Austroads Design Principles for Adapting Roads & Infrastructure for Emerging Mobility Technologies (2026)

What this means for the Future of Temporary Traffic Management?

TransIA
Transport Infrastructure Advisory

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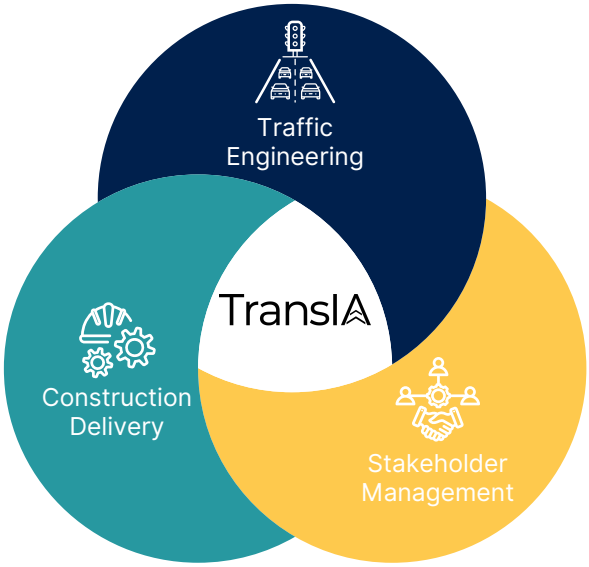

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EXECUTIVE SUMMARY

This summary report has been prepared by **Transia** to help **Temporary Traffic Management (TTM)** practitioners understand the key implications of Austroads' *Design Principles for Adapting Roads and Infrastructure for Emerging Mobility Technologies* report (2026) on future TTM planning, design, delivery and maintenance.

The Austroads report provides a future-focused framework to help road agencies prepare roads and infrastructure for emerging technologies, including Automated Vehicles (AVs), Connected and Automated Vehicles (CAVs), Electric Vehicles (EVs), Advanced Driver Assistance Systems (ADAS) and Cooperative Intelligent Transport Systems (C-ITS). The report identifies **24 design topics and 135 design principles** across physical infrastructure and digital infrastructure.

Emerging mobility technologies and related innovations are changing the way roads and infrastructure need to be planned, designed, operated and maintained. For TTM, the Austroads report is important because these changes are reshaping the operating environment in which TTM must function.

The most important shift for the TTM industry is the need to plan for both **human and machine users** of the road network. The practical implication is **change it physically, update it digitally.** This summary report identifies the key physical and digital infrastructure design topics that are relevant to TTM and the key implications for consideration.

While the Austroads report provides an important step toward practically preparing road infrastructure for emerging mobility technologies, several gaps and opportunity areas remain for not just the TTM industry but the broader road network.

Transia identifies three key areas of concern with the report as it relates to TTM:

- The risk of ad-hoc adoption, uncertainty and network inconsistency
- The cost of adaptation
- The lack of TTM-specific design and implementation guidance.

The overall concern is that because implementation of the design guidelines and principles are entirely optional and flexible and left to agency discretion, that infrastructure adaptation is likely to occur in a fragmented ad-hoc way. From a TTM perspective, this is concerning because **uncertainty and inconsistent adoption** on the road network can increase both complexity and safety risk.

The report also identifies future guidance development opportunities directly relevant to TTM, particularly temporary traffic guidance schemes, line marking and signage, and digital roadside signage for ADAS/AV readability.

It is recommended that TTM practitioners remain aware of future Austroads guidance development and look for opportunities to provide industry feedback. This will be important to ensure any future requirements are practical, nationally consistent and workable in real project environments.

1) INTRODUCTION

The Austroads' ***Design Principles for Adapting Roads and Infrastructure for Emerging Mobility Technologies*** **(2026)** provides a future-focused framework to help road agencies prepare for Automated Vehicles (AVs), Connected and Automated Vehicles (CAVs), Electric Vehicles (EVs), Advanced Driver Assistance Systems (ADAS) and Cooperative Intelligent Transport Systems (C-ITS). The report **identifies 24 high-level design topics** across physical and digital infrastructure, recognising that these technologies place new demands on road infrastructure and supporting systems.

