Intelligent Transport Systems Master Plan

The RAC welcomes the preparation of the Intelligent Transport Systems (ITS) Master Plan by Main Roads Western Australia (MRWA) to set out the strategic direction for ITS in Western Australia (WA) and thanks MRWA for the opportunity to provide comments.

About the RAC

RAC WA represents the interests of more than 800,000 Western Australians and is the leading advocate on the mobility issues and challenges facing our State. Drawing on our heritage, a key role for the RAC is to act as a voice for our members and as a strong public advocate on the mobility issues which affect Western Australia (WA). The RAC collaborates with Government and other organisations to ensure safe, accessible and sustainable mobility options are available for our members and the community.

The RAC aligns its activities with the following three themes:

- Safety – A safe mobility system can be defined as a system that outperforms national and international safety benchmarks. It encompasses safer drivers in safer cars on safer roads.
- Accessibility – To have a cost efficient, convenient and reliable commuter network is an essential part of personal mobility.
- Sustainability – Sustainable mobility is broader than the environmental aspects of mobility; it encompasses the mobility needs of current and future generations.

Context

We face an enormous challenge in delivering the infrastructure and services we need to keep Western Australians moving in a safe, efficient and sustainable way around our communities, cities and towns, and our State.

In 2013, 162 Western Australian's lost their lives on our roads, which equates to nearly one fatality every two days. RAC members make up a large proportion of Western Australian motorists and the number of people killed or seriously injured on our roads is concerning.

It has been forecast that congestion will cost the WA economy $2.1 billion by the 2020. Congestion is harming the State's productivity and profitability, and is taking a toll on commuters and families.

In 2013, a survey of nearly 700 RAC members on the impact of congestion revealed that most respondents reported a loss of family time, increased stress and lower productivity at work. Similarly, in 2013, the second survey of more than 400 businesses by the Chamber of Commerce and Industry WA (CCIWA) and RAC revealed 83 per cent of respondents believe traffic congestion is having a negative impact on their operations.

According to the Australian Bureau of Statistics, Perth's population will overtake Brisbane just before 2030. In addition it is estimated that at least 3.9 million, or a maximum of 5.4 million people, could call Perth home by 2050.

Our road network will always be critical to facilitating mobility in the State. However, the reality is that the road network alone cannot accommodate the demand being placed on it. It is clear that there is no single solution to fix congestion and that a suite of measures will be needed. The necessary expansion of the road network must be balanced against the need to make better use of the infrastructure we already have and of new and emerging technology solutions, in concert with better coordinated traffic management and road works planning.

ITS is a collective term for a broad range of information and communications technology solutions (integrated into road infrastructure, vehicles and public transport networks) to help reduce congestion, improve mobility, save lives and optimise the value of existing infrastructure.

Responses to MRWA Consultation Questions

In calling for comments on the draft ITS Master Plan MRWA has requested that submissions give consideration to a number of key questions. The RAC's response to each question is provided below.

1. **What ITS enabled services do you expect Main Roads to be delivering to WA road users by 2020?**

Managed Freeways (or Managed Motorways as it is commonly known)
The RAC considers that the introduction of Managed Freeway measures in WA would be highly beneficial. In our State Budget Submission 2014-15 we called for the State Government to provide funding to enable Managed Motorways principals and technologies to be trialled in WA.

Managed Freeways encompasses a suite of measures to optimise the existing infrastructure, by maximising the effectiveness and efficiency of the network to manage congestion, improve journey reliability and reduce the risk of crashes particularly during peak times. The suite of measures can include ramp metering, lane management (e.g. HOV lanes), hard shoulder running, variable speed limits and variable messaging signs. Ramp metering, which is traffic signals at freeway on-ramps to manage the rate at which vehicles enter the freeway running lanes, has been demonstrated to achieve a 15% improvement in travel speed and 5-15% increase in the rate of vehicle flow in Auckland[1] for instance.

---

[1] Ramp Metering in Auckland, New Zealand Transport Agency (NZ TA) https://at.govt.nz/about-us/asset-maintenance/ramp-signals/

In developing Managed Freeways proposals consideration should be given to the suitability of measures within the Managed Freeways suite, to WA's unique policy landscape, road environment and driving culture.

Traffic signals

In our State Budget Submission 2014-15 we called for the State Government to increase funding to better resource traffic signal operations, including funding to expand traffic modelling capacity.

