TRANSMAX

Traffic Services

We have extensive knowledge in arterial road network operation gained through the operation of the majority of Queensland's traffic signals.

Transmax Traffic Services

As an Intelligent Transport Systems (ITS) solutions provider, Transmax offers a range of services to enhance the sustainability and performance of customers' transport networks.

Transmax's primary product is STREAMS®, which connects ITS devices and provides visibility on a significant number of state and council regions allowing traffic management centre (TMC) operators tools to optimise and make our road networks safer.

In conjunction with STREAMS, other services can complement and improve arterial management, including:

- Pre-design services (SIDRA analyses)
- Traffic signal personality generation
- Network optimisation

OUR TRAFFIC SERVICES

SIDRA™ service

SIDRA™ is a software package Transmax uses for intersection and network capacity, level of service and performance analysis, and signalised intersection and network timing calculations.

What can we do?

A customer might engage Transmax to perform a SIDRA™ analysis on an intersection with the aim of:

- **improving safety** for vehicles, pedestrians and cyclists

- **increasing the capacity of an intersection** to help manage congestion

- **creating new Time of Day schedules** and suggesting new plans to run (assessing peak AM/PM periods, school zones, or special events).

How does this service work?

As a service, SIDRA work might involve Transmax traffic engineers observing an intersection's current operations in addition to providing an estimate using a traffic volume growth factor on how it will behave in the future. There are a number of steps involved in this service:

1 A customer engages Transmax to perform a SIDRA analysis for a new intersection or the modification of an existing intersection

2 Our traffic engineers are consulted about potential other options/services (depending on the requirements)

3 Transmax issues a quote based on the initial discussions

4 Transmax proceeds with the work on receipt of a purchase order from the customer.

Using vehicle counts, our traffic engineers will conduct an analysis looking at various components such as:

- **Level of Service (LOS)**
- **Degrees of Saturation**
- **Queue Length**
- **Phase Times**
- **Cycle Length**

Based on the results from the SIDRA™ outputs, Transmax can provide recommendations about how to further optimise the intersection.
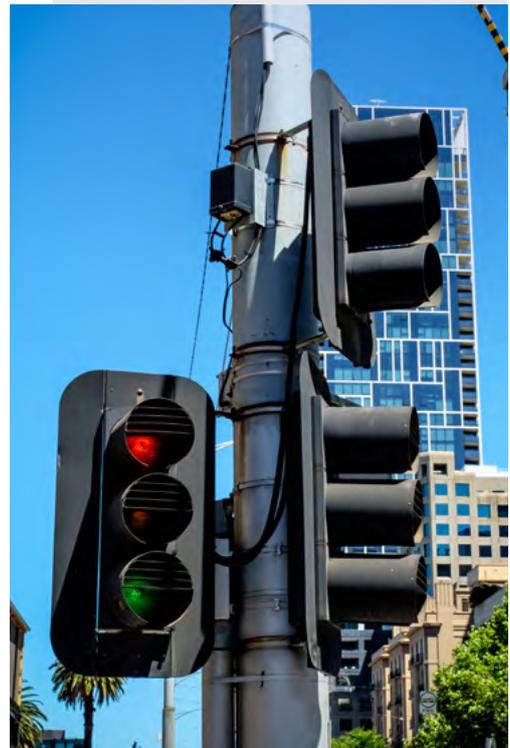
Why Transmax?

As the provider of STREAMS, our engineers have access to live traffic data that enables us to see volumes and timings.

