December 2019

Pacific Motorway (M1) – Varsity Lakes to Tugun upgrade

Package A – Varsity Lakes (Exit 85) to Burleigh (Exit 87)

Frequently Asked Questions

How will the upgrade benefit me?

Safety is the number one priority for the Department of Transport and Main Roads (TMR) and the Pacific Motorway (M1) Varsity Lakes to Tugun (VL2T) upgrade features many safety improvements. Some of these include:

- installing a centre concrete barrier along the full 10-kilometre route to better divide opposing traffic lanes
- an upgraded road surface for a smoother drive
- dedicated shared user paths for safer active transport connections
- extended entry and exit ramps for safer merging
- minimised crests on the road and straighter road alignments to improve visibility for motorists.

Traffic demand for the southern section of the Pacific Motorway is growing and expected to exceed 100,000 vehicles per day by 2026 (based on current growth source of 1.3 per cent per annum). The VL2T upgrade will cater for this traffic growth, benefitting the national freight network, tourism operators and commuters by:

- reducing congestion
- providing more efficient traffic flows
- improving travel time reliability.

Who is funding the work and what will it cost?

The VL2T upgrade is being jointly funded by the Australian and Queensland governments, with the *Queensland Transport and Roads Investment Program 2019-20 to 2022-23* allocating $1.03 billion to complete the work. This estimate includes various investigations, design elements, resumptions, early works and mainline construction.

Why is the project being delivered in packages?

The VL2T upgrade includes widening the motorway and numerous existing bridges, upgrading interchanges and extending ramps, constructing new bridges, and installing smart motorway technologies.

Due to these multiple technical and construction elements its more efficient to design and deliver the upgrade in packages. Completing the work in this manner will also increase market opportunities for the construction industry and result in best value for money for the community.

There are four stages to the 10-kilometre VL2T upgrade:

- Package A Varsity Lakes (Exit 85) to Burleigh (Exit 87) – known as VL2B
- Package B Burleigh (Exit 87) to Palm Beach (19th Avenue) – known as B2PB
- Package C Palm Beach (19th Avenue) to Tugun (Exit 95) – known as PB2T
- Package D Smart Motorway technologies retrofitted between Nerang (Exit 73) and Mudgeeraba (Exit 79).

All packages are currently in various stages of design.

Designing the packages in this way ensures work can begin as soon as the current Mudgeeraba to Varsity Lakes upgrade is complete in mid-2020. By 2021, all motorway widening works (packages A, B and C) will be in construction at the same time. This ensures the full benefits of each package will be realised simultaneously, removing the potential to push congestion hot-spots further down the line, as sometimes happens with a staged approach. Package D smart motorway technologies between Nerang and Mudgeeraba will be delivered at a later date.

When will the work start?

Subject to design progress, the project team for Package A Varsity Lakes to Burleigh is working towards the following milestones.

Late 2019	Community consultation
Early 2020	Design completed Early works to start on relocating public utility services
Mid-2020	Construction starts

What changes will happen between Varsity Lakes and Burleigh?

Package A Varsity Lakes to Burleigh will improve a two-kilometre stretch of the motorway between Varsity Lakes (Exit 85) and Burleigh (Exit 87) and includes:

- widening the M1 to a minimum of three lanes in both directions
- extending and relocating the Exit 85 northbound off-ramp by 250 metres to join Old Coach Road at a new signalised intersection
- adding a fourth northbound lane between Exits 85 and 87
- installing a new shared bike and pedestrian path on the western side of the motorway between Exits 85 and 87
- constructing a new Diverging Diamond Interchange (DDI) at Burleigh (Exit 87)
- installing smart motorway technologies such as traffic signals at the southbound on-ramp at Exit 85 and the northbound on-ramp at Exit 87
- replacing the existing concrete road surface with stone mastic asphalt
- preserving a corridor for a potential future rail extension south of Varsity Lakes.

Why move the northbound off-ramp at Reedy Creek (Exit 85)?

