



TRANSPORT AND PUBLIC WORKS COMMITTEE

Members present:

Mr SR King MP (Chair)
Mr CE Boyce MP
Mr RI Katter MP
Mrs JR Miller MP
Mr BJ Mellish MP
Mr TJ Sorensen MP

Staff present:

Ms D Jeffrey (Committee Secretary)
Ms M Telford (Assistant Committee Secretary)

PUBLIC HEARING—INQUIRY INTO TRANSPORT TECHNOLOGY

TRANSCRIPT OF PROCEEDINGS

MONDAY, 11 FEBRAURY 2019

Brisbane

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The committee met at 9.38 am.

CHAIR: I declare open this public hearing for the committee's inquiry into transport technology. I would like to acknowledge the traditional owners of the land on which our parliament stands. My name is Shane King. I am the member for Kurwongbah and chair of the committee. The other committee members here with me today are Mr Ted Sorensen, the member for Hervey Bay and deputy chair; Mr Colin Boyce, the member for Callide; Mr Robbie Katter, the member for Traeger is an apology; Mr Bart Mellish, the member for Aspley; and Mrs Jo-Ann Miller, the member for Bundamba.

The committee's proceedings are proceedings of the Queensland parliament and are subject to the standing rules and orders of the parliament. The committee will not require evidence to be given under oath, but I remind witnesses that intentionally misleading the committee is a serious offence. You have previously been provided with a copy of instructions to witnesses, so we will take those as read. The proceedings are being recorded by Hansard and you will be provided with a copy of the transcript. To assist with clarity, can you please identify yourself when you first speak and speak clearly and at a reasonable pace.

The purpose of today's hearing is to assist the committee with its inquiry. Media may be present and will be subject to the chair's direction at all times. The media rules endorsed by the committee are available from committee staff if required. All of those present today should note that it is possible that you might be filmed or photographed during these proceedings. I ask everyone present to turn mobile phones off or to silent mode. I also ask that, if witnesses take a question on notice today, they provide the information to the committee by 4 pm on Monday, 18 February 2019.

This hearing is the fourth hearing that the committee has held for the inquiry. The committee intends to conduct more hearings on the inquiry with information to be updated to the committee's web page as it becomes available.

KASPARIAN, Mr Jeff, Programs Director, iMOVE

McDONALD, Mr Stephen, General Manager, Strategic Initiatives, Transurban Queensland

MEREDITH, Mr Tony, Stakeholder Manager, Transurban Queensland

MICHAEL, Dr Rebecca, Head of Public Policy, RACQ

MOODY, Ms Ruth, Public Affairs Manager, Transurban Queensland

POYNTER, Mr Christopher, General Manager, Transurban Queensland

CHAIR: I welcome representatives from the RACQ, iMOVE and Transurban Queensland. Thank you for your assistance and your attendance here today. Would you each like to make a short opening statement?

Mr Poynter: Thank you for the opportunity to discuss transport technology in Queensland—a topic that is critical to the ongoing growth and prosperity of our city and communities. Transurban is an urban toll road developer and operator, with 17 motorways across Australia and North America. Here in Queensland, we operate seven roads where our 1.6 million customers make 470,000 trips each workday.

We have made a written submission to the committee on the topic of transport technology and have provided information on the technological trends that we believe will have major implications for transport and mobility over the coming decades, examples of how we are preparing for the expected changes and recommendations for the consideration of the committee. Since we commenced operations 20 years ago, Transurban has embraced technology to improve the safety and efficiency of our roads. Examples that are helping to ease congestion every day include coordinated ramp

metering, lane use management systems, variable speed limit signs, CCTV cameras, automatic incident detection systems, automatic height and occupancy detection systems, and enhanced travel time information. There is no question that further developments in technology will see our roads and cities transform over the coming decades. Like many companies, Transurban is preparing for the future. The possibilities that these developments in technology present are exciting but, to fully realise the benefits, we all need to be ready. That is why we have teams focused on exploring and understanding new and emerging technology as well as identifying trends and changes in traffic and behaviour. In fact, almost 40 per cent of our workforce today is employed in the technology space.

We have recently undertaken connected and autonomous vehicle trials here in Queensland, across Australia and in the US. We have also conducted a road usage study and are investigating mobility as a service to better understand how our business can provide greater value for our customers. As we look to the future, we believe that it is important that action is taken by the government and the private sector now to ensure the readiness of our communities.

