

Effective Integrated Traffic Management

by

**Brisbane CityWorks
Transport Network Provider**



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Transport Network Provider's Role

Transport Network is an operational unit of BCW focusing on the installation and maintenance of:

- **Intelligent transport and traffic signals**
- **Street, area and decorative lighting**
- **Data communications and networks**
- **CCTV systems**
- **Traffic control and situation response**



Objective

- **To minimise congestion on the Brisbane road network by decisively responding to faults and returning the system to optimum effectiveness.**
- **To maintain and improve an effective incident management response**
- **To ensure optimum traffic signal management**
- **ITS Systems used are to be easily connected to other systems and able to communicate with all other**
- **ITS integration with the overall BCC infrastructure**



Traffic Management System

CCTV Pictures
BCC
DMR
City Safe
Web Sites



Variable
Message
Signs



ICB Plant Management System

Brisbane
Linked
Intersection
Signal System



Bus Priority - RAPID



Electronic Bus
Timetables



Radio
Broadcasts



Electronic Lane Control



Traffic
Response
Units



Web Page



Product and Services

- **Installation of new signals and maintenance of existing signals infrastructure**
- **Installation of new CCTV cameras and maintenance of the existing system**
- **Installation of new VMS and RAPID maintenance of the existing infrastructure**
- **Installation and maintenance of the communication cabling and infrastructure.**
- **Traffic Response Unit and Traffic Controller dispatch and coordination**



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TRAFFIC SIGNALS



Traffic Signals Statistics

- **BCC operates 800 sets of signals**
- **Growth rate = 35 per year and increasing**
- **Most from developers and major works and black-spot programs**
- **Total budget is close to \$4.2m of which maintenance accounts for \$2.37m.**
- **Maintenance includes signals, communications, CCTV, VMS and Rapid signs**



Some More Statistics

■ There are about:

- 50,000 signal lantern aspects
- 9,000 poles
- 7,500 detector loops
- 5,500 push buttons
- 400 km of cabling
- >\$100m assets
- Oldest signals still operating (B003) was installed on 11/01/1936



Major Challenges

- To complete these works to the individual requirements of each client and to deliver a quality product within tight time constraints.
- To complete the works in a high profile environment, to a wide variety of Australian and local government standards.
- To maintain public and staff safety at all times without adversely impacting on the completion deadlines or the flow of vehicle and pedestrian traffic.
- To ensure all the appropriate permits and approvals are secured to minimise any disruptions by liaising with Brisbane City Council and Main Roads.



Solution

- Teams of staff from technicians to electrical engineers
- 24 x 7 reactive response service provides continuous coverage with a 2-hour response time for Brisbane.
- Monitoring of the system through automated alarming and messages sent via SMS to mobile phones
- Public calls relayed by the BCC call centre.
- Routine lamp changing

All of the above ensure a minimal disruption to the traffic network.



