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Friday, 3 July 2020

National Transport Commission
Level 3/600 Bourke St
Melbourne VIC 3000

Dear Sir/Madam

Re: Review of 'Guidelines for trials of automated vehicles in Australia'

Transurban is pleased to respond to the NTC's Discussion Paper: Review of 'Guidelines for trials of automated vehicles,' dated May 2020.

Consistent with our previous submissions to the NTC, we provide comments from two perspectives:

- As an owner and operator of major motorway assets, interested in seeing that guidelines will support safe and predictable operation of Automated Vehicles (AVs) on our infrastructure, and
- As a sponsor and project manager of completed trials of Level 2 AVs and planned trials of Level 4 AVs.

In our principal role as an infrastructure operator, Transurban supports the NTC's continued development of a comprehensive set of guidelines. It is important that the progressive development of AVs in Australia not be hindered by a lack of attention to the requirements that will ensure safety of trial participants and other road users during all stages of AV testing and piloting. We are also very conscious of the potential for trial vehicles that are not supported by appropriate safety plans and traffic management strategies to cause either damage to critical infrastructure or severe traffic disruption.

In our role as a facilitator of actual AV trials, we are well progressed in the planning of AV trials on routes that include our motorways. Our ability to manage lanes and provide high levels of monitoring and operational support means those roads can provide an ideal environment for Level 4 testing. We have been working with international partners who are able to bring well-developed automation technology to our shores, albeit with a near-term interruption under COVID-19 travel restrictions.

Our response to the questions below combines our own views with our understanding of the challenges seen by such an international operator, drawn from our joint planning processes and discussions with our local and international partners.

Responses to Individual Questions

1. Should the guidelines be updated to improve the management of trials (section 3 of the guidelines) and, if so, why? Consider in particular:

- the standard of evidence required in a traffic management plan
- the definition of 'trial location'
- the stakeholders trialling organisations should engage with
- requirements to state the purpose of a trial.

Our view is that the guidelines should be adaptable to the stages of maturity of trials. Early trials will tend to be in specific locations with well-defined traffic management plans. As trials broaden in scope and move towards pilots of operational services and then through to actual delivery, they will clearly need to have a more open operating environment. Of course, as the NTC progresses through development of regulations for operational arrangements, these will define the end-point of this progression. In the meantime, we support trials being delivered in a prescriptive environment in the early stages, with defined geographic boundaries, well-articulated traffic management plans in place and other parameters, such as hours of operation, specified.

All stakeholders that may be impacted need to be explicitly informed of the delivery of early-stage trials, including road and enforcement agencies. We also ask that you explicitly note the need for all operators of infrastructure on which a trial is to be conducted to be consulted, even if it is only a small section of the trial route. We want to ensure that a trial permit granted by a state agency does not provide an automatic right of access to privately operated facilities, such as toll roads.

As trials mature and move into operational pilots with potentially wider geographic reach, we see it as sensible to move away from a prescriptive to a risk-based approach, centring on clear definition of the operational design domain (ODD). This will have greater reliance on the safety management plan to show how potential events within the ODD will be safely handled. There will be a question of when does a trial qualify for migration to an ODD focus and there may be a base-level of proven operation in a more highly controlled environment that can be considered.

2. Should the guidelines be updated to improve the safety management of trials (section 4 of the guidelines) and, if so, why? Consider in particular:

- the standard of evidence required
- human driver or operator inattention
- road user behaviour that does not comply with road rules
- interaction with enforcement and emergency services
- pre-trial testing
- any additional key safety criteria.

Transurban has completed several trials of vehicles with Level 2 capabilities and we are in the early stages of our Level 4 trial plans. We make these comments from the perspective of having adopted many of the principles for the Level 2 trials, even though not strictly required, and having commenced preparation of a safety management framework for proposed trials with our partners.

Our key points for the NTC's consideration in response to this question are:

- The detailed safety management plan framework gazetted by the Victorian Government is a helpful guide, defining both Requirements and Issues to be Considered.
- We also value the willingness of the Victorian Department of Transport to be involved in an iterative development of the plan, rather than consider it a once-off submission.

- The areas covered in your Guidelines are appropriate and are reflected in the current Victorian framework. However, we propose that you include a recommendation related to the development of a plan, promoting an iterative process, as supported in Victoria.

3. What issues have been encountered when obtaining or providing insurance?

We have not yet tried to access insurance for our proposed Level 4 trials, so we make the following comments from our perspective as an infrastructure operator.

It is clear that all trial vehicles that operate on public roads should have coverage for potential damage and injury. If a vehicle is not actually registered, but is operating under a separate permit or an exemption, it should have the equivalent of Compulsory Third Party coverage as well as the routinely defined Public Liability insurance.

4. Are the current insurance requirements sufficient (section 5 of the guidelines)? If not, how should they change?

This is covered in our answer to Question 3.