Emerging mobility technologies and related innovations are changing the way roads and infrastructure need to be planned, designed, operated and maintained. For **Temporary Traffic Management (TTM)**, the Austroads report is important because these changes are reshaping the operating environment in which TTM must function.

Professionals in the TTM industry are likely to have some awareness of these emerging technologies, although many may not yet be familiar with how they could affect TTM. These mobility technologies have been evolving in the permanent road network for some time but their implications on TTM are still developing.

The release of Austroads' research report signals a shift from future-thinking to practical action. These technologies are no longer just long-term concepts; road agencies now have the option to use the design principles to consider how infrastructure may need to change to support them safely. However, there is currently no requirement for agencies to adopt, apply or even consider the principles. For the TTM industry, this highlights both the **importance and uncertainty** of how temporary road environments will fit into a more digitally integrated road network.

This summary report outlines the key Austroads design principles relevant to the TTM industry, with a focus on what the research means for the planning, delivery, implementation and maintenance of temporary traffic environments. It also provides **Transia's** response to the report, including key considerations, gaps and opportunities as the industry transitions to a more digital, connected and data-enabled road network.

2) THE DESIGN TOPICS AND PRINCIPLES

Austroads identified **24 design topics and 135 design principles** across two domains: **Physical Infrastructure (PT) and Digital Infrastructure (DT)** to help guide infrastructure planning and decision-making to accommodate the demands of these new and evolving technologies.

The topics are not intended to be a prescriptive checklist or an immediate standard for all agencies. They are a flexible, future-focused set of principles that agencies can apply depending on project context, local need, technology maturity and operational readiness.

Each of the design topics sets out the background context, identifies the key challenges, outlines key design considerations, related topics, the principles and future research areas.

2.1 Timeframes and Application

The Austroads report does not provide a rollout plan or implementation timeframe. The design principles are intended to be applied flexibly by road agencies, depending on project context, local need, technology maturity and operational readiness.

The principles are future-focused and reflect anticipated infrastructure needs over a **20- to 40-year horizon** as vehicle technologies continue to evolve. The report includes a list of near-term opportunities to apply the design principles, such as improving line marking visibility, replacing faded signage, reducing ghost line markings, improving consistency between physical signage and digital information.

The report also identifies areas where further guidance development and research will be needed before more detailed requirements can be established.

2.2 Physical Infrastructure Design Topics (PT)

The **11** physical infrastructure topics focus on how the road environment is seen, interpreted and used by vehicles and road users. In simple terms, these topics are about making the physical road environment clear, consistent, readable and maintainable.

1. Managing transitions of control (automated to manual) (PT1)
2. **Ensuring readability of lane markings and road signage by vehicles (PT2)**
3. **Ensuring compatible road and traffic design for AV navigation and operations (PT3)**
4. Maintaining roadway and pavement integrity for AVs and EVs (PT4)
5. Managing mixed traffic interactions with AVs (PT5)
6. **Supporting CAV readability of digital roadside signage (PT6)**
7. Managing AV interactions with E-scooters, cyclists and personal mobility devices (PT7)
8. Kerbside management for AVs (passenger pick-up, drop-off and automated deliveries) and EVs (PT8)
9. Minimising urban congestion from AV fleet staging, parking and idle circulation (PT9)
10. Ensuring EV-compatible crash barriers (PT10)
11. **Maintenance and asset management for CAV and EV infrastructure (PT11)**

2.3 Digital Infrastructure Design Topics (DT)

The **13** digital infrastructure topics focus on the information, communications, systems and governance needed to support connected and automated mobility. In simple terms, these topics are about making sure the digital version of the road network is accurate, current, secure and aligned with what is happening physically on site.

1. **Ensuring CAV awareness of temporary and dynamic traffic conditions (DT1)**
2. **Ensuring data accuracy and validation for AV navigation (DT2)**
3. **Ensuring reliable CAV communications for continuous data exchange (DT3)**
4. **Protecting CAV and transport data from cybersecurity threats (DT4)**
5. **Ensuring CAV compliance with dynamic road regulations (DT5)**
6. Supporting multimodal and CAV integration (DT6)
7. **Ensuring digital resilience and failover mechanisms for CAV operations (DT7)**
8. Improving CAV interaction with emergency vehicles and vulnerable road users (DT8)
9. Optimising CAV and EV fleet management and staging (DT9)
10. Integration of CAV and EV operations into smart city and traffic management platforms (DT10)
11. Ensuring real-time EV and electric CAV charging availability and status updates (DT11)
12. Standardising digital road regulations for EV and electric CAV charging zones (DT12)
13. Supporting CAV interpretation and compliance with traffic signal infrastructure (DT13)

3) WHAT DESIGN PRINCIPLES ARE RELEVANT TO TEMPORARY TRAFFIC MANAGEMENT?