THIS CAPABILITY ALLOWS US TO:	
	• **gather manual counts and see the current performance of the intersection** (with road agency permission)
	• **view surrounding intersections and observe any potential flow on effects**
	• **view existing plans/phase times/cycle times**
	• **see whether the intersection is part of an intersection group which may have a Dynamic Plan Selection**
	• **use the information from our SIDRA investigation for network optimisation in STREAMS,** which is another service Transmax offers (more information in this brochure).
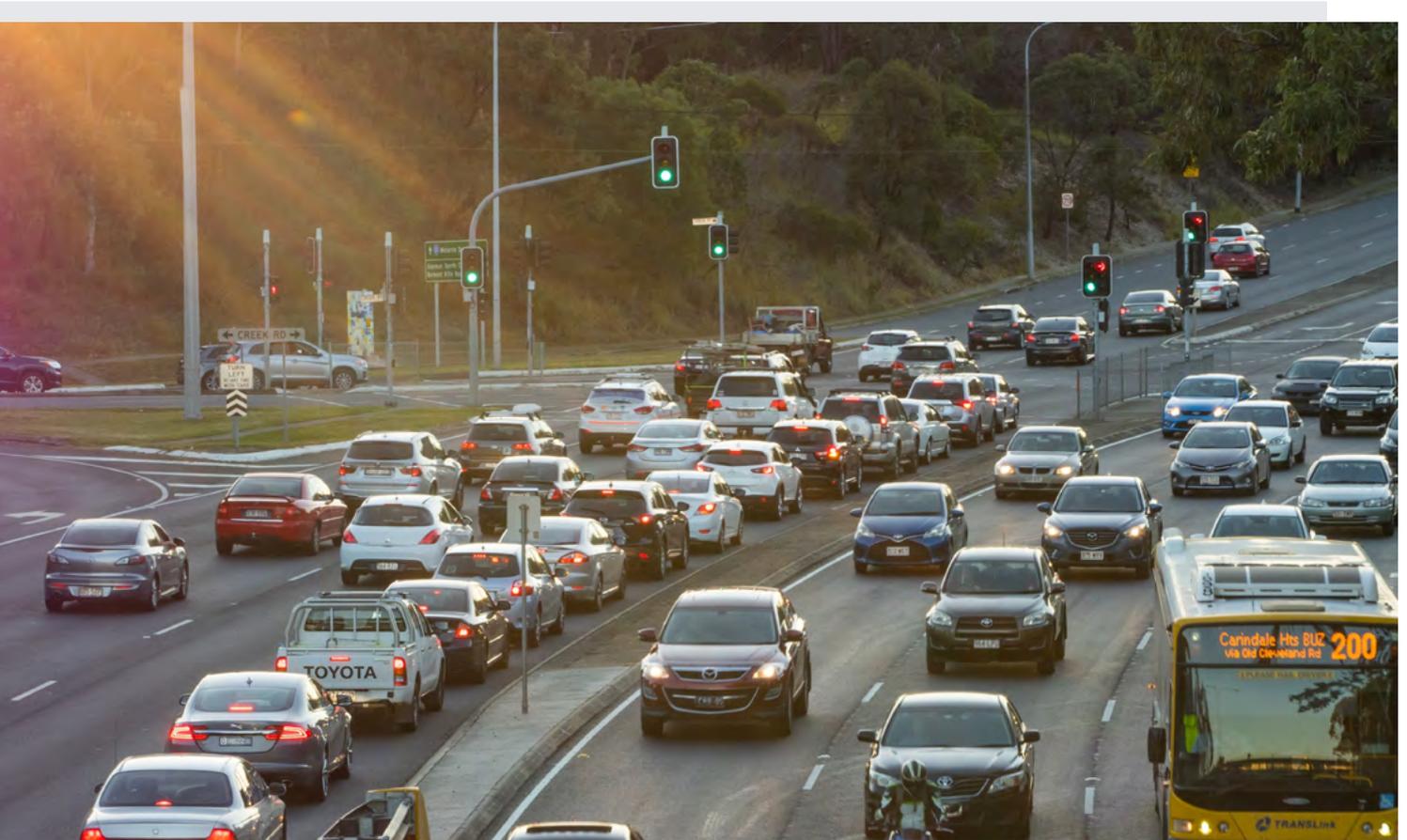
Other components

Transmax can be engaged at various stages in the development of an intersection. As part of our SIDRA™ service, this can be tied in with our other services such as:

CONCEPTUAL LAYOUT

In the very early stages before civil work commences, our traffic engineers can support the provision of a conceptual layout of the intersection based off the SIDRA™ investigation and can coordinate the drafting and finalisation of the certified intersection drawings with an external design consultancy.

PERSONALITY GENERATION

Using the drawing, our traffic engineers can program the personality for the intersection controller.

NETWORK OPTIMISATION

The SIDRA™ investigation can also support network optimisation(optimising plans in STREAMS for traffic management centre operators).

OUR TRAFFIC SERVICES

Personality Generation

What can we do?

A traffic signal controller personality is a configurable part of the traffic signal controller that needs to be developed for every intersection. Based on the operations detailed in the signal drawings for an intersection, our team of traffic engineers can:

- **create new / modify intersection personalities**

- **provide the intersection personalities either via email, PCMCIA Card/ EPROM or XPM Dongle**

- **test new / modified intersection personalities to ensure they operate correctly.**

How does this service work?

There are a number of steps involved in personality generation.