Of all traffic management measures, the operation of traffic signals is often considered to have the most influence on the performance of metropolitan road networks. A well set up and maintained traffic signals system ensures that the maximum possible performance and capacity is achieved from existing network infrastructure. Likewise, poorly performing intersections can unnecessarily constrain traffic flows, induce bottlenecks and be unsafe.

Since 2012, the RAC has worked in partnership with MRWA to progress the Traffic Signals Safety and Efficiency Study. The Study, funded by the RAC, tests an alternate approach to signal retiming aimed at improving traffic flow across the road network.

More effective coordination of traffic signals along key corridors will be essential.

TransPriority

This approach, which is expected to be promoted through the Moving People Network Plan being prepared by the Department of Transport (DoT), would aid the management of competing demands for limited road space along routes by giving priority to different users at different times of the day. Such an increased, and coordinated, focus on measures to prioritise road use is supported. Robust operational plans, developed through collaboration between various stakeholders are yet to emerge and these will be essential to support the successful implementation of TransPriority.

Using and sharing data

MRWA should utilise and encourage the sharing of data to better understand how people currently use, and wish to use, the transport system as well as influencing how they use it in the future. An open data approach would allow MRWA, and other agencies, to collectively tailor and target services, deliver effective traveller information and maximise the effectiveness of ITS solutions to influence travel behaviours and demands, and ultimately help to make technology work better for the community.

Data from third party and private sector sources will likely have an important role to play and MRWA should be proactive in negotiating arrangements to facilitate the sharing of data where possible.

Privacy issues will be a consideration though and will need to be managed carefully.

2. **What ITS enabled solution would you anticipate to make the biggest difference to the travellers in WA by 2020?**

Whilst not the only priority, and by no means the sole solution to address the transport challenges that WA is facing, Managed Freeways could be anticipated to make a significant difference to reliability, safety and the journey experience for travellers if implementation can be progressed within this timeframe.

As discussed under question 1, the management of traffic signals could also be expected to have significant benefits for road users. As MRWA could place increased focus on in the short-term, at little risk and cost, moving forward this could almost become classed as business-as-usual.

From a non-infrastructure perspective, in-car technology has significant potential where it relates to changing or mitigating the effects of road user behaviours and will play a key role in reducing road trauma and congestion. These technologies include, but are not limited to the ability of vehicles to monitor fatigue (Fatigue Management Systems), sync preferred distances between vehicles (Autonomous Active Cruise Control), and automatically suggest alternative routes to avoid traffic bottlenecks.

Other intelligent, anti-distraction technologies such are also being trialled whereby vehicles can recognise drivers and learn their driving preferences, such as climate control and rear view mirror settings – all of which can take a driver's eyes off the road when adjusted manually.

Further, the first vehicle with road sign recognition as standard will be released in late 2014. The system can recognise and display speed signs and a selection of other road signs in the digital display in front of the driver.

3. **What do you consider to be the greatest impediment to the successful use of ITS in WA?**

Funding

It has been widely reported that the State is operating in an increasingly constrained fiscal environment which in 2013, culminated in the downgrading of Western Australia's AAA credit rating. However, according to the quarterly State of the State report released by CommSec in early 2014, "Western Australia remains the top-performing economy in the nation".

Securing necessary funding for the timely development and implementation of ITS solutions will be essential to meet the challenges ahead, and may in fact, help to offset the escalating economic and social costs brought on by road trauma and congestion.

Insufficient available funding will be a significant impediment to the successful use of ITS in WA. Opportunities for economies of scale, integrating ITS solutions in other projects (such as in

association with the development of activity and specialised centres, etc.) and securing funding from private sector sources will be necessary to supplement dedicated Government funding.

ITS Architecture and Standards

Understanding the requirements of the architecture, and the standards to be applied, both nationally and internationally, will be critical to the successful integration of ITS.

MRWA will need to ensure it is an active participant in the process of developing the national architecture and standards, and that implementation of ITS solutions aligns with these to ensure that whatever is implemented within WA is compatible with that which is implemented in other States and Territories, and that it remains fit-for-purpose in years to come. MRWA will also need to ensure that it is proactive in preserving the capacity for the architecture into the future.

In this context, building skills, knowledge and a pipeline of ITS expertise within the transport portfolio will be essential. However, MRWA should also play a role in necessitating the development of the industry's knowledge base through broader education and training programs.

Relationships and communication

Given that ITS includes intelligent infrastructure, smart vehicles and information services, and it cuts across a range of function areas (discussed further in the response to question 6) successful use will require the collaborative inputs of a wide range of stakeholders. Building effective relationships across all levels of Government, vehicle manufacturers, technology and information suppliers, road user representatives and a host of other stakeholder groups will be critical.

