



Department
of Transport
and Planning

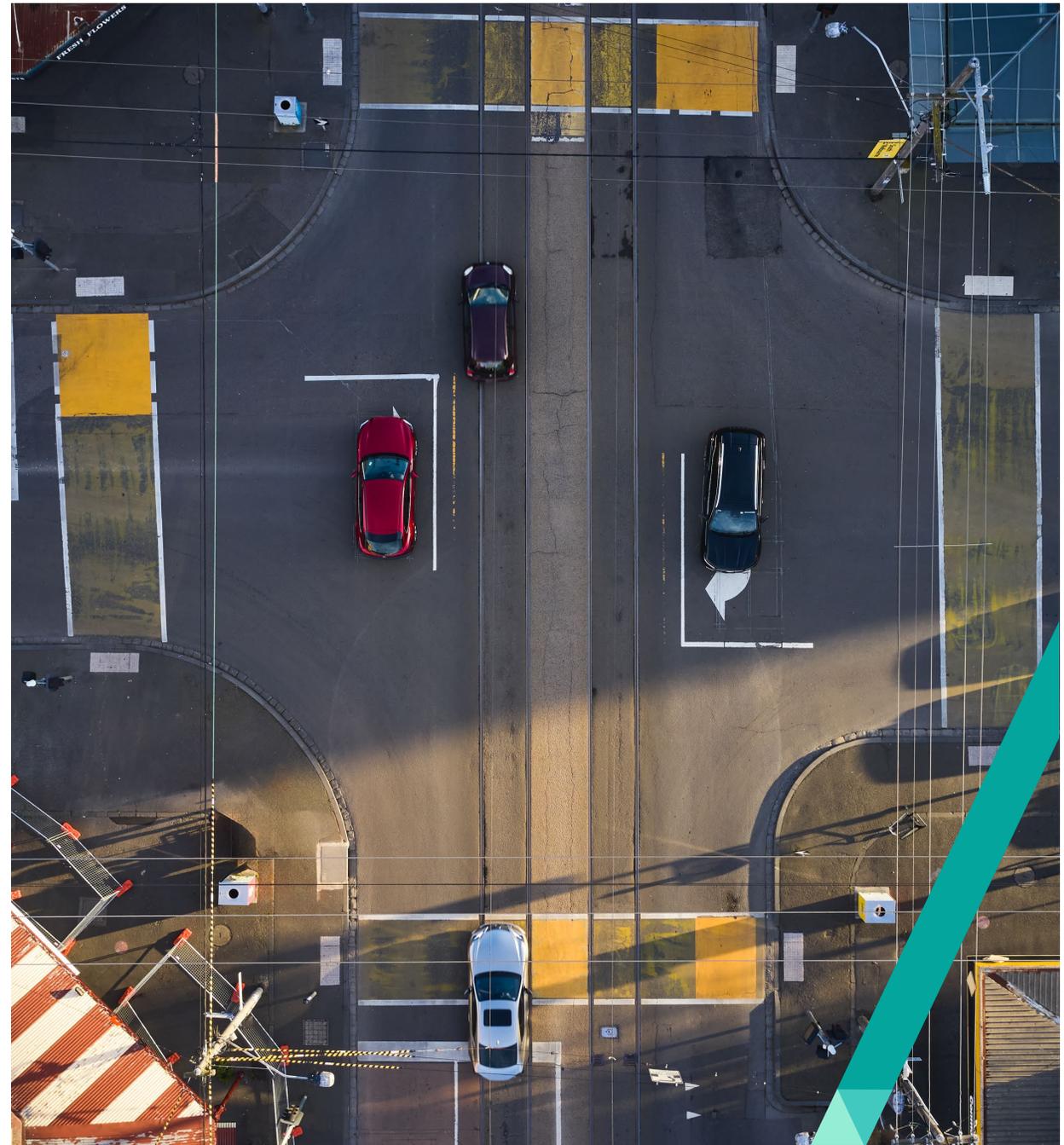
SMUG

Department of Transport & Planning,
Victoria

FEBRUARY 2026

Trent Robinson, Associate Director Signal Services

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Signals Family

Mission

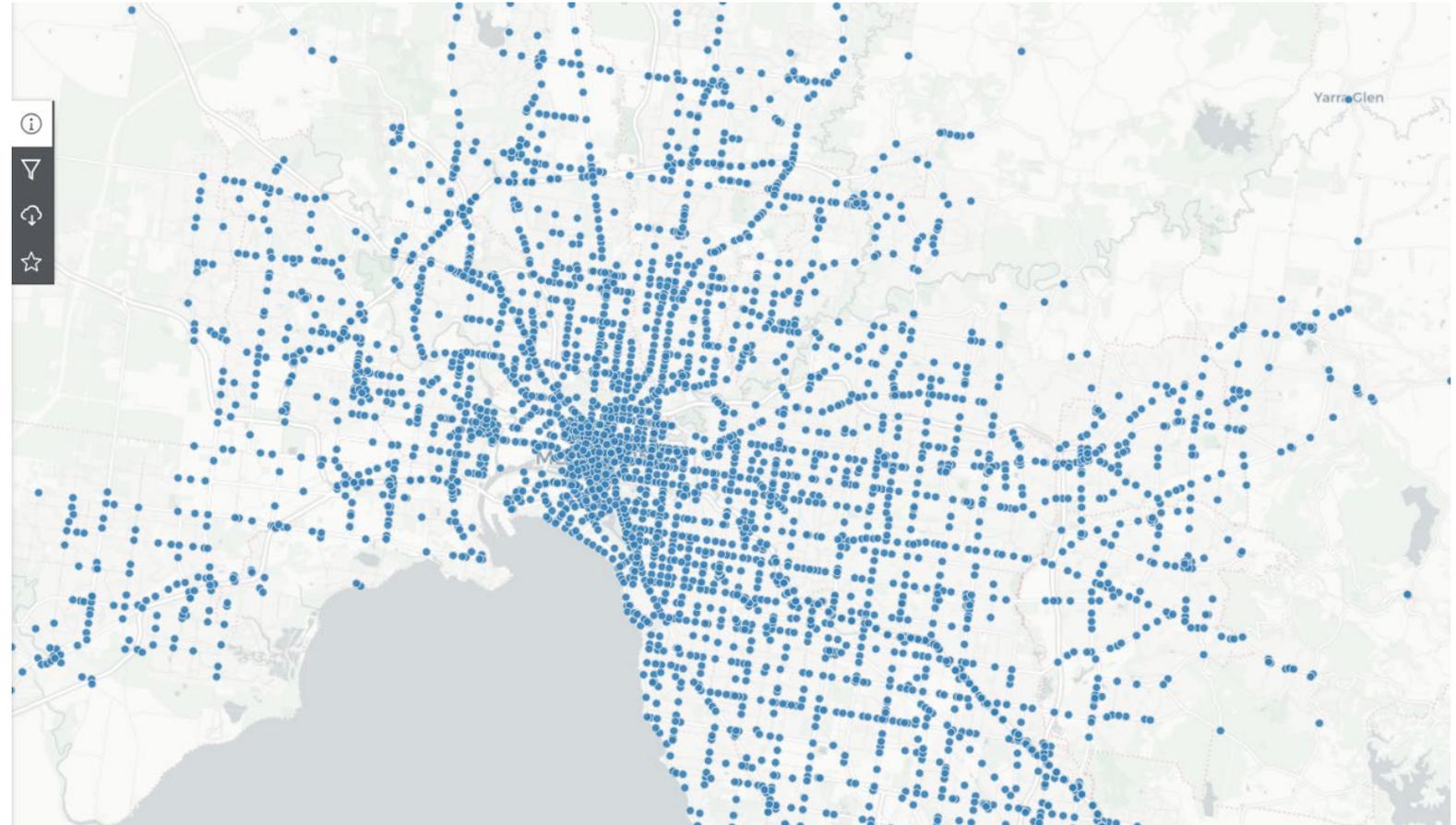
Design and optimise the traffic signal network (*local, arterial and motorways*) harnessing data and technology to provide safe, efficient and effective journeys for Victoria