1 Customers provide Transmax with a traffic signal drawing, which shows us how an intersection should behave and from which a personality is programmed. If a customer is unable to provide a traffic signal drawing, Transmax can coordinate the modification or drafting of the drawing with an external design consultancy on behalf of the customer.

2 Our team will issue a quote within a couple of days of receiving the drawing (note: prices can vary depending on the complexity of the intersection).

3 If the quote is accepted, the customer then provides a purchase order. The average turnaround time for the service after receiving the purchase order is 2-3 weeks.

4 From here, our team of traffic engineers commence programming of the intersection along with calculating the appropriate times based on the geometry of the intersection.

5 Once the traffic signal controller is programmed, our traffic engineers perform functionality testing of the personality (including testing to ensure an intersection is compatible within STREAMS by uploading the personality on one of our intersection controllers and configuring it in our STREAMS test environment), review documentation and cross-check personality inputs to ensure the personality has been programmed correctly, operates safely and meets the customer's requirements.

6 Once complete, the programmer can provide the files either via email, PCMCIA Card/ EPROM or XPM Dongle.

BASIC PRINCIPALS
Signal Plans

PHASE DIAGRAMS

PHYSICAL LAYOUT

TITLE BLOCK

CABLE CONNECTIONS

CONFLICT TABLE

DETECTOR INPUTS

STREAMS REQUESTS

Why Transmax?

Transmax has a distinct advantage over other providers as we have extensive knowledge in arterial road network operation gained through the operation of the majority of Queensland's traffic signals through the company's STREAMS ITS platform.

Our team can program and conduct further testing to ensure that an intersection is compatible within STREAMS. We can program and test unique conditions by uploading the personality on one of our internal intersection controllers and configuring it in our STREAMS test environment.

EXAMPLES OF WHAT WE CAN TEST

Emergency Vehicle Priority (EVP)

Single/Double Diamond Conditions
(calling B/C phase using STREAMS)

Train intersections

Writing/testing Extra Special Features
(XSF called from STREAMS)

Different plans
(Isolated/STREAMS Master Isolated/
STREAMS Coordinated).

OTHER COMPONENTS THAT CAN BE PROGRAMMED INCLUDE

Intelligent Pedestrian Demand Operation

Intelligent Pedestrian Carriageway Operation

STREAMS Setup & Configuration of Intelligent Pedestrian Radar Failures

Advanced Warning Beacons

Train Intersections

Bus Priority Signals

Pedestrian Protection

Network optimisation service

This service involves traffic engineers examining a group of intersections with the aim of ensuring that a platoon of vehicles is able to move efficiently through the intersections with the minimal amount of delay. Our traffic engineers can coordinate multiple intersections to optimise the flow of traffic through an intersection group.

What does this service involve?

Network optimisation services could include:

- Collecting data from STREAMS and/or manual counts

- Analysing patterns with each movement at an intersection level

- Looking at data from different times to set-up a time of day (ToD) schedule

- Creating a plan for each ToD schedule for each intersection to maximise efficiency

- Creating traffic signal timing plans that match the prevailing traffic conditions and with the road authority's permission, configure the plans in STREAMS and then test the plans on site to ensure they work as intended

- Conducting pre and post review analysis and assisting with the installation of the monitoring equipment to ensure that measurable results are obtained from the optimisation of the network

- Inputting a test day of the configured plans that only run once and observed (preferably on-site) to determine their performance

- Making slight alterations to traffic as we observe it on test day

- Reviewing data to confirm improvements.

Why Transmax?

Transmax is uniquely positioned to provide network optimisation services to achieve optimal outcomes. Our team has direct access to and experience with STREAMS, the traffic management control system used by road agencies right across Australia and the system which coordinates the majority of Queensland's traffic signals. Our team of engineers can make sure that STREAMS is configured as designed to ensure that the higher level functionality works as intended resulting in optimal outcomes.

To date, our team of traffic engineers has generated hundreds of personalities for road agencies, councils, developers and construction contractors, which are the fundamental building block to the efficient operation of a traffic signal. We can provide a complete network optimisation solution to support the achievement of a customer's desired outcomes.

Benefits of using this service

Possible benefit-cost ratios of ITS projects compared to building new road capacity

Traffic signal phasing	62
Integrated corridor management	39
Traffic incident management	38
Real-time traffic information system	25
Intelligent traffic management	14
Traditional road capacity	2.7

Source: Mc Kinsey Global Institute, 2013

Using this service, customers will benefit from access to a data scientist at Transmax who can mathematically identify the different traffic patterns throughout the day (that is, Time of Day schedule via cluster analysis).