Several Austroads topics are directly relevant to the planning, delivery, implementation and maintenance of TTM. The most relevant are provided in **Tables 1 and 2**:

Table 1: Physical Infrastructure Design Topics - TTM

TTM: Physical Infrastructure Design Topics (PT)		
Design Topic	**Description**	**Key Implications:**
PT2 – Ensuring readability of lane markings and road signage by vehicles	TTM rely heavily on signs, line marking, delineation and visual cues. These must be reliably detected (readable) and interpretable by both human drivers and vehicles (machine vision). **Temporary line markings** are a critical issue. Ghost markings, poorly removed/overlapping lines can create confusion for both drivers and machine vision. Austroads notes that only current lines should be visible and redundant lines removed for temporary markings. **Traffic signals** can be problematic for machine vision where they are misaligned, obscured, affected by glare, inconsistently arranged or temporarily installed. Effective interpretation will require both vehicle systems trained for local signals and road agencies improving signal consistency, visibility and digital support. **Static and electronic signs** including VMS and variable speed limit signs, also need to be clear, visible and consistent.	▪ TTM will need to start treating automated driving systems as a distinct road user group. ▪ The principles emphasise designing for **both human and machine users.** ▪ TTM should minimise conflicting visual cues so human drivers and vehicle systems interpret the same message.
PT3 – Ensuring compatible road and traffic design for AV navigation and operations	Temporary traffic layouts can change road geometry, lane paths, speed environments and driver expectations. For AVs and ADAS-equipped vehicles, unclear or complex layouts may be harder to interpret than stable permanent road conditions. The key principle is that road and traffic design should be as clear, consistent and predictable as possible, particularly where lanes shift, speeds change, merge arrangements are introduced or traffic is moved through temporary alignments.	▪ Temporary layouts should avoid unnecessary complexity and ambiguity. ▪ Lane shifts, merges, tapers, detours and traffic switches should provide clear guidance and enough time for drivers and vehicle systems to respond. ▪ TTM designs should consider whether the temporary layout can be understood by both human drivers and ADAS/AV systems. ▪ Complex staging may need additional checks where lane paths, signs and markings change frequently.
PT6 – Supporting CAV readability of digital roadside signage	This topic relates to roadside electronic signs such as VMS, variable speed limit signs and lane control signs. Austroads highlights that these signs may need to be	▪ Portable VMS and variable speed limit signs should be positioned and operated so messages are clear and stable.

	readable by vehicle cameras, not just human drivers. Important considerations include contrast, brightness, message stability, avoiding fast scrolling or rapid switching, consistent symbols, suitable placement and clear lines of sight. Austroads also notes the need to support important roadside messages with digital information where appropriate.	▪ Critical messages should avoid fast scrolling or short display times. ▪ Electronic signs should be consistent with the physical site condition and any digital roadwork information being shared. ▪ Where electronic signs show temporary rules, such as speed or lane closures, they may need stronger consistency and verification.
PT11 – Maintenance and asset management	Future-ready infrastructure will need ongoing maintenance, not just installation. Austroads identifies machine-readable markings and signs, digital-ready signs, roadside units, sensors and connected infrastructure as assets that may require clear maintenance responsibilities, condition monitoring and lifecycle planning.	▪ TTM devices and temporary markings need to be checked throughout the life of the work zone, not just at installation. ▪ Signs, markings, VMS, sensors and connected devices should remain visible, accurate and functional as site conditions change. ▪ Maintenance responsibilities should be clear between agencies, contractors and TTM providers. ▪ Poor maintenance could create inconsistent readiness across the network and increase safety risk.