In our submission, we have made recommendations across a range of transport technology topics, including planning for future funding models, readiness for connected and autonomous vehicles, and advancements of mobility as a service. In our view, collectively—as government, private sector and peak industry bodies—we have a tremendous opportunity to position Queensland as an industry leader in this space. We have made an excellent start by recognising the advent of this technological change and the investments made to date. There are a number of Queensland companies leading the way across this sector already. As we now look forward, we have the opportunity to build on this through government regulatory policy that balances the need for safety and innovation and then further and continued close collaboration between governments and the private sector as we lean into these new frontiers together.

Thank you again for inviting us here today to present to you. Both Stephen and I would be happy to take questions of the committee.

CHAIR: Thank you very much for that. I will now move to the RACQ.

Dr Michael: Good morning, chair and committee, and thank you for the opportunity to present to the inquiry today. My name is Rebecca Michael, head of public policy at RACQ. On behalf of the club I would like to thank you again for this opportunity to discuss the impact of transport technology on our community and our constituents and how it might actually be integrated to maximise the outcomes for the community at whole.

As Queensland's peak motoring body we have a vital interest and stake in the future of our transport network. On behalf of 1.7 million members we advocate for a system that is safe, affordable and sustainable. RACQ was borne out of the last major transport disruption, which was when the car and the automobile replaced the horse and cart and we are keenly aware that as we move into this age of transport disruption once again that we need to refocus from motoring to a broader mobility paradigm. It is important that we identify and evaluate how transport technologies can be integrated into the Queensland Transport system not only to maximise their benefit for our members but also to mitigate the risk with that integration with respect to not only our organisation but also for the long-term impacts on the broader transport system as we seek to reduce congestion, improve road safety outcomes, but also to improve the mobility outcomes for all Queenslanders, particularly those that are currently at transport disadvantage.

CHAIR: Thank you. We will move to iMOVE.

Mr Kasparian: Thank you, chair, and thank you, committee. iMOVE Australia is an independent, national transport mobility research and development coordination centre. We run the iMOVE cooperative research centre or CRC which is a consortium of 44 national industry, government and research partners that conduct collaborative research to improve the mobility of people and freight through better use of data. iMOVE CRC is funded through the federal government's CRC program and its partners for a total of 10 years. Its total budget is approximately \$230 million consisting of cash and in-kind from government, industry and academic partners.

We were formed by our partners in response to their recognition of the critical need for collaborative, and I stress the word collaborative, research and development to assist industry and government to improve the movement of people and freight, all this at a time when there is market and technology change and uncertainty but tremendous opportunity brought about by the use of data and emerging technologies. We undertake a number of multistakeholder projects that will provide evidence based outcomes and recommendations. We also assess and develop technologies and data solutions that realise economic, social and environmental benefits in the transport sector.

Since commencing in September 2017, to date we have commenced 17 projects, seven of those projects involve Queensland partners. We have written a submission to the inquiry, but I would like to highlight two specific points. Firstly, it is important to the successful realisation of the benefits of technology and the better use of data that there is cooperation and collaboration at local, state and national levels. This is in terms of both thinking and use of assets such as test beds that exist in various jurisdictions. iMOVE is committed to ensuring its projects maximise these. My observation is that this is substantially occurring but that it requires ongoing vigilance to avoid duplication or, worse, incompatible outcomes. I can happily report that projects that we have in train with the Department of Transport and Main Roads here in Queensland involving other agencies as well primarily in relation to the connected and automated vehicle initiative, or CAVI, include a very strong level of collaboration at all levels.

Secondly, I would say that the challenges of data in transport—sharing, access, securing, curating, owning, standardising, analysing, presenting as just a few examples—are not trivial. The benefits are substantial and we should ensure that we collectively drive towards maximising them, of course, balancing harmonisation and national and state interests with industry competition. As an independent R&D centre iMOVE can provide, and is in a good place to become, a focal point for addressing a number of these issues.

CHAIR: Thank you very much for that. We will now go to questions.

Mr BOYCE: Thank you, Mr Chair. My question is to Dr Michael. As transport technology increases within a big city like Brisbane, for example, it seems to me that rural and regional Queensland will get left behind with this technology because it presents a range of practical problems to implement in small rural communities. Would you care to make a comment on that and how do you feel that that might be mitigated against?

Dr Michael: I think for some autonomous vehicle technologies there are limitations at the moment which would preclude the use case within rural and regional Queensland. We are working towards signage, road line markings, better identification of those using autonomous systems or ADSEs to actually be able to pick up those line markings and those road signs, but it is still a work in progress and we need to look at how we might harmonise at a national level to improve that so that going forward we can actually ensure that there is some sort of cross jurisdiction recognition of those standards.