Teams

- Managed Motorways
- Signal Design
- Controller Programming
- Real Time Signal Operations
- Signal Optimisation

Quick Facts

- Network Size
- SSDI
- Control Systems
- No. of Staff
- Budget



Challenges



Department
of Transport
and Planning

Challenge – Major Projects

- Project/consultant expertise
- Demand > capacity
- Network impact



**Level Crossing
Removal Project**



**Metro Tunnel
Project**



North East Link



**Regional Rail
Revival**



**Suburban Rail
Loop**



**West Gate
Tunnel Project**



Challenge – Risk

Human error

- Even with the best risk mitigations

Operational decision making

- Imperfect data/evidence
- Rapid assessment with limited resources
- Risk frameworks tend to be geared for *strategic* and *tactical* risks

Create Opsheet and PROM/SFT via

Map Procedure Checklist Edit

Summary

OBJECTIVE
A consistent process for Opsheets and PROM/SFT across Signal Services

Procedure

1.0 Receive PROM request form and delegate to Initiator

1.1 NO - NM - Lead Specialist - Design

NOTE Initiator may be delegated in accordance with the Signals Sign Off Delegation Matrix

GUIDE V02010000 - Signals SignOffDelegation.xlsx#1

2.0 Assign engineer

2.1 NO - NM - Lead Specialist - Design, TS - NO - NM - Signals Engineer, TS - NO - NM - Signals Engineer

2.2 Confirm Agreed PROM Target Date with customer

2.3 Create user 'notification' in Work Management System (WMS). Follow Opsheet Workflow steps in WMS ensuring the required Fields are updated as the work progresses to completion.

2.4 Assign engineer to WMS task to Design Work Sheet

2.5 WMS LINK to Work Management System User Training

2.6 If a new controller is required, send the controller requirements details to the project engineer. Project to confirm Controller Software Version and Type prior to drafting/creating Opsheet.

2.7 NOTE If a new site and connected to SCATS, a SCOT No. request needs to be submitted in SA.

2.8 WMS LINK to SCATS

2.9 WMS LINK to SCATS

2.10 WMS LINK to SCATS

2.11 WMS LINK to SCATS

2.12 WMS LINK to SCATS

2.13 WMS LINK to SCATS

2.14 WMS LINK to SCATS

2.15 WMS LINK to SCATS

2.16 WMS LINK to SCATS

2.17 WMS LINK to SCATS

2.18 WMS LINK to SCATS

2.19 WMS LINK to SCATS

2.20 WMS LINK to SCATS

2.21 WMS LINK to SCATS

2.22 WMS LINK to SCATS

2.23 WMS LINK to SCATS

2.24 WMS LINK to SCATS

2.25 WMS LINK to SCATS

2.26 WMS LINK to SCATS

2.27 WMS LINK to SCATS

2.28 WMS LINK to SCATS

2.29 WMS LINK to SCATS

2.30 WMS LINK to SCATS

3.0 Prepare draft Opsheet

Signal Design and Operation Guidelines
Part 4

Design of Signalised Facilities

Edition 2, January 2024

Network Technical Guide (NTG)
Supplement to Austroads Guide to Traffic Management Part 9:
Transport Control Systems –
Strategies and Operations

Version 2.0 Release Date December 2023

Network Operations
Department of Transport

Ramp Metering System Set-up
Operations Guidelines

15 Document information

Title: Signal Design and Operation Guidelines Part 5 – Design of Operation of Traffic Signals

Developed by: Signal Services

Approved by (business process/references): Signal Services

Approved by (engineering practice): N/A (engineering practice extracted as of edition 4, moved to supplements)

Date of Approval:

Amendment Record	Pages(s)	Issue Date	Amendment Description
1.0.0	All	September 2019	Draft
1.0.1	All	September 2022	Draft
1.0.2	117-118	December 2022	Added Flashing Prepare to Stop Sign
2.0.0	All	July 2023	Revisions to match AGTM changes
2.0.1	6, 8, 109	August 2023	Updated File It and Promapp links; removed references to deprecated VCB Intersection template
2.0.2	42	August 2023	Added more detailed description of V.A. sequence
2.0.3	All	January 2024	Updated Ball references to Content Manager references and proofread
2.0.4	44, 45, 65, 151	May 2024	Updated PUFFIN references to dual updated default PUFFIN operation

Traffic Signal Plan - Checklist

The purpose of this document is to provide a list of items that are checked by DTP's Signal Services, Regions (MS), ITS, A&E and the Delivery Project Manager (Metro Capital Delivery, MTA, etc) before a traffic signal plan is approved, including the issuing of a Memorandum of Authorisation (MoA) by DTP. It is also helpful as a checklist for draftsperson/design consultants/project managers before submitting a plan for approval.

This document is not intended to be a list of design requirements nor to be exhaustive. Additional guidance can be found in the priority order of DTP publications (eg. Supplements, Standard Drawings, Design Notes, etc), Austroads and Australian Standards, most of which are listed in the section Signal Design Reference & Links below, noting the application of these references require sound engineering judgement.

NOTE: The last column – DTP Checker – shows who (namely Signal Services, Assets & Engineering (A&E), Project Delivery Manager, Regions and/or Intelligent Transport Systems) is responsible for reviewing the associated item, noting the DTP team that issues the MoA is accountable for the project outcome.

Signal Services Opsheet Initiation v2.0.7

DTP Checker A&E

Initiation Date: 9-Aug-22 Region: Choose an item.

To: [DELIVERY ENGINEER] - [DELIVERY AREA]

[SITE NAME] Site Number: [1234]

Delivery Area Task: [123456.00 - 01.01] Signals Task: Choose an item - 012

Classification: Choose an item. Lanterns: Choose an item.

Opsheet Target: Click or tap to enter a date. Program Target: Click or tap to enter a date.

Responsible Officers: You and Choose an item.

