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Thursday, 21 February 2019

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

Dear Sir/Madam

Re: DEVELOPING TECHNOLOGY-NEUTRAL ROAD RULES FOR DRIVER DISTRACTION

Transurban is pleased to respond to NTC's consultation process for Developing Technology-Neutral Road Rules for Driver Distraction.

Transurban has ongoing commitment to the safe operation of our assets and road safety in general. Transurban has developed a road safety strategic framework which is underpinned by the Safe System approach. Transurban is able to influence a number of elements which have the potential to influence the safety of drivers and passengers on our network. These include:

- infrastructure design
- maintenance approaches
- signage
- speed management; and
- incident response.

Transurban is naturally concerned about the occurrence and impact of driver distraction, which are beyond the control of any road operator. This includes those contributing factors both inside and outside the vehicle, such as the proliferation of electronic functions embedded in both smart devices and the vehicle itself. We are also interested in the design of some functionality to improve driving convenience and safety.

As your issues paper noted, new and emerging technologies have gone well beyond the boundaries of the existing Australian Road Rules, which focus on video display units (VDUs) and mobile phones. This has resulted in a number of risks and regulatory uncertainties. We support NTC's process of progressively working towards a new set of technology-neutral rules.

Our response builds on our involvement in the NTC's workshop held at the ARRB research facility in Port Melbourne on the 1 November 2018. Since 2017, Transurban has been actively engaged in trials of connected and automated vehicles (CAVs). The prime objective of these trials is to anticipate the potential impact of new technology on our roads and operations. This includes understanding the ways in which future infrastructure design, road operations and customer relationships will need to adapt to CAVs and to proactively prepare for those changes. Our work will also be extended to consider work zone safety management and opportunities for speed harmonisation.

The evolution of CAVs emphasises the critical importance of achieving an effective regime to manage driver distraction. While the emergence of a range of driver assistance solutions at Levels 1 and 2 of the Society of Automotive Engineers (SAE) framework will, on face value, enhance safety, we must be sure that driver interaction with these systems is within an acceptable safety framework. Our CAV trials have demonstrated the complexity of balancing driver and vehicle interaction.

In Victoria, our trials identified a number of circumstances in which some Level 1 technologies – currently available in the market – were too slow to recognise emerging risks, and there were several instances recorded of Adaptive Cruise Control (ACC) not detecting a stopped vehicle on an exit ramp early enough to respond safely. One of our conclusions from this work is that drivers should be carefully informed of the limitations of technologies and that they should not allow themselves to be distracted from the driving task. Details of the Victorian trials have been published on our website:

<https://www.transurban.com.au/content/dam/cavs/documents/victorian-trials-report.pdf>

In a subsequent trial program across the broader NSW road networks, we observed a wider range of situations that caused CAV systems to disengage or otherwise not perform as needed; for example in areas with road-surface-crack repairs, incomplete or faded line markings and unusual lighting situations. Tunnels with narrow edges for lane-marking and dirty or faded markings were seen to provide a particularly challenging environment. These findings emphasise the need for drivers to be fully alert to the driving function, even when using Level 1 or 2 driving aids. Our report on the NSW trials has been published on our website:

<https://www.transurban.com.au/content/dam/cavs/documents/nsw-trials-report.pdf>

As CAV technology continues to develop towards being fully autonomous (Level 3), driver distraction will take on a new meaning. As noted in the issues paper, when operating a Level 3 autonomous vehicle, a driver needs to be ready to take back control quickly when alerted by the system. Understanding whether a car driver can afford to be 'distracted' in these circumstances will be an important consideration. We suggest that achieving a safety regime that is technology neutral and which may be extended over time to encompass the higher levels of CAV operation will be critical. Our work in this area is ongoing and we will be pleased to continue to provide our conclusions and perspectives.

We have provided our responses to the individual consultation questions below.

Comments on individual consultation questions.

1. Does the proposed definition include all the key functions required to safely perform the driving task?

The paper defines the driving task as a *complex, multi-task activity that involves the following functions:*

- o *route finding*
- o *route following*
- o *lateral motion control*
- o *longitudinal motion control*
- o *monitoring the driving environment*
- o *manoeuvre planning*
- o *responding to objects or events*
- o *making other road users aware of the driver's presence; and*
- o *complying with road rules.*

This is a comprehensive set and the only additions we can suggest are:

- o *maintaining safe clearance from other vehicles, road users and infrastructure*
- o *considering the influence of (or changing weather) conditions.*

These are implicit in other functions, including motion control and obeying road rules, but they more explicitly identify the judgement task (in absence of driver assistance systems) of managing separation from vehicles, cyclists, pedestrians and infrastructure.

2. Does the proposed definition capture all the behaviours that lead to driver distraction and a reduction in driving performance?