Equally, the unfamiliar and increasingly ubiquitous nature of many ITS technologies will require investment in a range of road user education initiatives in order to ensure these new technologies are well understood by motorists.

Privacy

Given the nature of ITS technologies and the desire for open data to maximise the effectiveness of solutions, consideration will need to be given to the social limits of automated control and intervention and privacy. In the context of smart vehicles for example, this could include ownership of vehicle-generated information, right to repair issues (the ability of consumers to choose their repairer), compatibility with national / international standards and road safety / driver distraction, etc.

4. **Are there any important actions for Main Roads (or Government of Western Australia), which could assist ITS implementation (examples such as open access to data or changes to regulations)?**

Facilitating vehicle and infrastructure interactions

In order to allow vehicles and infrastructure to interact effectively, it is considered that the WA Government would need to explore a number of policy, law and technology requirements. This could include consideration of the following;

- business cases for adoption of future technologies;
- guidance for National/State policy and regulation;
- socio-economic framework for adoption; and
- guidance for effective community engagement.

In terms of upgrading infrastructure to support ITS, there is a need to ensure all stakeholders understand the implications of deciding on particular technology, such as in relation to the national and international standards.

Standardised operating systems would facilitate deployment of intelligent connected vehicles for example. The benefits of this would include:

- safety technologies for all users including vulnerable road users;
- increases in the intelligence of the existing fleet; and
- products enabling affordable crash-proof vehicles and implications for insurance.

Managing expectations and raising awareness

In order to manage stakeholder and customer expectations in regards to the implementation of ITS solutions, desired outcomes and timescales for achieving these outcomes MRWA should:

- engage stakeholders in developing the detailed implementation plan;
- progress appropriate activities to increase public awareness around ITS and solutions being progressed; and
- share the outcomes of trial evaluations, etc.

General

Actions relating to points raised in responding to the previous questions include:

- utilising and sharing data to ensure decisions are evidence-based;
- negotiating data sharing agreements with third party suppliers of data, etc.;
- seeking to identify appropriate funding sources;
- actively participating in the development of ITS architecture and standards; and

- identifying and building relationships with key stakeholders.

5. Are there any improvements that Main Roads could make in relation to procurement of ITS solutions, which may improve efficiency and effectiveness of services delivered by Main Roads?

Whilst the Master Plan does not provide information on the procurement of ITS solutions by MRWA previously, it is suggested that MRWA seeks to benefit from lessons learned through the implementation of ITS applications and trials of new technologies in WA, nationally and internationally to ensure the supplier solutions progressed offer best value-for-money and conform with appropriate ITS standards.

MRWA could also seek opportunities to work with partners where appropriate, including the private sector, to improve the efficiency of the services delivered.

6. Are there any specific actions that Main Roads should take to accelerate alignment with the Australian ITS Architecture, and Australian and International ITS standards?

It is understood that the architecture is intended to 'enable industry and government to optimise the community benefits of ITS through a framework that promotes a common understanding and purpose through consistent application while fostering collaboration, consumer choice and innovation'[2].

The European FRAME architecture, upon which the emerging national ITS architecture will be based, sets out eight functional areas, namely:

1. Provide electronic payment facilities
2. Manage safety and emergency facilities
3. Manage traffic
4. Manage public transport operations
5. Provide journey traveller assistance
6. Provide support for law enforcement
7. Manage freight and fleet operations
8. Provide support for cooperative systems

Whilst area 3 is a core function for MRWA, the activities of MRWA interact with each of these areas and these areas in turn have implications for MRWA's activities. To achieve the best outcomes across the eight functional areas, and ultimately achieve the strategic vision of *smart roads, safer journeys* MRWA should seek to engage a wide range of stakeholders in the development of the detailed implementation plan to facilitate alignment with the national architecture.

---

[2] MRWA 2014. ITS Master Plan Discussion Paper.

Likewise, if MRWA does wish to 'adopt for Western Australia a more tightly specified architecture within the framework provided by FRAME' engagement with stakeholders should be undertaken to ensure the best outcomes for WA. As previously discussed, it will also be imperative to ensure compatibility of ITS standards with other States and Territories.

In regards to accelerating alignment with Australian and International Standards, as previously discussed under question 3, MRWA should be an active participant in developing the standards and seek to share lessons learned from ITS applications and trials of new technologies.