Job Type: Choose an item. Controller Type: Choose an item. Software Version: [VC5 R82]

DESCRIPTION OF WORK

Please check the attached final TSP against the draft plan comments (see me before requesting changes to the final draft plan)

id, validated by A&E

Notes (Intersections of an Operated Signals) (Including zebra crossings)

Opsheet Design and Review Checklist

Site Name Site No

Designer Design Date Click or tap to enter a date.

Checker Sign-off Date Click or tap to enter a date.

Note: Red italics indicate required fields.

0. Face Sheet	INTERSECTION VCB	Designer	Checker
	New or Re-program		
	Check controller type & software version (in SCATS, or RAI if offline)		
	Check lantern type QUILD & ELV/DW/PD (on Signal Plan in RAI)		
	Description of changes is accurate		
	SCATS Data Changes text matches changes in change summary		
	Re-program		
	Update Graphics 'Yes', if required – including changes to Site Notes		
	(DSP/MS)		
	Changes to signal hardware '✓', if required		
	Additional detectors '✓', if required. Types specified correctly		
	Changes to existing detector numbering '✓', if required		
	New		

Challenge – ITS

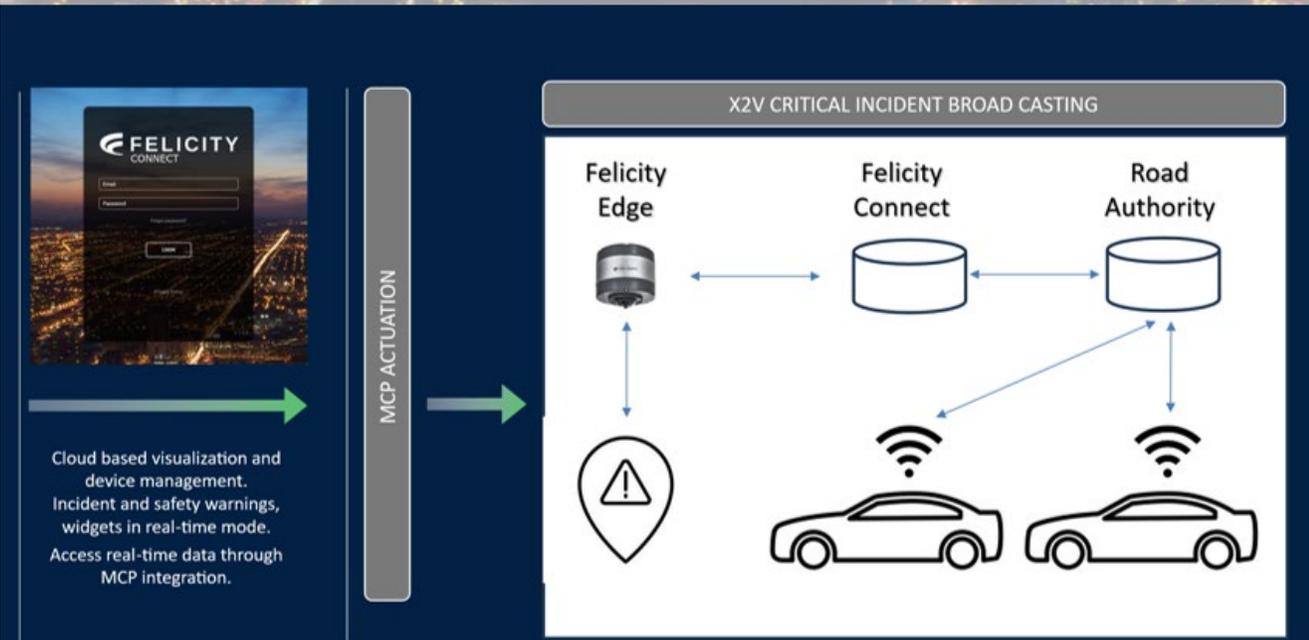
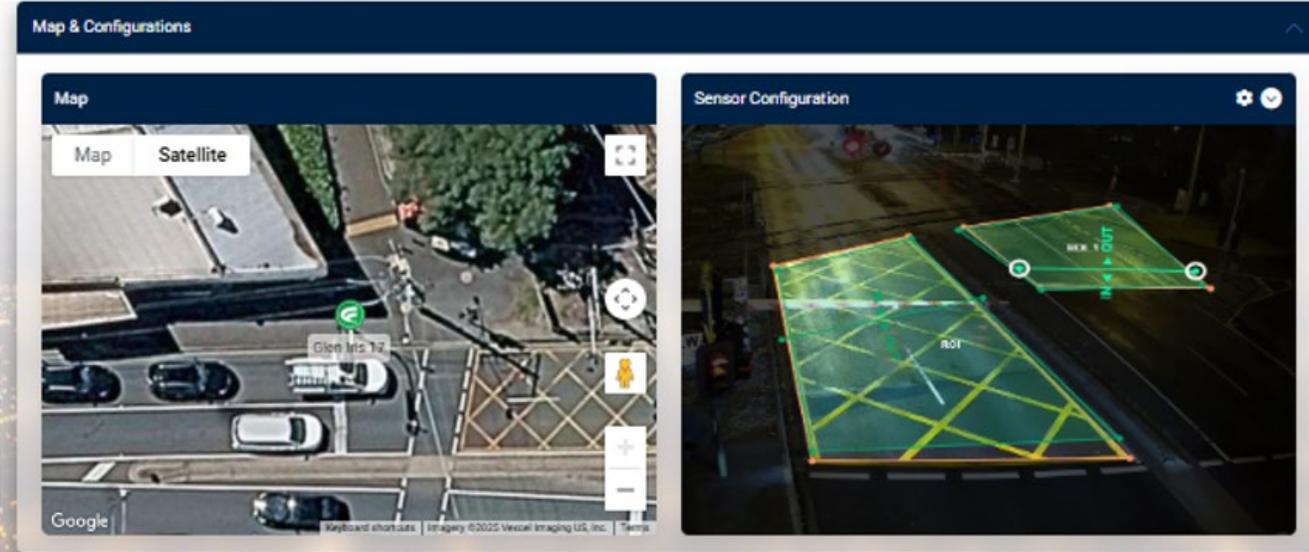
- Collaboration – government, academia & industry (national and international)
- CITS



Australian Integrated Multimodal EcoSystem (AIMES)



Home > Sites > [Glen Iris Level Crossing](#) > Glen Iris 17



Opportunities



VICTORIA
State
Government

Department
of Transport
and Planning

Opportunity – Public Relations



Giving you a better run along Boundary & Wells Rd

Media Release

The Hon Melissa Horne MP
 Minister for Casino, Gaming and Liquor Regulation
 Minister for Local Government
 Minister for Ports and Freight
 Minister for Roads and Road Safety



Friday, 16 June 2023

SMARTER CROSSINGS GETTING VICTORIANS HOME SAFELY

The Andrews Labor Government is rolling out cutting edge road crossing technology to keep Victorians safe on some of Melbourne's busiest roads.

Dynamic pedestrian crossings have been rolled out at pedestrian areas including shopping strips, sporting arenas, schools and train stations, with the 100th crossing recently installed near Dandenong High School.