Table 2: Digital Infrastructure Design Topics - TTM

TTM: Digital Infrastructure Design Topics (DT)		
Design Topic	**Principles**	**Key Implications:**
DT1 – Ensuring CAV awareness of temporary and dynamic traffic conditions	This is the most directly relevant digital topic for TTM. It means temporary road changes such as lane closures, detours, temporary speed limits, traffic switches and roadworks should be available digitally, not just shown through signs and devices on site. The key principle is that the digital information used by vehicles, navigation platforms and traffic systems should **match what is actually happening on the road.**	▪ "Change it on site (physically), update it digitally" becomes a key requirement. ▪ Lane closures, detours, traffic switches and temporary speed zones may need to be captured and shared digitally. ▪ Digital information needs to reflect the live site condition, not just the planned or approved arrangement. ▪ Poor or outdated digital information could create confusion for connected and automated vehicle systems.
DT2 – Ensuring data accuracy and validation for AV navigation **DT5 – Ensuring CAV compliance with dynamic road regulations**	Temporary traffic changes can affect lane layouts, speed limits, detours, access points and routing. Austroads highlights that this information needs to be **accurate, checked, current and consistent** so vehicle systems can navigate safely and comply with temporary road rules. For TTM, this means the physical setup on site should match the digital information being used by traffic systems, navigation platforms and future vehicle systems. Temporary rules, such as speed limits, access restrictions, closures and detours, should also be clear enough to be understood and updated when conditions change.	▪ TTM information will need to be accurate, checked and kept up to date. ▪ Lane closures, detours, speed limits and access changes should match the live site condition. ▪ Outdated or incorrect digital information could create safety and compliance risks. ▪ Clear responsibility is needed for checking and updating temporary traffic information.
DT3 – Ensuring reliable CAV communications for continuous data exchange **DT4 – Protecting CAV and transport data from cybersecurity threats** **DT7 – Ensuring digital resilience and failover mechanisms for CAV operations**	Connected work zones and digital traffic systems rely on information being shared between devices, vehicles, traffic systems and operators. Austroads highlights that these systems need to be **reliable, secure and able to fail safely**. For TTM, this means connected devices, digital signs, sensors, roadwork alerts and traffic data systems need appropriate communications coverage, protection from interference or unauthorised access, and fallback arrangements if systems fail or lose connectivity.	▪ Connected TTM systems need reliable communications where real-time alerts or traffic updates are used. ▪ Digital work zone information and connected devices need to be protected from errors, interference or unauthorised access. ▪ TTM must still operate safely if digital systems fail, lose connectivity or provide unreliable information. ▪ Physical signs, markings, barriers and traffic control remain essential as fallback information. ▪ Clear procedures are needed for monitoring, escalation and manual override.

4) WHAT DOES THIS MEAN FOR TEMPORARY TRAFFIC MANAGEMENT?

The key message is that TTM will increasingly need to consider both the **human and machine user** of the road network to support a mixed operating environment. This includes human drivers, ADAS-equipped vehicles, connected vehicles, automated vehicles, pedestrians, cyclists, e-scooter riders, mobility device users and emergency vehicles.

4.1 Human versus Machine Road Users

Traditionally, TTM setups have been designed for human interpretation. Signs, cones, barriers, line markings, traffic controllers and VMS communicate what drivers should do. The Austroads report indicates that this will no longer be enough in future operating environments. Temporary changes may also need to be communicated in machine-readable formats so connected platforms, navigation providers, ADAS-equipped vehicles and future CAVs can interpret them correctly.

Austroads highlights that human drivers and automated vehicle systems do not always interpret traffic situations in the same way**. Human drivers** rely on judgement, experience and informal cues, while **automated systems** rely on rules, sensors and digital information. In complex or unclear environments, this can lead to hesitation, sudden braking, inefficient movement or safety risks.

For TTM, this means temporary traffic arrangements will need to be clear, predictable and consistent for both people and vehicle systems. This applies to lane closures, detours, temporary speed limits, traffic switches, access changes, signs, line markings and VMS.