The proposed definition is: *Driver distraction is the voluntary or involuntary diverting of attention, in a visual, manual, auditory or cognitive sense, away from the driving task to focus on a competing secondary activity.*

We suggest this definition may be considered too prescriptive, in that it assumes that the competing activity is outside the driving task, i.e. a competing secondary activity. As noted in our preamble, one of the challenges we believe will need to be reconciled is the increasing use of driver assistance systems. If not managed well, these may also distract from the core driving function. An example from within the above-listed definition of the driving task would be the use of a GPS-based navigation system to achieve the route finding and route following functions. This will be a distraction if key-strokes are required to select route options. There are many other technologies already available and emerging which are designed to aid the driving task and ultimately improve safety, but which require some level of driver interaction. This may be as simple as engaging the function at an appropriate time, for example Adaptive Cruise Control (ACC) when in cruise mode, or they may require momentary attention to a visual display. We need to ensure that a new regime to manage distraction allows for realistic use of such systems, so that the intended safety benefits are not lost.

Given that 'distraction' may be from within the driving task itself, an alternative definition might be:

Driver distraction is the voluntary or involuntary diverting of attention, in a visual, manual, auditory or cognitive sense, away from an effective delivery of the full driving task.

3. *How could a distinction between manageable and unmanageable levels of driver distraction be used to inform the way distraction is regulated? What evidence-based distinctions could be considered?*

Transurban commissions research from institutes such as Monash University Accident Research Centre to analyse the contributing factors to crashes on our assets. Our research program also considers the nature of behavioural change that will best support crash reductions. This is driven by a desire to both increase the safety of our roads and to enhance the value proposition to customers through a reduction in avoidable delays, which in turn can impact on driver behaviour.

Some of this research has generated insights into the nature of crashes on our assets. Our findings include:

- o overall, Transurban's roads have a significantly lower rate of injury crashes than comparable roads in nearby locations
- o rear end and lane-change crashes are the most common crash types on our network; and
- o crash rates are higher in Friday evening peak-hours, to an extent not explained by increased volumes alone.

Drawing from these and other observations, we conclude that driver distraction is a major contributor to crashes on our roads. We also recognise that driver behaviour is quite complicated and consideration will need to be given to manageable and unmanageable distraction. For example, our research with road users indicated that the higher level of crashes in Friday evening peak times may be due in part to drivers' attention being away from the driving task. Some drivers, especially those who are regular commuters, can be caught in a transition between a work-day mindset and anticipation of the upcoming weekend. Their attention may be on finalising work tasks, including phone calls, at the same time their brain is also trying to focus on getting home more quickly to start the weekend. This behaviour becomes reinforced as manageable, particularly when there are no negative consequences.

Another area identified in our research with road users is the tendency to 'zone out' when the journey is a familiar and regular route, with few new challenges or points of interest. Often referred to being on 'auto-pilot', the driver allows the subconscious mind to navigate the familiar terrain and focus is removed from being alert to the driving task. The auto-pilot driver will often get through the journey unscathed, albeit with little recollection of the trip afterwards. However, along the way, their lack of attention to the dynamics of traffic around them has probably increased their crash risk. Again, this is a form of internal distraction that does not neatly fall into a manageable description.

Treating situations such as these requires more than regulation. It will require programs of awareness-raising and behavioural change that target particular drivers and situations. However, the regulation of distraction should be constructed in recognition of the range of complex interactions between drivers, their mindsets and degree of focus, as well as external devices and events. In this light, we suggest that the regulation avoids making specific distinctions between manageable and unmanageable distractions, eliminating any grey areas. In addition, we suggest that, where possible, the regulation should focus on the responsibility of the driver to manage the full driving task, rather than just focusing on the distractions themselves.

4. *Should conventional and technology-based causes of distraction be treated equally in the Australian Road Rules? Why?*

Conventional and technology-based distraction should be treated equally. For example, two seconds spent searching for a drink-bottle will be the same as two seconds devoted to a technology task. However, the complexity of the range of technology interactions may need special consideration. Many technical tasks are not single events, but a sequence of actions that lead to an ultimate outcome. An example is the loading of an address destination and selection of a preferred route. Each single action or letter may be able to be managed as a short distraction, but the temptation will be there to be drawn into multiple actions over an extended period. As the issues paper notes, the design of interfaces to these systems and to platforms such as Apple's CarPlay and Google's Android Auto have room for improvement from a safety perspective and the proposed rules should provide a clear basis for their use by drivers.

5. *Can you provide examples of effective non-regulatory approaches to driver distraction that assist drivers to self-regulate their behaviour in a dynamic driving environment?*

In the response to Question 3, we described some of our research that points to particular behaviours that increase risk from distraction, such as the Friday-evening mindset, and where drivers are in 'auto-pilot' mode. These are examples of behaviours that could be targeted with particular public education and behaviour change initiatives. Transurban is considering its role in implementing safety programs to address key issues such as distracted driving on its toll roads.

Public engagement or education programs similar to the current Transport Accident Commission (TAC)/Victoria Police campaign with the theme of 'think of us' before texting etc, communicates a range of messages including the risk associated with distraction and potential consequences from enforcement to injury.

The use of apps and telematics by auto insurers to monitor a driver's attention to the driving task have also been trialled and implemented, where drivers are rewarded/penalised for not using their mobile phones.