Using some of Australia's latest pedestrian safety technology, the crossings are already protecting pedestrians in over 100 high-traffic areas including the MCG, Marvel Stadium and Melbourne Park, with a further 11 crossings set to be installed in the coming months.

VicRoads Sponsored
 We've recalibrated traffic lights at key intersections along this busy corridor - improving journey times in the morning and afternoon peaks.



VicRoads Sponsored
 We've shaved 14% off southbound travel times, and 8% off northbound travel times along this section of Palmers Rd in the afternoon - part of our biggest traffic light review in Melbourne's history.

14% travel time improvement in the afternoon peak

Palmers Road
 Between
 Delaney Blvd & Dunning Road



More green time for vehicles in Mulgrave

VicRoads Sponsored
 9 August at 16:54
 Isaac, there might just be a job in our Smarter Roads team for you. Year One student, Isaac, sent a letter asking if someone could investigate a set of traffic lights on Plenty Rd in Bundoora - because they were sometimes making him late for school. Good news Isaac, the lights will be reviewed as part of the next stage of our Smarter Roads program: LINK



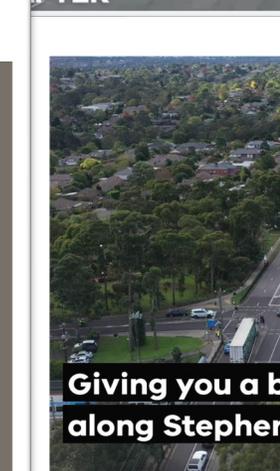
VicRoads Sponsored
 You may not notice them, but often a small change to traffic lights can have a big impact for those on the road. Here's just a few wins from our biggest ever traffic light review as part of the Smarter Roads program.



In Mulgrave, 240 extra cars now turn right from Wellington Road into Brandon Park Drive in the morning peak.



BEFORE



Giving you a better run along Stepnsons Rd



Pedestrian wait times dropped in Narre Warren



Traffic flow improves along Boundary/Wells Road

19 September 2022

Motorists and pedestrians are already seeing the benefits of a traffic light review of Boundary/Wells Road, with improved traffic flow along the 10-kilometre stretch between Clayton South and Chelsea Heights. We've reviewed and recalibrated the traffic lights at 18 intersections and pedestrian crossings along this busy stretch of road in Melbourne's southeast, shaving more than a minute off average afternoon peak trips from Heatherton Road to Thames Promenade.



VicRoads Sponsored
 We've recalibrated traffic lights along this busy corridor - creating smoother traffic flow and improving journey times.

Traffic lights saving time

A traffic light review has helped drivers save time on the Clayton Road. Following the latest government funding, the Victorian Government has announced that more than 400 intersections have been 'upgraded' as part of the Smarter Roads Program. On Clayton Road, city bus travel times have reduced by 8 per cent in morning peak and afternoon delays reduced by 7 per cent in afternoon peak. This is despite a 16 per cent rise in traffic. The Government has announced the next stage of the program of nearly 3000 intersections across Melbourne by 2026. Road Minister Ben Carroll said the program is a "game-changer" for Victorian motorists, reducing traffic jams and improving safety for every road user. "The program is already delivering results with motorists saving time on their commutes and reduced delays - getting to where they need to go more quickly and safely." Under the review, public transport is prioritised by traffic lights, with the help of real-time GPS tracking to cross-check itineraries. Roadside cameras and 43 road-side sensors monitor intersections. As well as automatically recalibrating timing times, the high quality cameras detect red lights and lights when only small groups need to cross. The traffic light review is rolled out in the next months in Melbourne since the lights were standardised nearly 50 years ago.

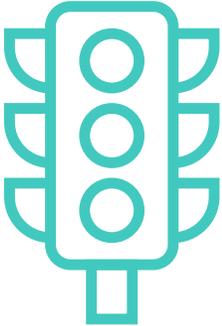


Road Minister Ben Carroll announced the next stage of an extensive review of Melbourne's traffic lights.

light review, creating a smoother traffic flow.

we're creating smoother traffic flow on Smarter Roads

Opportunity – Succession Planning



Why?

- 9 people / >200 yrs

How?

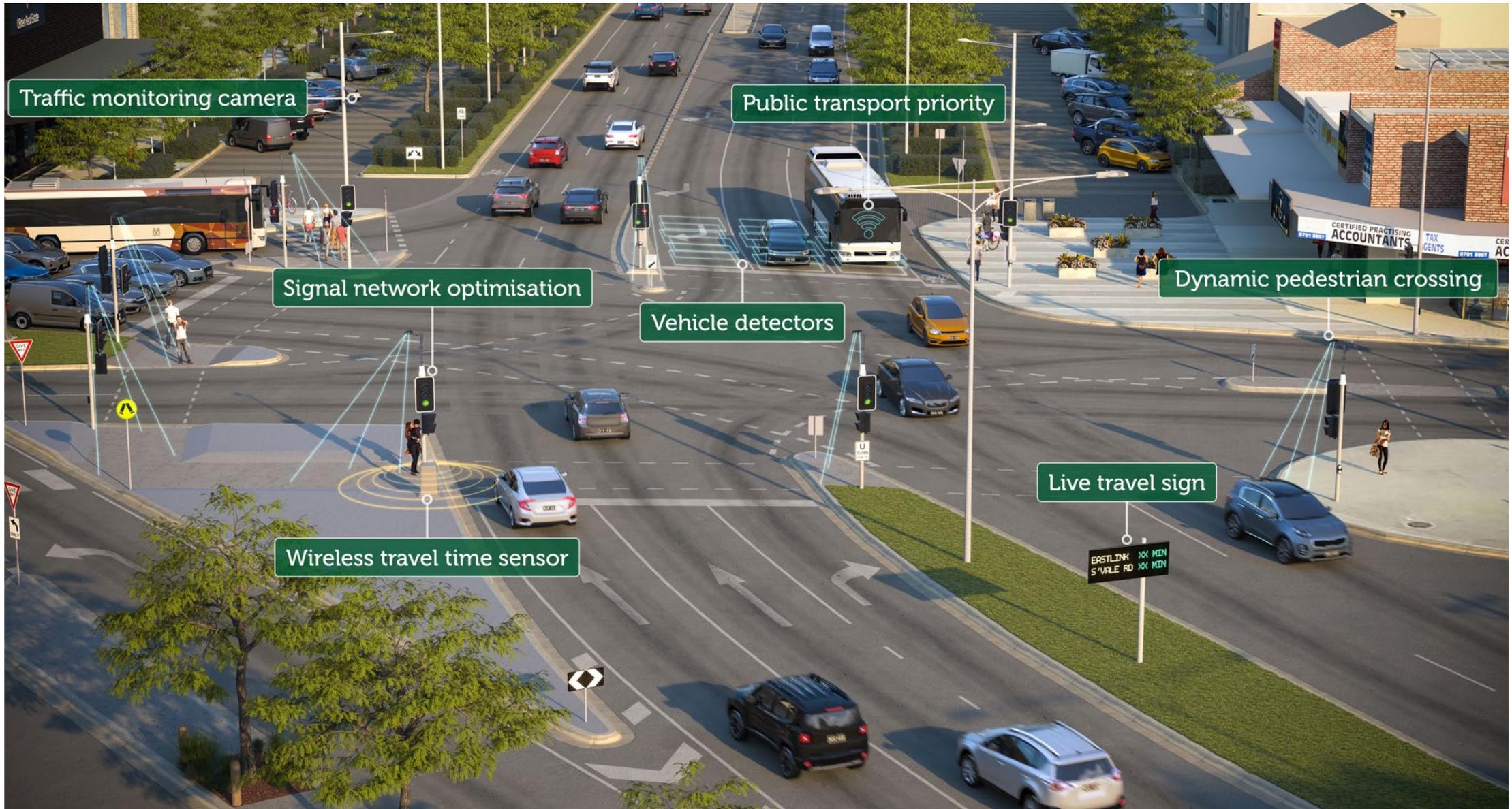
- Buy-in
- Masters Degree
- Value Recognition
- Capability & Proficiency
- Structure