In practical terms, TTM planning, design, delivery and maintenance may need to consider both the physical setup and its digital representation:

- **Planning:** consider digital requirements earlier, including how lane closures, detours, temporary speed limits and staging changes will be captured and shared
- **Design:** ensure temporary layouts, signs, markings, VMS, signals and devices are clear, consistent and readable for both human drivers and vehicle systems
- **Delivery:** when conditions change on site, the supporting digital information should also be updated *(change it physically, update it digitally)*
- **Maintenance:** temporary signs, markings, VMS, devices and digital information need ongoing checks to ensure they remain visible, accurate and aligned with the live site condition.

The key message is that future TTM will need to work for both **human road users** and **machine interpretation**. This does not replace the need for clear physical traffic management; it raises the importance of making temporary arrangements physically clear, digitally accurate and consistent across the network. For safety and network performance, the implication is that TTM becomes more integrated with broader traffic management systems.

4.2 Priority Guidance Development Opportunities – TTM

Austroads identifies *(Table 9.1 of report)* several guidance development opportunities to proceed with developing formal guidance. For TTM, the key ones include:

- **Temporary traffic guidance schemes for ADAS/AV compatibility:**

  Austroads identifies the need to develop guidance for temporary traffic guidance schemes that can be reliably interpreted by ADAS-equipped vehicles and future AVs. This includes temporary sign placement, visibility standards and the removal of redundant or conflicting markings. Further research is also needed to understand how full temporary traffic layouts can be optimised for reliable interpretation in more complex work zones.

  Suggested timeframe: Initiate within 1–2 years and review every 3–5 years.

- **Line marking and signage standards for ADAS/AV readability:**

  Austroads identifies temporary works readability as an area requiring further consideration, particularly where temporary markings, ghost markings, sign visibility, contrast, placement and consistency may affect how vehicle systems interpret the road environment.

  Suggested timeframe: Initiate within 1–2 years and review every 3–5 years.

- **Digital roadside signage design standards for ADAS/AV readability:**

  This guidance area is relevant to portable VMS, variable speed limit signs and other electronic signs used in roadwork zones. Austroads identifies the need to improve the readability of digital roadside signage for vehicle cameras, including issues such as brightness, contrast, refresh rate, message stability and readability under changing conditions.

  Suggested timeframe: Initiate within 1–2 years and review every 3–5 years.

5) TRANSIA'S RESPONSE – GAPS, OPPORTUNITIES AND IMPLICATIONS FOR TTM

While the Austroads report provides an important step toward practically preparing road infrastructure for emerging mobility technologies, several gaps and opportunity areas remain for not just the TTM industry but the broader road network. **Transia** outlines these below, along with key implications that we consider relevant for construction projects and TTM.

5.1 The Risk of Ad Hoc Adoption, Uncertainty and Network Inconsistency

A major gap in the Austroads report is the absence of a clear implementation pathway. It focuses on **how** infrastructure can be adapted but provides limited direction on ***why*** agencies would move from consideration to implementation. Although the report frames implementation as flexible and optional, it also concludes that adopting adaptive planning approaches is essential as vehicle technologies continue to evolve.

There is a missing piece in the overall strategy. The report sits within a broader policy landscape that is preparing for CAVs and AVs[1] but it does not identify any current or emerging national plan that sets desired road network adaptation targets/objectives. The gap remains that there is guidance on what could be done, but no clear direction on which parts of the network should be prioritised, timeframes or to what readiness level.

The design principles are deliberately flexible to accommodate the evolving nature of emerging mobility technologies. However, flexibility without direction creates a real risk of inaction. Road agencies are already operating under significant funding, resourcing and delivery pressure. In that environment, optional principles with no implementation pathway are unlikely to drive consistent network-wide change.

If adoption is left entirely to agency discretion, infrastructure adaptation is likely to occur in a **fragmented and ad hoc way.** Some jurisdictions, corridors or projects may apply selected principles, while others may not. The result could be a partially adapted road network with **inconsistent** levels of physical and digital readiness.

This matters because **consistency and predictability are critical** to safely supporting a mixed road user environment. Human drivers, ADAS-equipped vehicles, connected vehicles and future automated vehicles all depend on clear, reliable and consistent road information. Piecemeal implementation risks adding complexity to the road network rather than reducing it.