7. **Do you have any comments on the Draft ITS Master Plan including the Strategic Vision, The Focus, Areas for Action and the Individual Actions in the High Level Action Plan?**

Strategic Vision
MRWA's vision for 2020, '*smart roads, safe journeys*', is supported but it is considered that the specific vision for ITS could be more clearly defined in this Master Plan through the inclusion of a concise vision or purpose statement.

At present whilst the three premises explored in the development of the ITS Master Plan are set out these are quite broad and do not define what MRWA is seeking to achieve. In order to ensure the Master Plan helps to 'make technology work for the community' it is essential for it to be outcome focussed, making a real and measureable contribution towards addressing transport challenges and optimising outcomes. The desired outcomes from the implementation of ITS is WA should be explicitly stated, at present the '*what might smart roads, safe journeys look like in 2020?*' could be seen as open to interpretation. Appropriate Key Performance Indicators (KPIs) could also be identified to allow performance to be measured as ITS solutions are rolled out.

Focus Areas for Action
The RAC would like to see greater emphasis being placed on the 'whole journey' rather than the part of the journey that takes place on the MRWA network. This will be essential to truly provide for enhanced mobility, manage travel demand and provide travel options.

ITS will be a key consideration in the development and implementation of any TransPriority operational plans for instance and it will be essential for MRWA to work in collaboration with local governments, as well as the portfolio partners, to facilitate this. Whilst improving the safety, efficiency and reliability of the freeways and main arterials will be key, if such smart network planning is not implemented effectively on local roads where there are competing demands for road user priority there will likely be knock-on effects on the strategic network. Smarter traffic signal priority, including better coordination of signals along corridors and improved safety outcomes, will be essential.

MRWA's role as a leader, providing support and facilitating local governments (and other stakeholders) to progress appropriate ITS solutions within their control should also be reflected in Section 4 ('*How can Main Roads make a difference?*') of the Master Plan.

High Level Action Plan

The RAC is strongly supportive of demonstrations and pilots to trial potential solutions, allowing for risks to be management and effectiveness maximised through lessons learned before wider rollout.

With the current funding challenges, the need for sound investment decisions has never been greater. Demonstrations and trials can be a useful means of avoiding unnecessary, or repeated, expenditure on infrastructure and technology options which do not offer the best value for money. They also provide an opportunity to build an evidence-base for innovation, to challenge standards and guidelines.

It is therefore essential that a clear commitment be made to developing a robust monitoring and evaluation process, which includes the establishment of appropriate objectives and outcomes in the initial planning stages and the collection of before and after data. The results of evaluations should be made publicly available by MRWA.

Preliminary Draft Multi-Year High Level Action Plan

It is difficult to comment on the suitability of individual items in the action plan based on the level of detail provided. The RAC would welcome the opportunity to provide comments on these items when further detail is made available through the multi-year implementation plan.

Notwithstanding this, it is positive to see the high priority assigned to the identification of further Managed Freeway proposals and the implementation and operation of these over the coming years. From an intelligent infrastructure perspective, the RAC is also particularly supportive of the Congestion Management Program and Network Operation Planning.

Some potential actions to help facilitate the implementation of smart vehicles have been discussed previously and these should be considered when fleshing out the detail of this action plan and the multi-year implementation plan.

In terms of the priority of items included in this action plan, it is unclear whether MRWA intends to progress the following:

- develop and operate multi-modal priority systems for signal and lane use operations;
- continue an open data approach to facilitate powerful traveller information;
- encourage private sector investment in flexible mobility options; and
- ITS becomes a central part of Main Road's business and investment planning.

Whilst these have been included in the action plan for 2016 to 2020, '*Figure 8.1 Categorisation of actions by expected benefits and required investment (costs)*' suggests that they have 'No Priority – do not include'. However, the last paragraph in '*8.1 Prioritising Actions for Inclusion in the Plan*' states that 'no actions in the draft action plan are considered low priority actions'.

It is also unclear why the low priority category has been included in '*Figure 8.1 Categorisation of actions by expected benefits and required investment (costs)*' if there is no intention to identify actions which fall within this category.

We trust that the comments provided in this submission will be helpful in finalising the ITS Master Plan, which will be critical in guiding and facilitating the implementation of ITS in WA. The RAC would welcome any opportunity to provide input into the multi-year implementation plan to be developed following adoption of this Master Plan.

A submission by the RAC.

Advocacy and Member Benefits
Royal Automobile Club of WA (Inc.)
832 Wellington Street,
West Perth, WA 6005