However, in Queensland it is a particular transport task and a particular network. We have I think about 180,000 kilometres of roads, 100,000 kilometres of those are unsealed, which is going to present huge challenges for the use of any kind of autonomous vehicle. That said, there are other types of technologies that are being used that actually deliver benefits to rural and remote communities. Particularly I am thinking about heavy vehicles and the use of certain tracking systems and performance based standards that are being used to actually improve the efficiency and productivity of vehicles servicing these communities, also being able to assess the impact on the network.

There is a trial that has just been announced that will enable location based charges, for example, using these technologies which will deliver a greater form of revenue to rural and remote councils to better manage their network while also enabling first and last mile access. Undoubtedly there will be challenges that will need to be overcome, and they are being worked through, but there are technologies at the moment that are delivering benefits. I think in those rural and remote communities the quantum of benefits that could be delivered are largely tied up for the road network in road safety improvements. As we see vehicles become better equipped with technology that mitigates human error, that will actually improve road safety outcomes at a greater proportion in rural and remote communities than you would see in highly urbanised lower speed communities. Being able to account for that error at higher speeds that you see on rural highways is going to deliver a safety benefit. It is a mixed bag.

CHAIR: Member for Hervey Bay, do you have anything at the moment?

Mr SORENSEN: No.

CHAIR: I had one question before I throw to the member for Aspley who is very keen. I noticed you were saying that you had done some autonomous vehicle trials locally. I am very interested to hear some more about that if you could expand on that, please.

Mr Poynter: I will start and then perhaps Stephen can jump in. In October and November of 2018 we undertook partially automated vehicle trials on the Transurban Queensland network. That effectively involved eight or nine vehicle manufacturers partnering with us, together with TMR, Brisbane

Brisbane City Council, RACQ and QUT, to run these trials. What we did was test vehicles in a fully controlled situation. We tested the existing technology on these vehicles that you can buy from the showroom floor today. That involved testing the lane keep assist, testing the speed sign recognition and the other technology that is available today. We are currently analysing all those results and we will have the results out and it will be made public in a few months. Perhaps Stephen can comment further about what we have done.

Mr McDonald: There is just one point I want to make. I think when we use the word automated I think we have to accept that there are various levels of automation and the technology is maturing. To enhance what Chris was saying, what we are testing now is current level, what classically would be called level 2, simple things such as adaptive cruise control, lane keep assist and automatic emergency braking. Those are the tests that we were running. The primary focus here was trying to understand how those technologies interact with our roads, was there anything that we need to look at or feed back to the manufacturers around how those vehicles respond. The Queensland trials were very similar to trials we ran in Victoria and New South Wales. Chris touched on some of the findings that will be coming out in the next month or two, but I think the findings were very similar to what we had seen in some of the other regions around the requirement for very clear distinction in line markings, the speed signs need to be very clear around how they are positioned and their brightness and the contrast that the vehicle perceives and then again line markings on off-ramps and so on need to be clear. We can articulate more of those if you need any more detail.

CHAIR: Thank you for that. Member for Aspley?

Mr MELLISH: I look forward to seeing the results of the trials when they come back. Just following on from that, as you have your own dedicated networks around the place do you see yourself as a bit of a leader going forward in terms of trialling these connected and autonomous vehicles? Do you see yourself over the next 10 years or so as being able to be in a position to trial these technologies, to be a bit of a leader in this field?

Mr McDonald: Our view on this is that it is a collaborative effort. I think to see us as a leader is not the way we are positioning it. We know that this technology is coming. We know that governments at various levels are working hard to make sure that the regulation is in place for their safe adoption and use. Our contribution to this is making sure that our networks are safe for their use. Our networks provide a natural first point for some of this technology to be tested. I think you have articulated there are lanes that we can dedicate, there are things we can do to think about how we control those and the point of the trials we are doing is to make sure that we partner with the right people, the vehicle manufacturers and government organisations at each level, get some a data, not just what you suspect, get data from what we see from the vehicles and actually talk to the people who are in the cars and talk to the people who will be driving next to the cars and find out how they react and then we share that data with everybody to make sure that we can prove it. That is our role as we see it: to make sure that it is safer and better for the cars on our roads.

Mr MELLISH: I note you say you are working with eight or nine vehicle manufacturers, do you see a point in the future where there will need to be some sort of standardisation on a national or international level in terms of the technology that they are putting in the cars?

Mr McDonald: It is a good challenge and I think the industry is wrestling at the moment with how you get some sort of standardisation. Our view is around making sure that whatever regulation is applied from the government level for out in the regions where our roads operates that those on the road can operate safely. I think some of the challenges that you articulated there around how do we make sure that our roads keep pace with that technology evolution around communications infrastructure and any modifications we might have to make on the roads in future will rely on some form of standardisation and our role again is to make sure that we keep pace with those changes and feed any requests or findings back into the decision-making bodies.