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COMMUNICATIONS and ITS

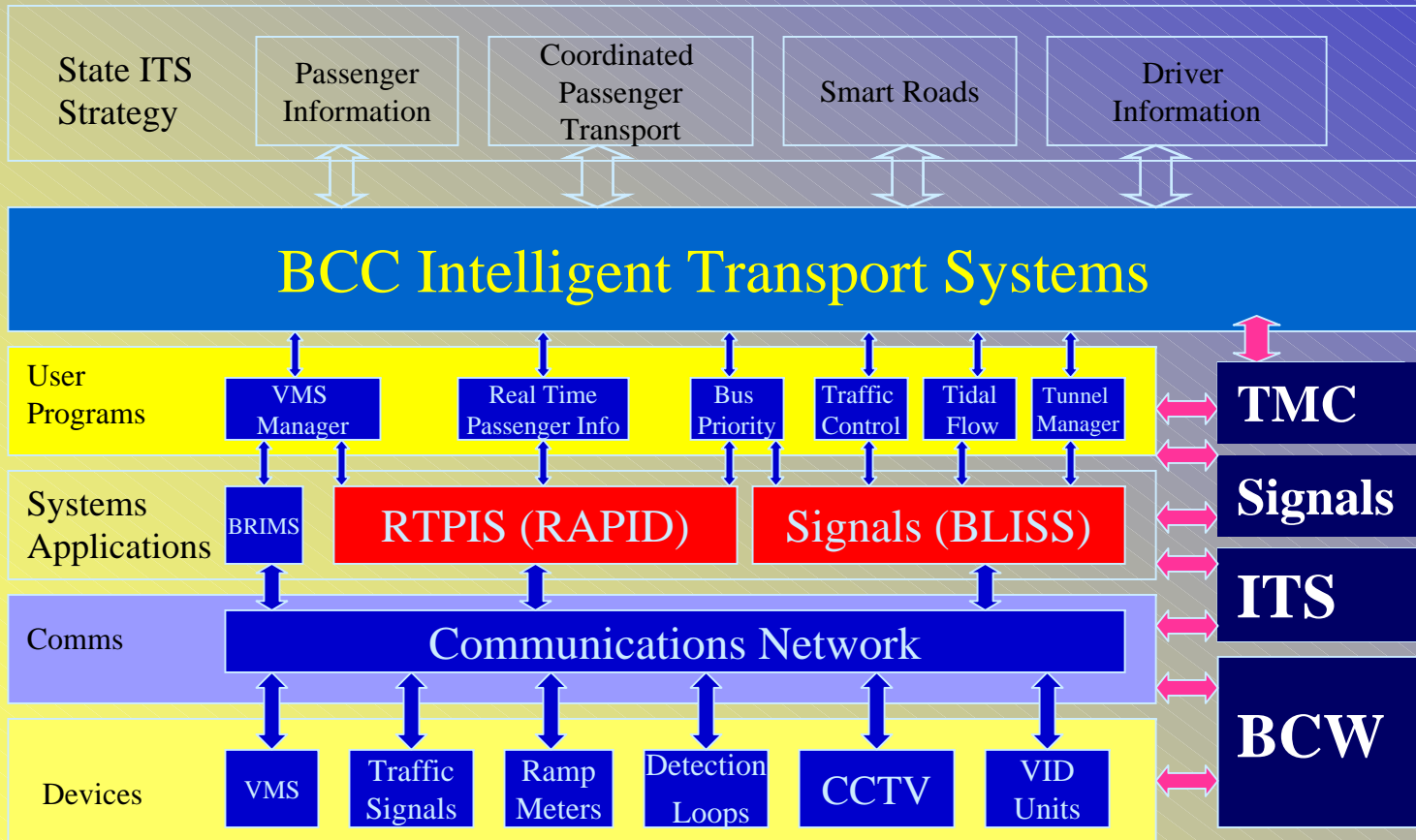


Communications & ITS

Signalised or controlled intersections require a means to communicate with each other and back to the control centre. The control centre must be able to interpret the data quickly to correct any traffic flow issues.

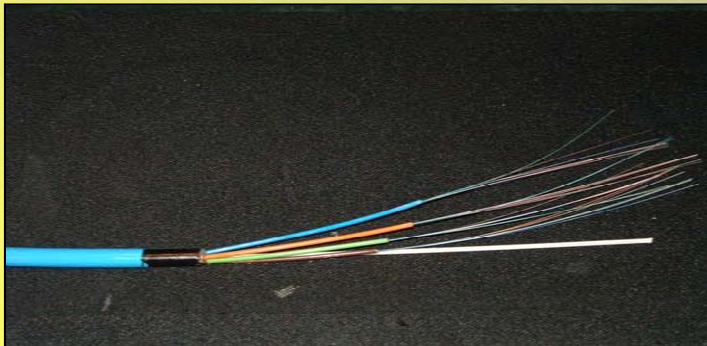


BCC ITS System



Major Challenges

- To introduce new technologies for faster and more reliable data transfer.
- Maintain the availability and quality of the information including video and data.
- Future proof a system to keep up with ever increasing information requirements
- An easily expandable multi-use information system.



Solution

- Installation of vast quantities of fibre optics for improved data transfer rates and reliability.
- Conversion from a serial communications system to an IP address network. Each site can be accessed remotely from anywhere so the intersection can be modified in real time.
- BCW's technicians are continuously searching the globe for, or designing systems internally to meet changing requirements.
- Conversion to digital technology, BCW has successfully converted BCC's analog CCTV system to digital to install streaming video solutions.