6. *Can you provide examples of strategies successfully implemented by other international jurisdictions and industries (for example, aviation) that could be applicable to driver distraction?*

To improve the safety of our toll roads Transurban engages with our customers through initiatives such as the 'Orange Cones. No Phones' campaign to address driver distraction. This campaign was undertaken with our government partners, highlighting the need to be alert in construction zones for the safety of road workers.

We also have policies and procedures relating to the safe use of fleet vehicles, including the use of mobile phones and inclusion of driver assistance systems, to ensure employees and contractors drive with due care for themselves and other road users.

7. *Are there other parties besides the vehicle driver who can influence the risk of driver distraction? If so, are there mechanisms to ensure those parties are doing all that is reasonably practicable to ensure safety?*

One of the themes of the November workshop was that the distraction issue should be treated as a system, not just a driver phenomenon. We support that approach and agree that there is a potential to influence the actions of a range of players in the chain of responsibility, although perhaps not as rigorously as in the Heavy Vehicle legislation. A systematic framework that provides guidelines and/or rules for providers of services and information to drivers will be a key step in managing the incidence of distraction. This should encompass telecommunication companies and application providers that are involved in in-vehicle services as well as the platform providers that are supporting integration of devices with the vehicle (e.g. Apple and Google on the smart device side and providers such as Continental on the vehicle platform side).

Vehicle manufacturers are also clearly part of the chain, taking overall responsibility for their products and the systems embedded in them. Outside the vehicle, similar principles could also be applied to other 'providers' of potential distraction, including billboard designers and roadside sign operators.

Educating and supporting these providers to understand the safety principles for design and implementation should form part of the implementation of any change to the road rule.

A critical step in the establishment of appropriate guidelines and rules will be the establishment of a system-wide view of acceptable levels of distraction. This will require continued research and stakeholder engagement to reach a consensus. This may well require additional processes to continue outside the NTC core consultation process and Transurban will be willing to participate in any such activities.

8. *Can you provide examples of effective strategies for ensuring that new in-vehicle technology and mobile apps minimise driver distraction?*

The November workshop also explored the opportunity to augment technology, whether in-vehicle or a personal device, with features that either inhibit inappropriate use or 'nudge' the driver towards better behaviour. An example of this is Transurban's LinktGO tolling app, which was developed in line with safe design principles to minimise distraction and direct engagement with the app. LinktGo was reviewed by leading distraction expert, Professor Michael Regan.

Other examples include vehicle systems that monitor drivers for impending fatigue, whether by tracking eye and eyelid movements or the pattern of steering corrections. We see that there is considerable potential for this type of approach to be applied to either detect instances of distraction or to prompt drivers to take appropriate actions. A simple example could be apps that periodically remind drivers to focus on the journey and avoid the zone-out tendency discussed under Question 3.

9. *Can you provide examples of strategies to ensure that users of partially automated vehicles are fully informed about their responsibilities, and the limitations of their vehicle's technology?*

Our preamble refers to the challenge of extending principles of acceptable distraction into a realm in which the driving task is temporarily eased. We see this as more than just making sure drivers understand their responsibilities. There are complexities in providing a safe environment, as consideration needs to be given that drivers in prolonged situations of idle activity can have their attention diverted to a wide range of alternative actions. We note the industry commentary, particularly amongst US and European vehicle developers, that Level 3 may not ultimately be a safe level of operation and that some developers are targeting Level 4 as the next operational paradigm beyond Level 2.

Notwithstanding this dynamic, we should expect that many Level 2 vehicles will evolve naturally towards Level 3 operation and there should be serious consideration of the mechanisms to support safe operation. We are aware of one approach, where the vehicle provides a signal such as a beep, vibration or voice command that creates an artificial requirement for regular driver intervention, to make sure that he/she is alert and available. This is somewhat contrary to the objective of relieving the driver from the driving task and may not be as commercially attractive as a more relaxed Level 3 system. This means that there will be a further requirement for other means of either monitoring alertness or prompting action. These could be an extension of the potential approaches discussed under Question 8 above. We do see such actions just as important as informing drivers of their responsibilities.

10. *What evidence is available in support of a performance-based approach or a prescriptive approach for managing the risks of driver distraction?*

The examples provided in the issues paper are good demonstrations of the limitations of both performance-based and prescriptive approaches. It is clear that the prescriptive approach, referring to VDUs and mobile phones is well outdated, while the performance requirement of proper control of the vehicle continues to be valid today. However, the latter provides limited guidance to its application in particular circumstances.

In our view, the proliferation of in-vehicle and personal devices and apps, and the uncertainty of future developments, mean that a purely prescriptive approach will not be practicable. On the other hand, we need more than 'proper control'.

A realistic middle-ground may lie in being prescriptive about behaviour rather than technologies. For example, the workshop discussion about duration of distraction may translate to a limit of two seconds. Similarly, the number of screen-touches can be defined, regardless of the application or activity, as could the time required for the average person to absorb a billboard display. Requirements such as these could still be accompanied by an overall performance-based provision, perhaps an updated view of proper control in a Level 1, 2 and 3 context.

We hope these comments provide constructive feedback on a complex set of issues and help find a path to an appropriate regulatory regime.

Yours sincerely



Elizabeth Waller
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