In addition, studies have shown that optimising traffic signal timing plans has a greater Benefit to Cost Ratio (BCR) than building new road capacity.

Our team of engineers can provide recommendations on traffic signal modification including personality modifications to improve the efficiency of the network.

Read the case study below for more information on the benefits of using Transmax's network optimisation service.

CASE STUDY

Mackay CBD
Network Optimisation

Transmax customer Transport and Main Roads identified the need to optimise their traffic signal timing plans in Mackay CBD with the aim of reducing congestion and making the network flow better. It was important to our customer that a review produced real, measurable results. Transmax proposed to review the timing plans and implement a measurement process.

What we did

A traffic signal engineer at Transmax conducted a signal timing review utilising the tools and data available in STREAMS.

To measure benefits, Transmax installed a series of permanent Bluetooth readers to measure the travel time of vehicles as they traversed the network.
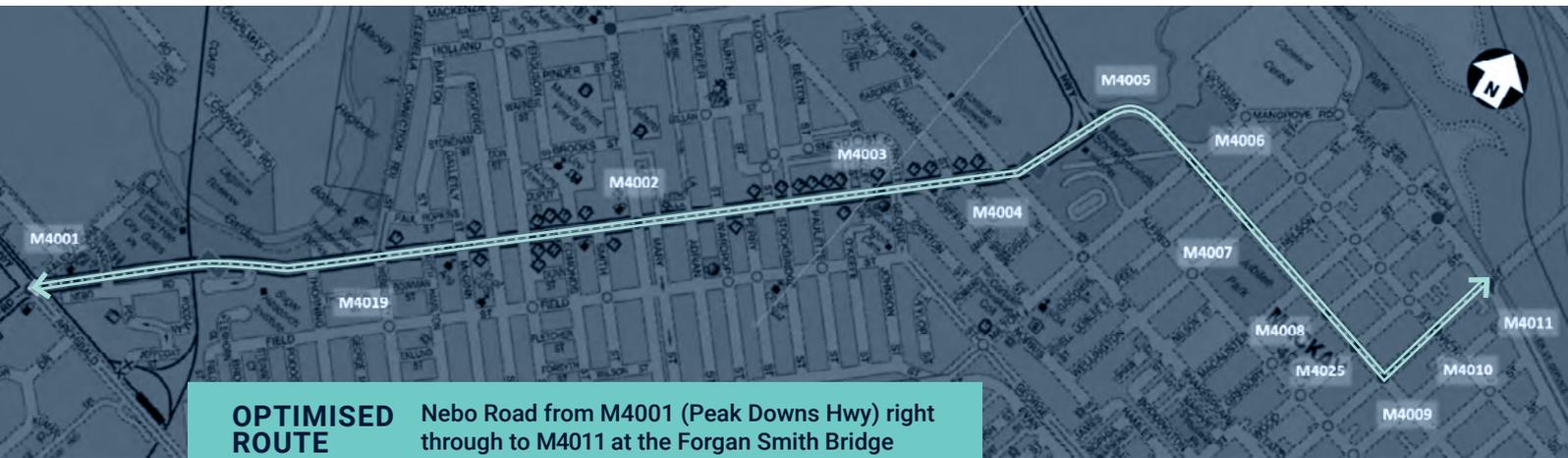
OPTIMISED ROUTE Nebo Road from M4001 (Peak Downs Hwy) right through to M4011 at the Forgan Smith Bridge

Transmax undertook the following steps to create and implement new traffic signal coordination plans:

1. **Data verification, collection and collation**
2. **Intersection groupings review**
3. **Creation of base Time of Day plans**
4. **Testing of plans on site**
5. **Review of plans by Transport and Main Roads**
6. **Implementation of the timing plans.**

Outcomes for Mackay

The resulting outcome was an optimised traffic signal network with a measured improvement in network journey times.

Contact Us

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Average travel time savings

⏱ **10.2%**

along the state-controlled road corridor

Afternoon |4-5pm|

NORTHBOUND travel time

reduced by

⬇ **23.8%**

along the state-controlled road corridor

👍 **In the first year alone,**

the improved operating conditions should result in

SIGNIFICANT SAVINGS

to the community and make their journeys more efficient

In addition, as the Bluetooth readers are permanent, they can be used by Transport and Main Roads Mackay to continually measure the operation of the road network including any future congestion reduction projects.