5. Should the guidelines be updated to improve the provision of relevant data and information (section 6 of the guidelines)? Consider in particular:

- **serious and other incidents, including:**
 - consistency of reporting requirements
 - disengagements
 - definition of a serious incident
 - broader data recording requirements
- **research outcomes and end-of-trial reports.**

We consider that the current guidelines cover this area well. One aspect that would benefit from clearer definition is the recording of disengagements. In our view, the publishing of a single overall level of disengagement may be misleading because there are at least three types of disengagement, each with its own implications for assessment of operational safety. These are:

- Unexpected disengagements initiated by the automated system.
- Action by a safety driver who is not sure that the automated system is responding or will respond safely (we had instances of this type of action in our Level 2 trials and expect there will be similar occasions in Level 4 trials).
- Routine disengagement by a safety driver, for example, as a vehicle moves from its trial ODD to a different operating environment.

The recording of routine disengagement should be excluded, as it does not provide value in terms of safety assessments. The treatment of responses to the other two variations will be different and we recommend that they be separately recorded.

6. Is there any additional information the guidelines should include for trialling organisations?

Our answer to Question 2 refers to the value of a gazetted or published safety management framework and the value of an iterative process for the development of a plan and permit application between the applicant and relevant permit authority. This is based on our Victorian experience. We propose that the guidelines include recommendations that these processes be adopted more generally.

7. Should the guidelines apply to any other emerging technologies (discussed in chapter 4 or other technologies) and operating domains?

It will be difficult to require application of the guidelines to areas that do not require permits. However, it will still be useful to promote their application as a voluntary framework for organisations trialling other technologies, such as pods or personal mobility options.

In our view, trials that rely on technology to maintain safe operation beyond the capability of a human operator should have the same level of safety management framework requirements. A good example is platooning with Cooperative Adaptive Cruise Control (CACC), under which a driver is controlling steering, and separation between vehicles is controlled by a system and reduced below a level that would be considered safe for human driver intervention. While this is not technically Level 4, in our view, the level of reliance on the technology to support safe operation means that the guidelines should be followed.

8. Are there any additional criteria or additional matters relevant to the trials of automated heavy vehicles that should be included in the guidelines?

Special consideration for heavy vehicle loading should be included. It would be logical for initial trials to be conducted with unladen or lightly loaded vehicles and there is likely to be a progression through to tests at full load capacity. The dynamics of the vehicle will vary markedly over this progression and it would be worth noting the need to have safety plans take account of the changing behaviour.

9. Are there currently any regulatory or other barriers to running larger trials? If so, how should these barriers be addressed? (Consider the guidelines, state and territory exemption and permit schemes, and Commonwealth importation processes.)

As we have noted in our response to Question 6, we see it as logical to move to an ODD focus for larger trials over time. This will overcome many of the practical challenges of extending tightly controlled traffic management operations to wider areas and longer timeframes. In this light, it would be helpful if the permit and exemption schemes across various states and territories converge to a common approach for larger-scale trials, particularly those across Eastern Seaboard freight routes.

As far as importing test vehicles under permit is concerned, the prospective international partners we have worked with are prepared to look at that option for small numbers of vehicles, but for larger scale operations would transfer technology to vehicles already approved under Australian Design Rules (ADRs). As such, it would be more important to have future ADRs cater for automation components than to expand special permit allowances.

10. Should the guidelines continue to allow commercial passenger services in automated vehicle trials? If so, should the guidelines reference additional criteria that trialling organisations should be subject to, and what should these criteria be?

We have no comment here.

11. What challenges have you faced with administrative processes when applying for approving trials of automated vehicles, and how could these be addressed?

As previously noted, we have not yet been through the full process, but we do value the approach taken by the Victorian Department of Transport to offer an iterative process in which they will contribute to the development of final trial and safety plan details.

12. Are there any other barriers to cross-border trials? Is there a need to change current arrangements for cross border trials?

Our response to Question 9 is relevant here.

13. Should there be a more standardised government evaluation framework for automated vehicle trials? If so, what are the trial issues that should be evaluated?

It will be difficult to guarantee the confidentiality of information once it has been shared across jurisdictions. Therefore, it is preferable to have an evaluation framework that includes the minimum amount of information and that all parties can treat as effectively public information. This could include high level trial results and key learnings, but no proprietary information. The evaluation should include implications for infrastructure owners and operators.

14. Should the results of evaluations be shared between states and territories? If so, how should commercially sensitive information be treated?

We think that core information based on a minimal evaluation framework should be shared amongst states, territories and also private road operators.

15. What works well in the automated vehicle importation process, and what are the challenges?

We have not been through this process.

16. Is there anything further that should be done to facilitate a transition from trial to commercial deployment?

Our responses to Questions 6 and 9 refer to migration to an ODD regime and we see this as an important phase in moving towards commercial operation in a future regulated environment.

As a road operator, we are also thinking through changes that may be required to the infrastructure to support or enhance future AV operation. There may be a need to consider new road or lane management options, for example, to permit AVs in a lane at certain times, but not other vehicles. Some of these options may need new modes of communication with both AVs and other drivers and there may be a need for new designs of regulatory signs. This may not be relevant to guidelines for trials, but we take the opportunity to note the potential need in the broader context of future AV operation.

17. Are there any matters that the NTC should consider in its review of the guidelines?

We have no further comment.

We hope these comments provide constructive feedback on a complex set of issues and help the improvement of both the guidelines and some aspects of the broader evolution to a future regulated AV operational environment.

Yours sincerely

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