Currently the Exit 85 off-ramp at Reedy Creek joins the roundabout at Old Coach Road and Kingsmore Boulevard and this exit ramp queues back onto the M1 during peak traffic times. This off-ramp will be extended by 250 metres to improve the safety of motorists and increase capacity on the off-ramp. The new off-ramp will connect directly to Old Coach Road, near Woodland Park, via a new signalised intersection.

Extending and relocating the off-ramp will also assist with traffic flows through the Old Coach Road/Kingsmore Boulevard roundabout as traffic exiting the M1 to travel north on Old Coach Road will no longer use the roundabout.

As a further benefit of relocating the off-ramp, a fourth northbound lane will be constructed on the motorway between Exit 85 and Exit 87. Known as an auxiliary lane, this additional lane will link the two ramps to help minimise weaving and merging manoeuvres.

What benefits are there for pedestrians and bike riders?

Every trip made with active transport is a benefit, as it moves people towards healthier, more efficient and sustainable choices, reduces congestion and leaves room on our roads for freight, business and other trips.

A new shared bike and pedestrian path, around three metres wide, will be constructed on the western side of the motorway between Exit 85 and Exit 87. This new path will connect from the Burleigh (Exit 87) interchange, run adjacent to the northbound motorway lanes, and join the local bikeway network at the new Exit 85/Old Coach Road northbound off-ramp. A 1.8metre high safety barrier will separate the new shared path from the motorway lanes.

Significant active transport infrastructure is also included through the new DDI at Burleigh (Exit 87). Wider shared paths will feature across the DDI as well as a separated on-road bikeway.

These features provide greater active transport connections in all directions, especially to the main industrial and shopping centre hubs at Reedy Creek and Burleigh Waters, and will encourage more people to ride, walk and use other modes of active transport more often.

What is a Diverging Diamond Interchange (DDI)?

The existing Burleigh Interchange at Exit 87 operates as a large roundabout, with motorists giving way to traffic already on the roundabout, which makes some movements congested during peak times. The current roundabout also has reduced visibility in some instances and is unable to positively cater for active transport users.

Exit 87 will soon be transformed using an innovative Diverging Diamond Interchange, known as a DDI, which will provide a new way of managing existing traffic volumes and increasing demands. This new configuration will improve safety and keep large traffic volumes moving quickly.

DDIs have been operating successfully in a number of countries throughout the world, with more than 60 implemented in the United States in the last decade. However, this type of interchange is relatively new to Australia, and Queensland is leading the way, with two already planned – on the Bruce Highway at Caloundra and on Gympie Arterial Road at Bald Hills. The DDI at Exit 87 will be the first of its kind on the Gold Coast.

The DDI boasts a number of benefits including:

- traffic movements from one side of the interchange to the other will be controlled by synchronised signals
- a reduction in the number of traffic signals that would normally be required at such a busy interchange
- a much safer and more efficient arrangement than the existing roundabout
- improved active transport connections to and from Bermuda Street (Southport-Burleigh Road)
- a compact design that uses a smaller footprint than traditional interchange designs.

A large number of vehicles turn right from the motorway northbound to Bermuda Street. The DDI will provide a major advantage for this movement as right-turning traffic does not have to cross opposing traffic when making a right-hand turn. The exit ramps operate in the same signal phase whereby road operators can ensure that queues will never extend back onto the M1.

The western side of the DDI will be constructed to enable a possible future connection direct to Old Coach Road.

To view a video showing how the new DDI will operate or to read the fact sheet, visit www.tmr.qld.gov.au/projects.

Will the new Exit 87 interchange connect to Old Coach Road?

In 2011, TMR worked with City of Gold Coast on a corridor preservation study that looked at linking the Pacific Motorway and Old Coach Road. This connection, leaving the motorway at the Burleigh Interchange (Exit 87), has been indicated in the Gold Coast street directory for several years.

Referred to as the Old Coach Road Connector, this link will provide a future connection for southbound access to the M1.

The City of Gold Coast is constructing stage one of this upgrade. A future stage will provide a connection from Old Coach Road to Burleigh Interchange (Exit 87) and land has been preserved to accommodate the upgrade.

