



Project Leader

Dr Karlson Hargroves

Senior Research Fellow, Curtin
University Sustainability Policy
Institute (CUSP)

1.52: Technology Enabled Transport

Informing the Transition to Technology Enabled Transport Vehicles and Infrastructure

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Project Steering Group Chair

Dr Ken Michael, AC

30th Governor of Western Australia
Western Australian Commissioner of
Main Roads (1991-96)

Tech-Enabled Transport

The recent interest in high-tech transport presents both opportunities and risks for travellers, freight stakeholders and infrastructure managers. This project will seek to identify specific areas to update assumptions to inform the deployment of such advances to continue to provide affordable and effective mobility and freight services for our rapidly growing cities and connecting population centres across Australia.

Part 1: Understanding Currently Held Assumptions around Tech-Enablement

- a) Identification current assumptions held by Core Partners and select key stakeholders around transport related technology trends and implications related to all types of vehicles, infrastructure and user interactions.
- b) Identify specific areas where assumptions could be updated or amended to better reflect anticipated future conditions.

Potential physical infrastructure impacts

- Linemarking requirements for vehicles.
- Pavement and roadbase thickness.
- Wearing surface performance requirements (smoother deceleration).
- Design distances (sightlines, stopping distance, round-about configuration).
- Need for signage and overhead gantries.
- Need for 'emergency' lanes if cars can automatically move out of the way of emergency vehicles.
- Requirements for charging infrastructure.
- Need for infrastructure technology to monitor roads and intersections.
- Area in intersections needed to accommodate for cars may be less if they are more precisely driven.

Potential transport modelling impacts

- Anticipated headways and reaction times.
- Acceleration and deceleration rates.
- Stopping distances and length and line of sight lines.
- Merging protocols.
- Impacts on peak congestion levels.
- Traffic smoothing (Green Wave).
- Vehicle size and weight.
- Impact of vehicle empty running.
- Potential increased demand for secondary roads.
- Occupancy rates.
- Incident response times and routing.
- Plausible range of vehicles and assumptions around charging infrastructure.
- Market penetration rates of vehicles.
- Second car ownership implications such as reduced registration revenues.
- Impact and reliance on electricity grid.
- Potential for interference by vehicle electrics on road infrastructure sensors.

Theme 1: Safety and Accessibility Impacts?

- Increased vehicle occupancy rates through effective ride sharing platforms?
- Improved vehicle prioritisation leading to more effective public transport and accelerated incident response times?
- Increased access to mobility services by elderly, unlicensed, disabled and impaired travellers?
- Additional street furniture requirements and the potential for interference from obsolete line marking?

Theme 1: Safety and Accessibility Impacts?

- Increased vehicle occupancy rates through effective ride sharing platforms?
 - *Increased average occupancy rate of vehicles (affecting traffic modelling).*
 - *Increased average vehicle weights (affecting road pavement design).*
 - *Reduction in projected traffic volumes (which is unlikely to be offset by greater access to mobility services).*

Theme 2: Efficient and Reliable Mobility Impacts?

- Increased total vehicle kilometre travelled with driverless vehicles running empty?
- Increased traffic smoothing with vehicles able to match speeds with signals?
- Reduced headway requirements due to faster reaction times?
- Less requirement for vehicle parking due to driverless capability?
- Shift to smaller vehicles for public transport?

Theme 2: Efficient and Reliable Mobility Impacts?

- Increased total vehicle kilometre travelled with driverless vehicles running empty?
 - *Increased vehicle numbers during off-peak and peak times (affecting both traffic volume modelling and maintenance costs of roads).*
 - *Greater congestion during peak times (affecting traffic volume modelling).*
 - *Potential for reduce parking demand (affecting land use planning).*

Theme 3: Improved Economic Performance Impacts?

- Increased reliance on interaction with the electricity grid?
- Greater accuracy in vehicle path control allowing for narrower lanes?
- Reduced need for signage and signalling assuming vehicles are connected to traffic management systems?

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- Increased reliance on interaction with the electricity grid?
 - *Increased call for vehicle charging equipment to be embedded into the transport network (affecting road design and construction).*
 - *Potential for revenue generation by transport agencies from electricity sales (affecting the business case for major transport investment).*
 - *Greater potential for electrified self-driving mass transit options (affecting network design).*

What are some High Priority Areas?

1. Potentially significant reduction in revenue from fuel excise and driving related fines and charges due to a shift to electric and driverless vehicles (*consideration of pay as you drive*).
2. Uncertainty around congestion levels and travel demand patterns (*the need for well informed scenarios to inform investment decisions*).
3. A shift from current modes to higher-occupancy light vehicle on-demand options (*impact on long term service provision contracts such as bus services*).

Part 2: Consideration of the Findings of Related Reviews of Regulations and Standards

- a) Review existing reports on how regulations and standards stand to affect the deployment of technology enabled vehicles and infrastructure in Australia.
- b) Identify initial tangible areas of potential amendments or inclusions in existing policy and regulations to underpin an appropriate deployment across a spectrum of technology enablement.

Part 3: Strategic Considerations for Investment

The final Industry Report will provide clear guidance on:

- a) How technology enablement of vehicles and infrastructure is likely to transition in the coming decade
- b) Implications for risk management and infrastructure investment.
- c) Recommendations related to short term investment priorities and medium term investment risks and opportunities.