>
</tr>
<tr>
<td>Travel Time Savings</td>
<td>$2,469</td>
</tr>
<tr>
<td>Vehicle Operating Cost Savings</td>
<td>$839</td>
</tr>
<tr>
<td>Reliability Benefits</td>
<td>$344</td>
</tr>
<tr>
<td>Crash Cost Savings</td>
<td>$164</td>
</tr>
<tr>
<td>Environmental Externalities</td>
<td>$70</td>
</tr>
<tr>
<td>Residual Value of Assets</td>
<td>$38</td>
</tr>
<tr>
<td><strong>Total Benefits</strong></td>
<td><strong>$3,924</strong></td>
</tr>
<tr>
<td><strong>Costs</strong></td>
<td></td>
</tr>
<tr>
<td>Capital Costs (discounted)</td>
<td>$1,254</td>
</tr>
<tr>
<td>Operating Costs</td>
<td>$143</td>
</tr>
<tr>
<td><strong>Total Costs</strong></td>
<td><strong>$1,397</strong></td>
</tr>
<tr>
<td><strong>Results</strong></td>
<td></td>
</tr>
<tr>
<td>Benefit Cost Ratio</td>
<td>2.8</td>
</tr>
<tr>
<td><strong>Net Present Value</strong></td>
<td><strong>$2,527</strong></td>
</tr>
</tbody>
</table>

* Costs have been discounted to represent 2014 dollars for economic evaluation purposes.
7.0 Delivery and Assurance

7.1 Critical Path Items

As would be expected for a major infrastructure program, a number of key activities need to occur prior to the finalisation of the construction contract for the road works in November 2015. The key milestones and critical path items for the delivery of Perth Freight Link road works and the heavy vehicle charging infrastructure are outlined in Table 4.

Table 4: Critical Path Items

<table>
<thead>
<tr>
<th>Activities / Milestones</th>
<th>Date</th>
<th>2015</th>
<th>2016</th>
<th>2017</th>
<th>2018</th>
<th>2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preferred road concept approved by the Commissioner for Main Roads WA</td>
<td>Mar 2015</td>
<td></td>
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<tr>
<td>Issue request for proposal (RFP) to tenderers for the Perth Freight Link road works</td>
<td>Apr 2015</td>
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<tr>
<td>Amendments to the Main Roads Act 1930 (To enable to introduction of a Heavy Vehicle Charge)</td>
<td>Sept 2015</td>
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<tr>
<td>Submit the HVC Concept, the Legislative &amp; Regulatory Framework and preferred commercial and procurement models for ministerial consideration to proceed to tender</td>
<td>Sept 2015</td>
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<tr>
<td>Assess and recommend preferred proponent for delivery of the roadworks</td>
<td>Sept 2015</td>
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</tr>
<tr>
<td>Contract award (Perth Freight Link Road works)</td>
<td>Nov 2015</td>
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<tr>
<td>Commencement of early works package – Roe Highway extension</td>
<td>Feb 2016</td>
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<tr>
<td>Fiona Stanley Hospital entry road completion</td>
<td>Mar 2017</td>
<td></td>
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<tr>
<td>Contract award (Heavy vehicle charging infrastructure and systems)</td>
<td>Jun 2017</td>
<td></td>
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</tr>
<tr>
<td>Completion of Perth Freight Link (Road works and heavy vehicle charging infrastructure)</td>
<td>End 2018/19</td>
<td></td>
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<td></td>
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</tbody>
</table>