For the **TTM industry**, this is concerning, particularly from a **safety perspective**. Temporary traffic environments are already complex, change frequently and place workers and road users in close proximity. If roads are adapted inconsistently across the network, temporary traffic arrangements may have to operate within mixed levels of physical and digital readiness, creating confusion for drivers and vehicle systems and increasing safety risk and disruption.

Implications for Construction Projects and TTM

- Uncertainty about whether individual projects, corridors or locations will be expected to apply the design principles and to what extent.
- Inconsistent requirements across road agencies, jurisdictions and major projects.
- Greater difficulty designing TTM for roads that have been only partially adapted for emerging mobility technologies.

[1] Relevant national policy documents include the Australian Government's *Principles for a National Approach to Co-operative Intelligent Transport Systems (C-ITS) in Australia*, the *National Road Transport Technology Strategy and 2024–27 Action Plan*, and the *2024–27 National Connected and Automated Vehicle (CAV) Action Plan.*

- Impact on training and qualifications for traffic controllers and traffic management implementation
- Risk that temporary traffic arrangements do not align with the physical and digital readiness of the surrounding network.
- Increased complexity for contractors and TTM practitioners, who may need to manage different expectations without clear implementation guidance.
- Potential safety and operational risks where inconsistent application creates confusion for human drivers, ADAS-equipped vehicles and future CAVs.

Key opportunity

A clearer implementation pathway is needed as well as context around why agencies need to plan for adapting infrastructure (e.g. future AV uptake and network benefits). The Austroads report identifies possible application pathways, including corridor or precinct planning, design and procurement, trials, upgrades, gap analysis and selected corridor deployment but does not set any desired targets or identify which parts of the network should be prioritised first.

In the absence of an overall strategy to guide implementation, an indicative prioritisation framework would be valuable.

5.2 The Cost of Adaptation

A second area of concern is the uncertainty around the cost and funding of infrastructure adaptation. The Austroads report identifies a wide range of physical and digital infrastructure changes that may be needed to support emerging mobility technologies but the broader cost implications, funding responsibilities and whole-of-life impacts remain unresolved.

Adaptation may involve improved signs and line markings, traffic signal changes, digital roadwork data, communications infrastructure, roadside units, cybersecurity, data governance, system integration and ongoing maintenance. Austroads also notes that emerging CAV and EV infrastructure may require more frequent and specialised maintenance, shorter technology lifecycles and adapted funding models.

Without clearer guidance on funding and cost responsibility, agencies may struggle to justify investment, particularly where the benefits are uncertain, long-term or dependent on future vehicle uptake. There is also **a risk that costs are pushed into individual projects**, creating **uneven adoption and uncertainty** for project teams, contractors and TTM practitioners.

For TTM, this is a significant issue. Temporary traffic environments already operate under cost, program and safety pressures. If future-ready requirements are introduced without clear funding, scope or benefit criteria, they may be treated as optional extras or applied inconsistently between projects.

Implications for Construction Projects and TTM

- Uncertainty about who pays for future-ready TTM requirements, including digital roadwork information, connected devices, improved temporary markings or temporary signal upgrades.
- Risk that costs are shifted onto individual projects or traffic management subcontractors and suppliers, without clear agency funding or consistent procurement requirements.
- Difficulty assessing value for money where benefits depend on future CAV, AV or ADAS uptake.
- Increased whole-of-life cost implications from maintaining digital infrastructure, data quality, communications systems and connected work zone assets.
- Potential for inconsistent adoption where only larger projects can afford enhanced physical or digital TTM treatments.

Key opportunity

Greater certainty around implementation would help agencies plan and fund adaptation more effectively. Clearer expectations and priority use cases would allow road agencies to factor future-ready infrastructure into forward budgets, project scopes, procurement requirements and renewal programs, rather than treating it as an unfunded add-on or optional project-by-project decision.

This would also help the industry understand where investment is likely to be required, which treatments are expected and how costs should be planned across new projects, corridor upgrades, maintenance programs and TTM delivery.

5.3 Lack of TTM-Specific Design and Implementation Guidance

A further gap is that the Austroads report recognises TTM-related issues but does not yet provide TTM-specific implementation guidance.

It identifies the importance of temporary and dynamic traffic conditions, including roadworks, lane closures, detours, temporary speed changes, temporary markings and temporary signals, but does not explain how these principles should be applied in day-to-day TTM planning, delivery, inspection and maintenance.