Mr MELLISH: To Dr Michael, anything that reduces the number of car accidents on the road is good from a public safety perspective and it is good for you guys as well, less insurance you have to pay out as well as the public safety benefits. I am just interested to see what benefits you see from connected and autonomous vehicles on safety going forward I suppose firstly and also on congestion.

Dr Michael: To further Transurban's point, there are a number of obviously different autonomous levels at the moment. What we see at the moment at autonomous level 2 and 3 is still a degree of human interaction with the vehicle, whether it be to take back control or to intervene in some way once the vehicle has highlighted a significant problem.

In terms of safety outcomes, while human factors are generally causally related to a crash in up to 95 per cent of instances, there is obviously a huge benefit that could be derived from an increased level of automation in vehicles. However, that human autonomous interaction at the Brisbane

moment does create potentially a conflict. As we increasingly hand over control to a vehicle, we need to ensure that they are safe. To do that—Transurban are doing trials which is fantastic, and I know that our colleagues and members of iMOVE are also undertaking trials—it is important to build up that knowledge base. Particularly to speak to the member for Callide's point, we have a lot of use cases and environments within Queensland, and we need to make sure that we are trialling vehicles under all circumstances to make sure they are safe before they are deployed into these environments.

In terms of congestion, autonomous vehicles can have the potential again to deliver a significant benefit. If we see an uptake of autonomous vehicles in the public transport sector which may improve the efficiency of that sector then we might see a transfer from people driving their own vehicles to using more PT. However, autonomous vehicles have the potential to open up the transport network to a number of people who currently might not be able to drive—people with a disability, people with a medical condition, people who for various reasons cannot currently operate a vehicle. Unless we undertake work to ensure that we have good quality public transport that is contestable with people wanting to drive, we could have a situation where autonomous vehicles are exacerbating congestion. It is important that we look holistically at the transport system to ensure we are pulling the right policy levers to achieve the outcome while we are increasing our confidence about the safety of autonomous vehicles on our roads.

Mr MELLISH: I note in your submission you have done some work on ownership models going forward. Can you elaborate on that in terms of what the future of transport looks like in terms of private vehicle ownership et cetera?

Dr Michael: What we are seeing overseas is a shift towards effectively spotifying your vehicle. It is a shift from ownership to access. It is access that becomes more critically important. When you look at the running costs of vehicles, a lot of the time, particularly in more densely populated systems overseas—for example, in Europe—that have good quality transport, it does not make financial sense to own a vehicle. However, you might want to access one for a weekend trip and so on.

We are seeing vehicle subscription services pop up in the US. There are also a couple of them that are being operated in Australia now where people subscribe. If you want a small vehicle to get around the city, you would subscribe to that. If you want to hand that back and get what my boss would have—a Mustang—to cruise down the coast on the weekend, that option is available to you. The spotification or the vehicle subscription relies on access as opposed to ownership. I see that as being the biggest change in going forward around how we deal with vehicles.

Mr MELLISH: Finally, Mr Kasparian, in your submission you were more focused on data. Going back to my question on standardisation, do you see a need for data to be on the same platform or standardised a little bit going forward?

Mr Kasparian: I think it is a challenge. We need to make sure that anything we do—people talk often about the rail gauge problem. If we do not standardise a number of elements, we are going to run into trouble. It is clear that a number of elements on networks need to be standardised. The way that cars in a connected environment talk to each other needs to be standardised.

In the freight sector we have just completed a study for the federal department of infrastructure where we looked at a number of elements of ownership, gaps and so on in the use of freight—the ownership of freight, what sorts of models would exist. There is a real tension there, of course, between trying to get something that works across a state and across a country and then ensuring that there are appropriate commercial opportunities to maximise the outcomes from a commercial perspective, so there are challenges. I think some examples have been cited here today. There are a number of projects that we are undertaking as well that really need to look at not just standardisation but also who holds the data, who has use of it, what are the costs associated with it, who upkeeps the data. All of these questions are very significant issues that go along in parallel with that very key issue of standardisation as well.

Mr MELLISH: Is that something that needs to be done nationally or internationally or a bit of both?

Mr Kasparian: I think it is going on. That is the first point to make. It is going on in any case. I think the important thing for Australia to do is to ensure that it is plugged into what is going on—I would suggest that it is—and for Australia to contribute to it, and I would suggest that it is. I think the important thing to do, as I said in my opening statement, is to ensure—to use the relevant example of the work that Transurban has been doing in relation to looking at vehicles—that we do not duplicate that work, that we do not create our own state based version of what has been done in other states and other areas. Let's learn from what has happened in other jurisdictions and other areas and make sure that we are advancing the data—in this case the data conversation—and not simply repeating it.