The Traffic Engineering Services team at Transmax can undertake similar network optimisation projects for customers encountering similar challenges.
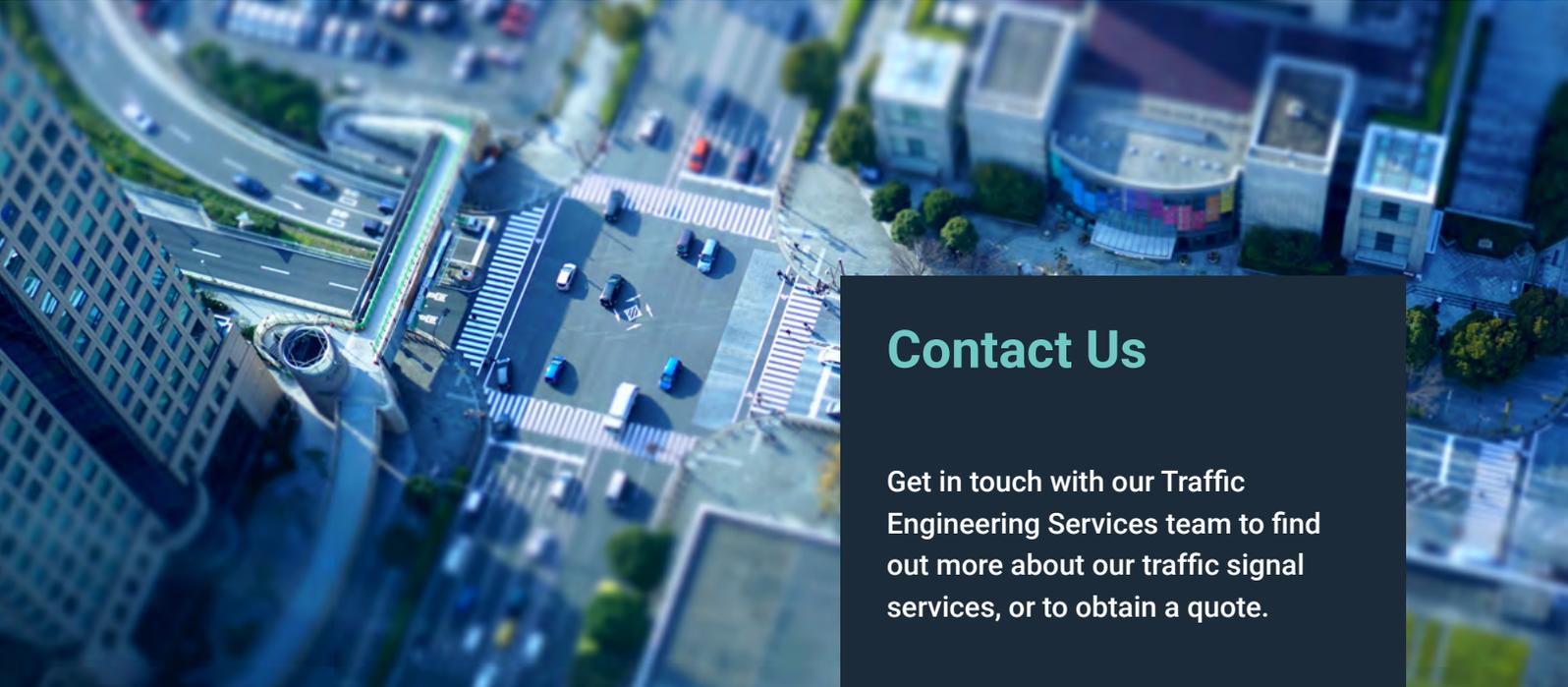
TRANSMAX

Contact Us

Get in touch with our Traffic Engineering Services team to find out more about our traffic signal services, or to obtain a quote.

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About Transmax

Transmax is the solutions provider of the international award-winning ITS platform STREAMS. We exist to improve people's lives by providing industry-leading transport solutions and help move millions of commuters around Australian road networks every day.

STREAMS was first developed as part of Queensland's Department of Transport and now, as a government-owned entity, Transmax supports other transport departments around Australia and internationally to achieve safer and more reliable road journeys for people in the communities they serve.

We place our customers at the centre of everything we do and work collaboratively to ensure our ITS solutions meet their needs. Transmax offers customers systems engineering, software design and development, along with a range of consulting and support services throughout the entire ITS lifecycle.

With 50 years of ITS experience, we help our customers realise the community benefits of optimising transport networks by providing smarter, more sustainable ITS solutions.

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