This is important because temporary traffic environments are among the most complex and changeable parts of the road network. They can alter road geometry, speed environments, lane guidance, sightlines and access arrangements over short periods of time. These changes need to remain clear to human drivers while also becoming more readable and digitally understandable to emerging vehicle systems.

In addition, the **online tool** could benefit from the inclusion of 'Temporary' as a road environment type.

The concern is that, without practical TTM guidance (for short and long term sets-up), the industry may understand the future direction but lack clarity on what is expected in practice. For example, the report highlights issues such as temporary markings, ghost markings, digital roadwork updates and temporary signals, but does not yet translate these into requirements for TMPs, TGSs, staging plans, site inspections, device placement, data updates or handover processes.

For TTM, this creates a risk that temporary traffic environments are treated as secondary to permanent road infrastructure, despite being a critical part of how the road network operates during construction, maintenance and incident response.

Implications for Construction Projects and TTM

- Uncertainty about how the design principles should be applied to TMPs, TGSs, staging plans, traffic switches and site inspections.
- Inconsistent treatment of temporary signs, markings, VMS, temporary signals, detours and temporary speed limits across projects and jurisdictions.
- Risk that temporary traffic arrangements interrupt or undermine the physical and digital readiness of adapted corridors.
- Limited guidance for contractors, designers and TTM providers on what "future-ready" TTM should look like in practice.
- Greater safety risk if temporary arrangements create conflicting physical or digital information for human drivers and vehicle systems.

Key opportunity

There is an opportunity to develop a dedicated TTM-focused guidance note or companion document that brings together the **Austroads design principles most relevant to temporary traffic environments**. This would help avoid TTM-related requirements being buried within broader infrastructure guidance and make it easier for practitioners to understand what the principles mean for TMPs, TGSs, staging plans, traffic switches, site inspections, device placement, temporary markings, VMS, temporary signals, digital roadwork updates and handover processes.

This guidance should be developed with direct input from TTM practitioners, contractors, road agencies, designers and technology providers to ensure future requirements are practical, nationally consistent and workable in live project environments.

The accompanying Austroads **online tool** could also be strengthened by adding **"Temporary"** as a road environment category, making it easier to identify the design principles most relevant to roadworks, staging, detours and work zones.

6) RECOMMENDATIONS

The Austroads report is an important signal that emerging technologies are starting to impact traffic management on both the permanent and temporary network environments. While the design principles are not mandatory, they indicate the direction in which road infrastructure guidance is likely to evolve as ADAS-equipped vehicles, CAVs and future AVs become more common on the network.

The biggest change for TTM practitioners is the need to start planning for both **human road users** and **machine interpretation** which adds a new layer of complexity. Temporary traffic environments have traditionally been designed for human drivers. Over time, they are likely to face new expectations where temporary layouts, signs, line markings, VMS and digital information need to be interpreted by both people and vehicle systems.

The key message is not that immediate change is required across every project. Rather, TTM practitioners should be aware that future requirements are likely to emerge, particularly in areas where Austroads has identified further guidance development opportunities. The most relevant areas for TTM stated in the report are:

- Temporary traffic guidance schemes for ADAS/AV compatibility
- Line marking and signage standards for ADAS/AV readability
- Digital roadside signage design standards for ADAS/AV readability

These areas are likely to shape future expectations for TGS design, temporary sign placement, temporary line marking quality, ghost marking removal, portable VMS, variable speed signs and the broader consistency of temporary traffic information.

A key concern is that the practical requirements and constraints of TTM are not always well understood in broader infrastructure technology discussions. The TTM industry is also often underrepresented in the development of new policies, standards and guidelines, despite being responsible for some of the most complex and changeable operating environments on the road network.

It is recommended that TTM practitioners remain aware of future Austroads guidance development and look for opportunities to provide industry feedback. This will be important to ensure any future requirements are practical, nationally consistent and workable in real project environments.

Recommended reading:

For further context on the broader technology and innovation landscape affecting TTM, refer to **Transia's *The Future of Temporary Traffic Management – Technology & Innovation Insights 2026***, which explores how digitisation, automation, connectivity and real-time data are changing the role and function of temporary traffic management in Australia.