Outcome

- Culture
- No. of Staff – 2017 Vs 2026
- Short-term retention – 79%
- Long-term retention – 65%

Question group	Highest scoring questions	You 2025
Meaningful work	I achieve something important through my work	100%
Job enrichment	I can use my skills and knowledge in my job	100%
Job enrichment	I clearly understand what I am expected to do in this job	97%
Flexible working	My direct line manager supports working flexibly	97%
Manager leadership	My direct line manager treats employees with dignity and respect	97%
Manager support	I can discuss problems or issues with my direct line manager	94%

Opportunity – Smarter Roads



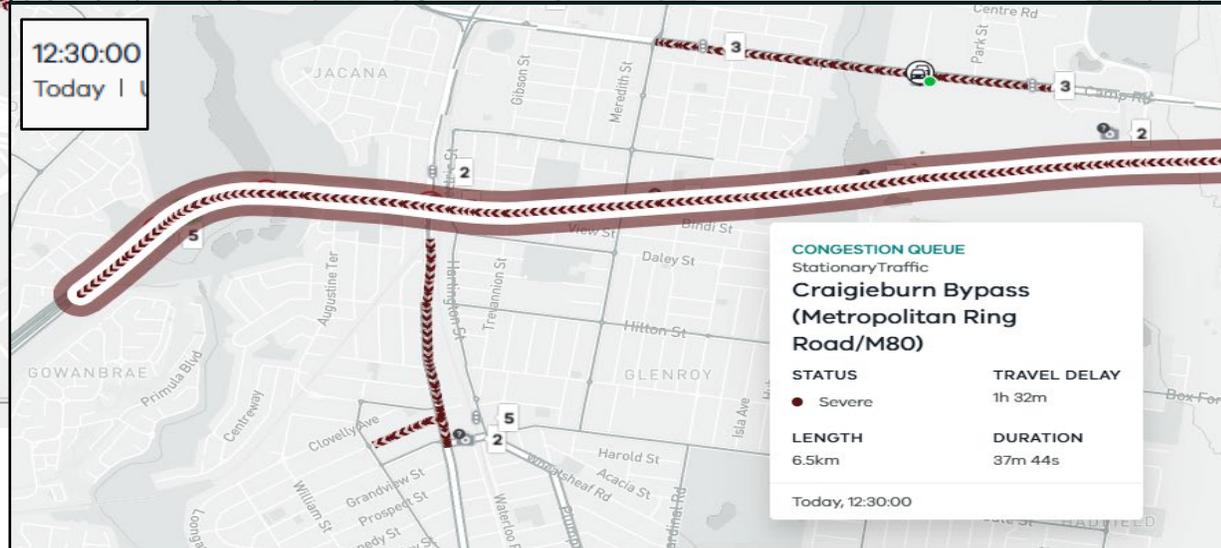
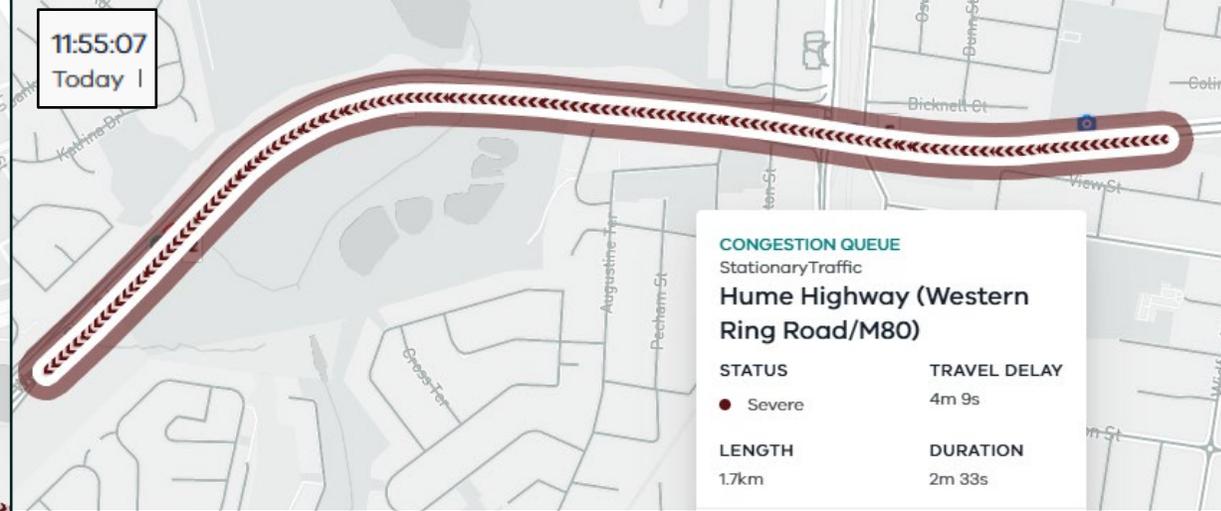
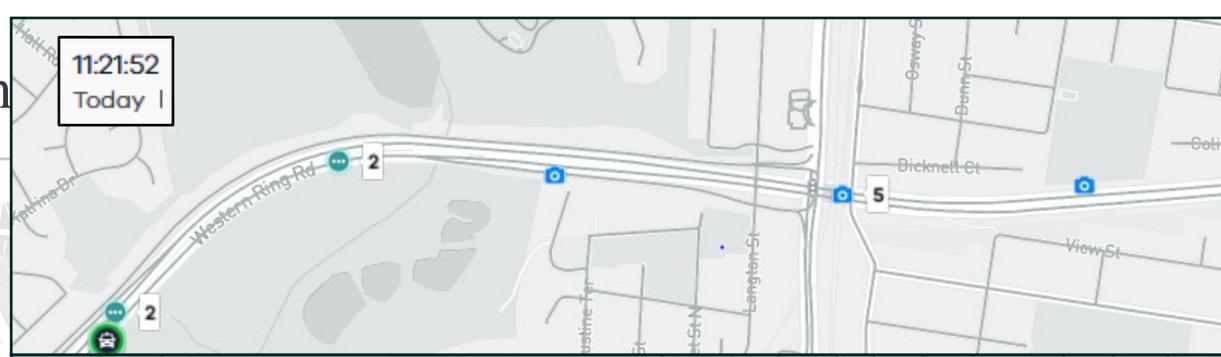
Opportunity – Optim