The City of Gold Coast is leading the planning and timing for the Old Coach Road Connector upgrade, and the VL2T project team has worked with the City of Gold Coast to ensure the new DDI at Exit 87 will cater for future traffic flows when the connection is provided.

For further information on upgrades to Old Coach Road, contact City of Gold Coast at mail@goldcoast.qld.gov.au or call 1300 465 326.

Why not upgrade and widen the Reedy Creek flyover?

Current traffic volumes and future modelling indicates the northbound on-ramp to the motorway at Exit 85, also known as the Reedy Creek flyover, will perform satisfactorily as a single lane during off-peak periods. During peak periods smart motorway technologies will restrict access to the M1 to protect the operations of the M1. Rather than widening the flyover bridge to store more vehicles and congest the motorway over time, it is considered more practical to encourage local trips to use alternative routes (such as Bermuda Street or Scottsdale Drive).

No additional lanes are being proposed on the flyover as part of the VL2T upgrade, however TMR will continue to monitor traffic flows and capacity in the Varsity Lakes area.

What are smart motorway technologies?

Smart motorway technologies help to reduce 'stop-start' travel, improve safety and provide more predictable travel times for motorists.

Smart motorway initiatives planned for Package A Varsity Lakes to Burleigh include:

- ramp signal metering
- variable speed limit signs (VSLS)
- additional CCTV cameras
- vehicle detection equipment to measure and calculate traffic flow speed and consistency.

These initiatives allow proactive, real-time management of the motorway and connecting local roads, with benefits including:

- keeping the motorway traffic moving and delaying the onset of congestion by managing the volume traffic entering the motorway at congestion points
- providing safer merging conditions for motorists entering the motorway
- reducing ‘stop-start’ travel for motorists and helping to improve travel time reliability
- allowing a proactive and responsive approach to managing road network conditions and responding to congestion, incidents or bad weather in real time.
- optimising the performance of the motorway and maximising the motorway capacity.

Will a new road surface be applied?

The existing concrete road pavement will be replaced with stone mastic asphalt (SMA), which is a gap graded asphalt surface mix. The mix is filled with a mastic (or binder) of bitumen and fillers, with fibres added in to provide adequate stability to the binder and prevent drainage of the binder during transport and placement of the product.

In addition to its structural capabilities, other benefits of SMA include:

- better skid resistance than dense open graded asphalt
- suitable for heavy vehicles and higher traffic volumes
- road traffic noise improvement as noise levels are lower than concrete surfaces

- stable and durable under a range of weather conditions
- economical in the long term, improving rehabilitation options with the ability to extend its overall service life.

One of the innovative pavement techniques that will be applied to the VL2T upgrade is rubblisation, which is a method for rehabilitating old concrete pavements and minimising waste. The process involves fracturing an existing concrete pavement into small, interconnected pieces that serve as a base course for a new asphalt overlay on top.

Breaking the concrete involves a machine fracturing the slabs, which will generate noise. The project team will keep the community well informed and a step ahead of any noisy works.

When will the rail line be extended south of Varsity Lakes?

In 2005, the Department of Transport and Main Roads (TMR) identified a possible corridor to extend heavy rail south of Robina to Tugun, with the first stage between Robina and Varsity Lakes constructed in 2009. Further investigations were conducted in 2009 as part of a wider Robina to Tugun Rail Impact Assessment Study that considered technical, environmental, social and economic impacts on a preferred rail alignment. As a result of the 2009 study, the current alignment was protected from future development.

It is important to note there is currently no funding to construct a rail extension, and the extension will not be constructed as part of the VL2T upgrade. The scope of the VL2T project includes continuing to protect the future rail corridor – this means that any construction works completed as part of the upgrade between Varsity Lakes and Tugun must consider the possible future rail extension.

For further information on the passenger railway corridor, the TMR Rail Planning team can be contacted on:

Email: RailPlanning@tmr.qld.gov.au
Web: https://www.tmr.qld.gov.au/Projects/Name/R/Robina-to-Tugun-Rail-Impact-Assessment-Study

Are more noise barriers being installed?