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VARIABLE MESSAGE SIGNS (VMS) and RAPID



VMS and RAPID

- To create an accurate real time display of buses and their expected time of arrival for the commuters and information of traffic conditions on major traffic routes.
- In order to have up to date and accurate information on Brisbane CityWorks' bus stop variable message signs, a cost effective system has been devised to monitor the location of Brisbane City Council's hundreds of buses.
- This information is also used for traffic flow modelling, allowing technicians to constantly monitor and optimise traffic flows



Major Challenges

To facilitate the installation of VMS at bus stops and other major traffic routes required a system that:

- could instantly update the expected time of arrival of the next bus or traffic related issues
- use small amounts of power (to connect into any point of the Energex network)



Major Challenges

- be vandal resistant
- economical and
- allowed direct communication to the control centre.



Solution

- Using the existing infrastructure at controlled and signalised intersections, the system works hand in hand with Vehicle Identification system (VID). As a vehicle passes over a detector loop the signal from the VID unit is received and sent to the main controller at a signalised intersection then sent onto the VMS.
- Variable Message Signage was developed in house at Brisbane CityWorks' Stafford workshops. The VMS can display 20 characters on each of its four lines.



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TRAFFIC RESPONSE UNITS and TRAFFIC CONTROLLERS



TRU's and Traffic Controllers

Currently road congestion costs Brisbane \$400 million per annum and approximately 50% of this congestion is due to traffic incidents. Department of Main roads have estimated incident management could save the community up to \$60 million per annum. The key objective of utilising Traffic Response Units is to manage the traffic at and around an incident using a coordinated approach with Police, Emergency “Services, and the BCC Traffic Control Centre.



Major Challenges

Units are to manage the traffic at and around an incident using a coordinated approach with Police, Emergency Services, and the BCC Traffic Control Centre. They provide:

- Traffic management at and around planned and unplanned events, including implementing traffic diversion plans;**
- Assistance to Police and Emergency Services at planned and unplanned incidents;**



Major Challenges

- **Ensure the area around incidents is made safe;**
- **Minimise the risk of occurrence of further secondary incidents**
- **On-road support for motorists and facilitating 3rd party assistance service providers.**

Solution

- The service will operate from 6.00 AM to 11.00 PM Monday to Friday and 9.00 AM to 5 PM weekends.
- They consist of 4 specially designed and purpose built vehicles with 5 field personnel reporting
- They have an average response time of 5 minutes.

Total jobs	140	2383
BCC jobs	114	1970
DMR jobs	26	403
Total breakdowns	68	1171
Vehicles shunted	11	157



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OTHER TRAFFIC MANAGEMENT SYSTEMS



Tunnel Management

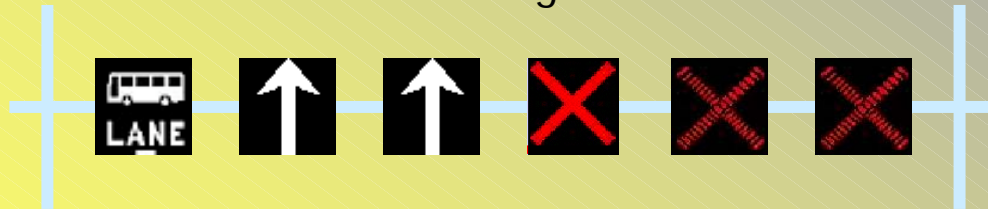


- Traffic Management System
 - Vehicle detection
 - 14 CCTV
 - 5 Variable Message Signs

Coronation Drive

Tidal Flow Lane Control System

- 2 permanent lanes in each direction with switchable T3 lane
 - 20 overhead gantries. 226 signs - 172 active, 54 passive
 - 5 entry signs inform motorists of number and type of lanes available
 - 8 barrier gates (4 pairs) provide only physical barriers in system
 - 425 Pavement lights to delineate reversible lane
 - Monitoring via 14 CCTV cameras
 - Total length of 2.5 km



- Routine maintenance and BCW monitors and provides emergency actions and response