Vehicle detectors & sensors

- [AddInsight](#)
- STREAMS
- SCATS

DTP DATA



- Close
- Details
- Deselect all
- Details detail
- Red alarms
- Select all

Force

Weather

- Bureau of Meteorology

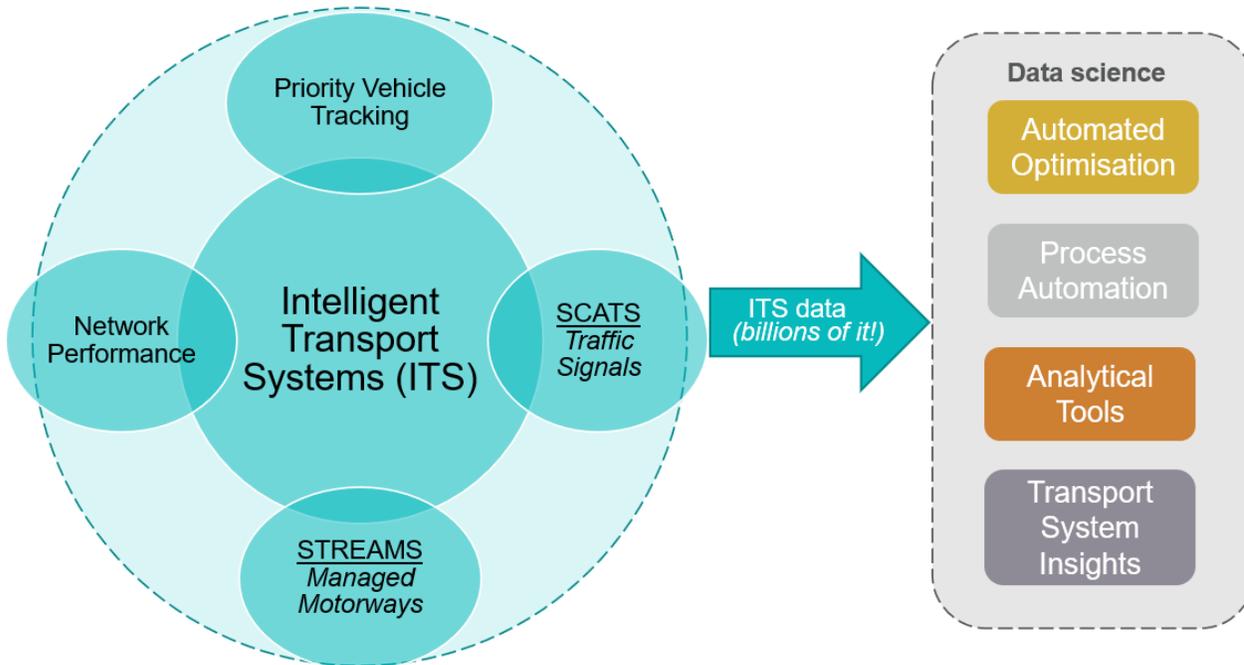
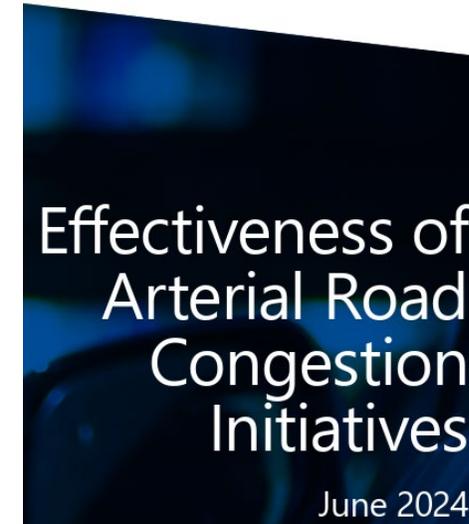


“Begin expanding smart motorways into Melbourne’s growth area freeways ”

“Use modern traffic control technology for efficient and safe journeys”

Opportunity – Continuous Improvement & Innovation

- DTP CITS Strategy
- VAGO
- JAG



“Signal reviews are complex and involve multiple teams within the department, including highly trained signal engineers”

1 year of operation appraisal period	
	\$119.4
	\$117.0
	50.1

JAG – Agentic AI Assistant

“Team in a Box”

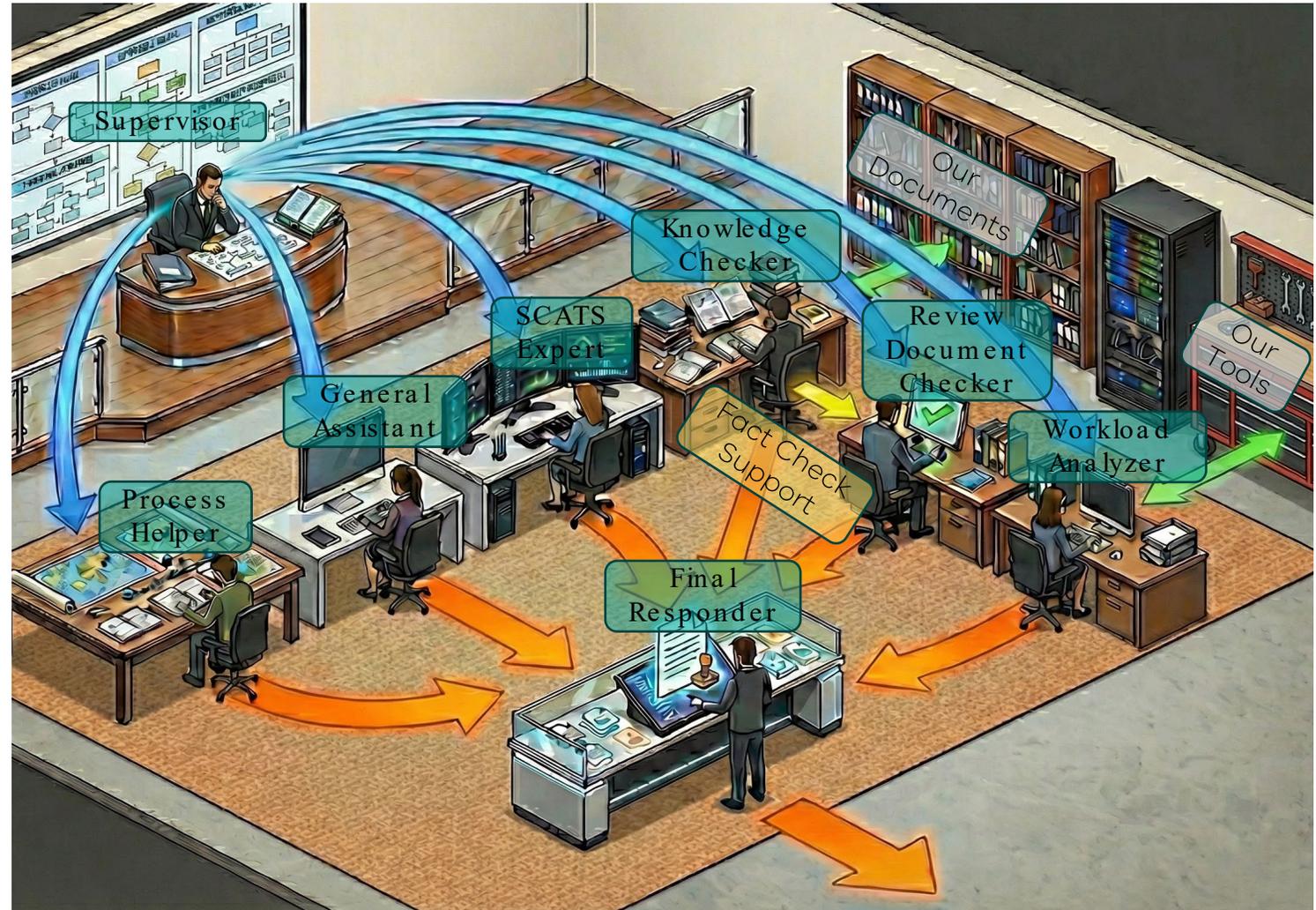
A state-of-the-art Multi-Agent System where specialized LLM-powered AI Agents coordinate to handle complex real-world workflows, outperforming generic tools