The Transport Noise Management Code of Practice

Road traffic noise is managed under the *Transport Noise Management Code of Practice Volume 1, Nov 2013* (the Code) (https://www.tmr.qld.gov.au/business-industry/Technical-standards-publications/Transport-noise-management-code-of-practice.aspx) and implementation of the Code is a legislative requirement under the *Transport Infrastructure Act 1994*.

For residential properties to qualify for a noise barrier the results of noise monitoring and noise assessment needs to indicate that the area is above the Code's road traffic noise criteria of 68dB(A) L_{A10} (18 hour).

Noise barriers do not suit all locations, and in many instances there are visual amenity, topographical, geological and constructability issues.

Noise modelling

When constructing major road upgrades, the design life of that upgrade is considered, and noise modelling predicts what the road traffic noise levels may reach by the end of that lifespan. The VL2T upgrade has been designed in accordance with the State Government's South East Queensland (SEQ) Regional Plan 2017, Shaping SEQ, which is 2041.

Acoustic engineers have modelled the road traffic noise levels to 2041, taking into account the upcoming changes in the road surface, vertical and horizontal road alignment, surrounding buildings, increased general and heavy vehicle traffic volumes.

All road traffic modelling predictions are conducted in accordance with the Code, which ensures that a prescriptive process is followed for all road traffic noise assessments.

The VL2T project team is currently communicating with those impacted landowners at locations where the noise modelling has identified a higher than 68dB(A) L_{A10} (18 hour) road traffic noise level,

Noise monitoring pre-construction

Before construction starts, noise monitoring is typically conducted to understand the existing noise environment and provide road traffic model verification points. These locations are also typically selected to be representative of a cluster of houses for a particular area. Selecting suitable sites for noise monitoring must consider externalities such as animals, plant and other external features that have the potential to affect the measurements.

The locations selected for noise monitoring on the VL2T upgrade were considered to best represent the properties most exposed to road traffic noise in a particular area. This monitoring was undertaken in May and November 2018 during normal traffic flow conditions, that is, outside of school and public holidays.

Noise monitoring post-construction

Once the upgrade is complete and traffic patterns have returned to 'normal', post-construction noise monitoring will be carried out at the same or similar locations as the pre-construction noise monitoring. This post-construction noise monitoring will help to verify the noise modelling and confirm that any noise reduction measures undertaken as part of the VL2T upgrade have performed appropriately.

In the unlikely event that these measures exceed TMR's criterion level, additional noise reducing measures will then be considered in accordance with the Code.

Heavy vehicle noise

TMR acknowledges there can be a perceived increase in the overall noise level generated by intermittent truck engine breaking, motorbikes, modified vehicles and emergency sirens. Noise barriers are not capable of addressing this type of intermittent or isolated noise events, for example engine breaking is generally too short to affect long-term noise readings.

TMR is unable to provide strategies to reduce noise events generated by heavy vehicles, as they are usually due to driver behaviour or vehicle maintenance.

It is also relevant to note that engine braking processes significantly reduce brake wear and prevent heat induced brake fade or failure, it is also a safety mechanism to help heavy trucks to slow down. Due to safety implications, engine braking cannot be prohibited and signs requesting drivers to limit engine braking are not legally enforceable. TMR has found that these signs do not have a measurable effect in limiting exhaust braking noise in the immediate vicinity, and because the Pacific Motorway (M1) on the Gold Coast has many closely spaced exits and a high number of road signs already, TMR will not be installing such signage as part of the VL2T upgrade.

How can I get more information?

Residents and motorists are encouraged to subscribe to the free email and SMS traffic alert update service for this project. Register with TMR on the contacts below.

Phone: 1800 799 824 – free call from any landline (during business hours, 9am–5pm, Monday to Friday)

Email: VL2T@tmr.qld.gov.au
Web: www.tmr.qld.gov.au
Post: Department of Transport and Main Roads
PO Box 442, Nerang QLD 4211