In Practice

- Plan. Delegate. Consolidate.
- Integration potential with SCATS

Behind the Scenes

Industrial-grade foundation powered by cutting-edge techniques



▲ AI-assisted image (based on Google Nanobanana)

JAG – Agentic AI Assistant

Signal AI Assistant

What is the caus...

+ New Chat

Export

Author: Chris Zheng

Conversation

What is the cause of see through effect?

Answer

The cause of the 'see through effect' is the unintended visibility of green traffic signals to motorists for whom the signal is not intended. This typically occurs in two main scenarios:

1. At paired intersections, downstream green signals can be seen by motorists stopped at the upstream stop line, leading to confusion.
2. At intersections where the legs intersect at angles other than 90°, green signals on one leg may be visible to drivers on an adjacent leg.

This effect is due to the physical arrangement of intersections and the orientation of signal lanterns, which allows signals meant for one approach or direction to be seen by drivers on another approach or at a different stop line.

Document 1: AGTM-Part 9-Transport Control Systems - Page 132

Retrieved Content:

With paired intersections, care should be taken to avoid the potential 'see through' problem, i.e. downstream green signals being seen by motorists stopped at the upstream stop line (refer to Part 10 of the Guide to Traffic Management, Austroads 2020g). Austroads 2020 | page 119

For intersections where legs intersect at other than 90° angles, care needs to be taken to avoid the potential see-through problem, by ensuring that the green signals on one leg are not seen by drivers on an adjacent leg. For further guidance, refer to Part 10 of the Guide to Traffic Management (Austroads 2020g). Austroads 2020 | page 120

Relevance: 100.0%

Guide to... 132 / 284 | 62%

Guide to Traffic Management Part 9: Transport Control Systems – Strategies and Operations

For key traffic management selection considerations for staggered T-intersections and freeway interchange ramps, refer to Part 6 of the Guide to Traffic Management (Austroads 2020f).

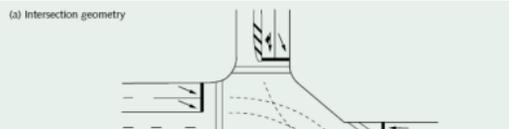
6.12.3 Intersections with More than Four Legs

At intersections with more than four legs, there are potentially more than four origin-destination movements from each approach road. The design of lane arrangements and signal phasings for such intersections is a significantly more complex task. Where allowed, U-turn movements will also need to be considered in the design, refer to AS 1742.14. Generally, these complex intersections would be treated on a site-specific basis.

An example of a five-legged intersection geometry and phasing arrangement is shown in Figure 6.24.

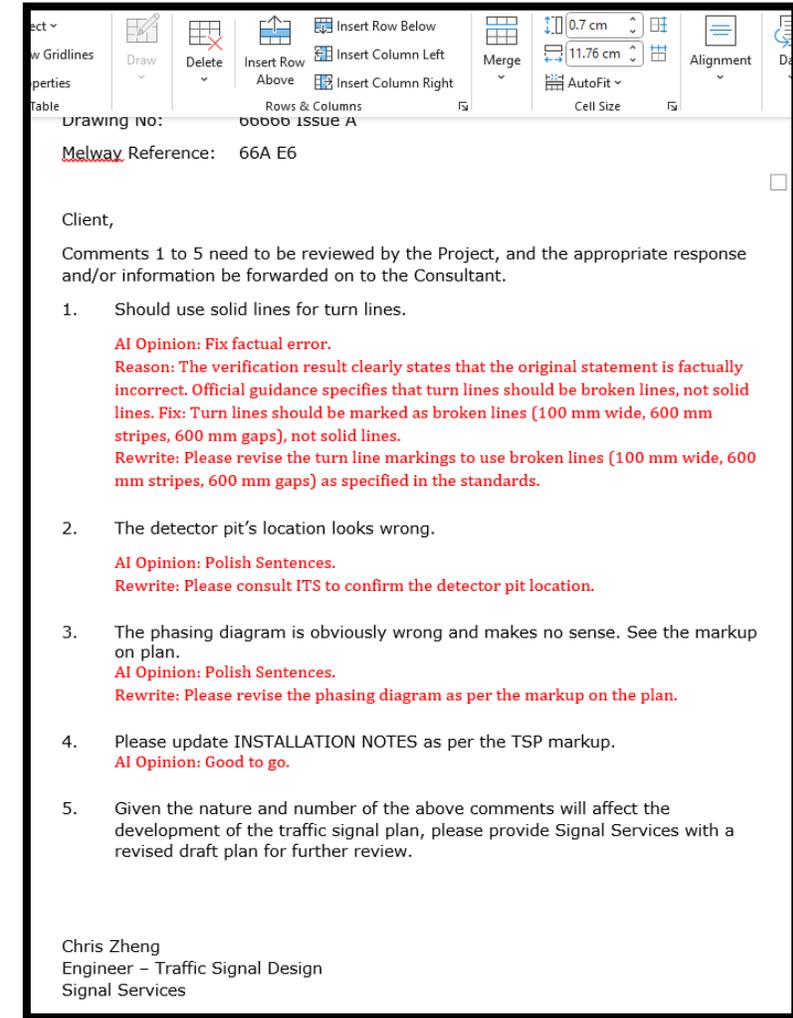
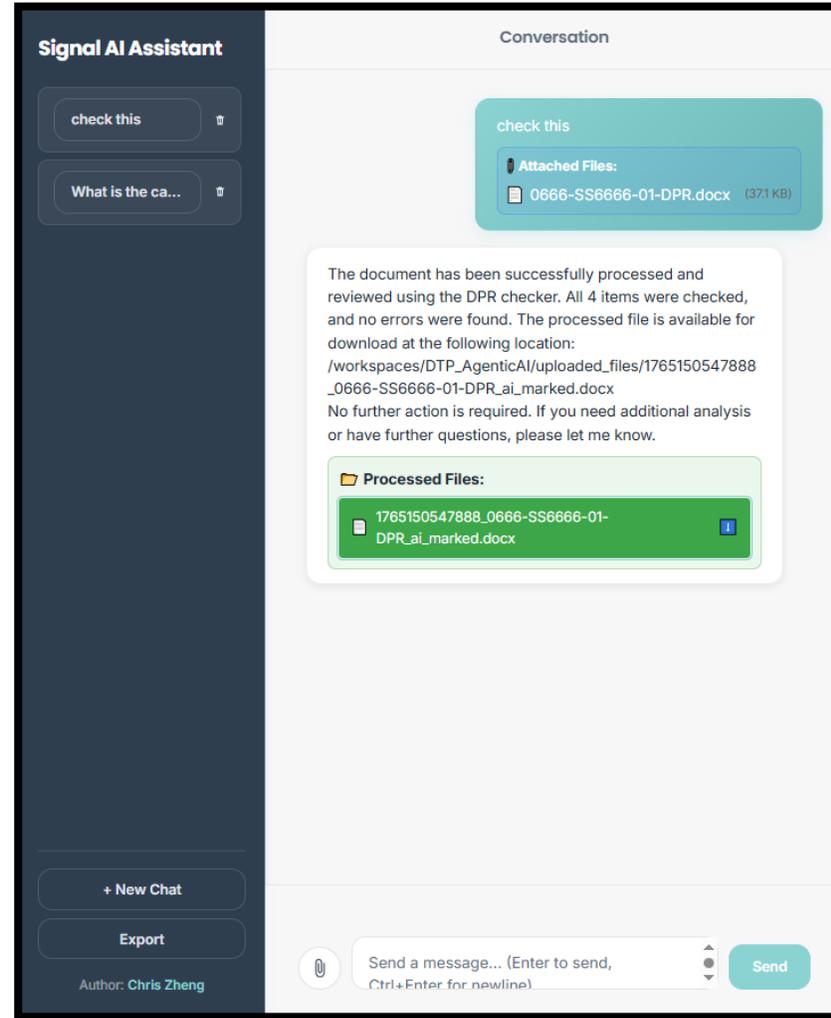
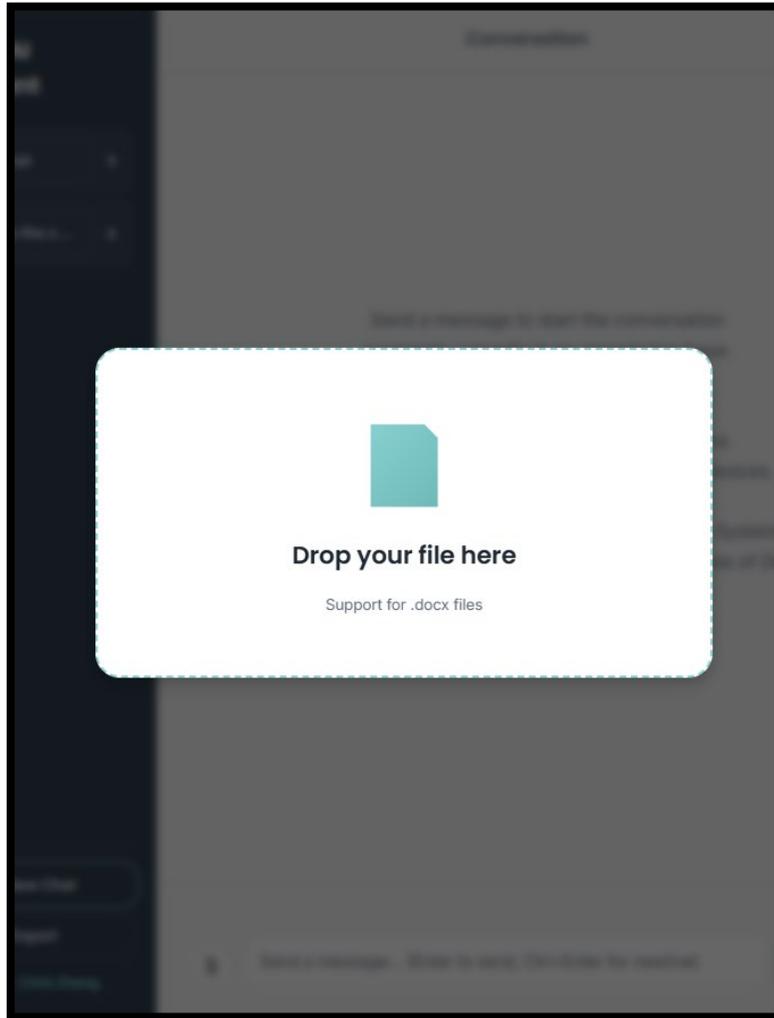
Figure 6.24: Example of intersection with more than four legs

(a) Intersection geometry



Send a message... (Enter to send, Ctrl+Enter for newline) Send

JAG – Agentic AI Assistant



JAG – Agentic AI Assistant

Signal AI Assistant

check my workl...
check this
What is the caus...

+ New Chat
Export
Author: Chris Zheng

Conversation

check my workload, anything due in 14 days?

Workload Analysis: Tickets Due in the Next 14 Days

1. JQL Filter Used

- JQL:**
`created >= -30d AND due <= startOfDay("+14d") AND (assignee = currentUser() OR comment ~ currentUser()) ORDER BY updated DESC`
- Intention:**
This filter identifies all Jira tickets created in the last 30 days, with a due date in the next 14 days, that are either assigned to you or where you are mentioned in comments. It helps you focus on immediate, relevant work.

2. Raw Jira Data Collected

Key	Summary	Status	Assignee	Priority	Created	Project
KAN-3	Signal Plan Review-666-C Road/D Street	Idea	Unassigned	Medium	2025-11-21 12:39:56	Could be your team
KAN-2	Signal Plan Review-888-E Road/F Street	Idea	Chris Zheng	Medium	2025-11-20 11:03:48	Could be your team

3. Analysis Summary

- Total tickets due in 14 days:** 2
- Status:** Both are in "Idea" (early stage).
- Priority:** Both are Medium; no urgent or critical items.
- Assignee Distribution:**
 - Chris Zheng: 1 ticket (KAN-2)
 - Unassigned: 1 ticket (KAN-3)

Send a message... (Enter to send, Ctrl+Enter for newline) Send

+ Create 13 days left

Could be your team

Summary List **Board** Calendar Timeline Pages Forms

Group

IDEA 3

Opsheets-777-A Road/B Street
20 Mar 2026
[x] KAN-1 = CZ

Signal Plan Review-888-E Road/F Street
15 Dec 2025
[x] KAN-2 = CZ

Signal Plan Review-666-C Road/D Street
15 Dec 2025
[x] KAN-3 = [User]

+ Create

Quickstart

Thank you



Department
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