Mrs MILLER: I am interested in the comments made in relation to spotification. Surely that threatens the future of RACQ. For example, at the moment a person owns a car and they purchase a membership of the RACQ, or whatever interstate equivalent it is. If something happens to your car, you ring up and the RACQ comes out usually fairly fast. If we are looking at a situation of automation, basically the car manufacturers can forget about the RACQ. If something goes wrong with their car, they can provide a direct service wherever that car breaks down, so people might not necessarily feel that they have to join the RACQ. Has the RACQ done any research on that?

Dr Michael: There are undoubtedly a number of broad economic impacts and changes to the transport sector that would arise, from employment as well as organisations, from the increased level of automation and connectivity in vehicles. In terms of RACQ understanding that, there is still a lot of end state uncertainty in the transport technology sector. What I mean by that is something only becomes a disruption if people value it and there is uptake in it. What we are seeing at the moment is the rapid emergence of a number of different models relating to transport. Everything from, like I said, vehicle subscription, ride-share—and there are so many different permutations of ride-share that it is not funny now—right through to connected and autonomous vehicles.

There is undoubtedly going to be an impact on the RACQ business model. To keep in step with the change to the transport sector, we have refocused from motoring to mobility. While motoring is still at the core of our DNA, we recognise that there will be a number of changes both to the expertise that our staff require and to the types of jobs that we do, including, as I think it was mentioned previously, to our insurance and risk profile as well. RACQ is responding to that.

To speak to your point about repair and those kinds of things, it will become increasingly important for an organisation such as RACQ to continue to advocate for motorists particularly around the right-to-repair information. We could have a scenario where there is an issue that goes wrong in the automated driving system. The Australian government is proposing to regulate the automated driving system separate to the actual vehicle. If there is an issue that goes wrong, what are the liability implications in that space, how do you determine fault and who is going to advocate on behalf of the motorists through an insurance claim? Similarly around the right-to-repair information, if it is an automated driving or connected driving system fault, is it simply a software update or is there proprietary ownership of the data that will then actually cause issues for the right for you as a motorist to take your vehicle to whoever you want to take it to to get it repaired?

A number of those issues will emerge as people start to increasingly uptake this kind of technology. RACQ absolutely has to adapt to be able to meet those changes in the market. We also need to keep one step ahead to make sure that we are advocating on behalf of motorists so that their consumer rights are also preserved within this transport technology space.

Mrs MILLER: I have a follow-up question in relation to that. I note that in the submissions that you all put in government needs to talk to the peak bodies et cetera which I have no problem with. How many of you are actually talking to the working people of Queensland? There are plenty of working people in my electorate who own a 10-year-old car or even older who are very frightened of this technology because, whilst they are able to afford a car now and are able to put 10 bucks worth of petrol in it to get from A to B, what happens to them with this automated system that will inevitably come in? They are very, very concerned.

Mr Poynter: Certainly, from a Transurban point of view, we are talking to our customers. One of the ways in which we are doing that is by undertaking a number of trials in mobility as a service space. In particular, we have a trial going on at the moment which is a parking trial in the Myer Centre here in the city. That is what we are referring to as a 'windows up' trial, a 'windows up' parking solution where, using your Linkt account, your toll road account, you can pay for your parking at that centre—you drive in; with number plate recognition technology, the boom gate comes up; you park; you do not have to worry about a ticket; when you are ready to exit, you simply drive up to the boom gate again; it recognises your number plate and you drive out. It is very easy, very convenient. Our customers love it. We are getting excellent feedback on that. It is one of the many examples that we are looking at in these trials, providing more value to our existing customers and listening to them.

Mr McDonald: In terms of talking specifically to the automation question you mentioned, as part of all of the trials we are running across all of our jurisdictions is a significant component of community and customer interaction. For example, we will take surveys. We have taken some of the community for a ride in the vehicles when we are doing the trials. Just to be clear, the vehicles have professional drivers in them. They are completely safe and they are fully road compliant. We talk to them about their concerns before they get into the vehicle and then after they get out of the vehicle. We log those concerns and share those findings as well. One of the interesting things—and it is similar to some of the other studies we have done—is how people's thinking matures once they get Brisbane

exposed to some of the technology. In terms of the technology and the safety, that is one aspect. Exposure and public relations campaigns and getting people in contact with the technology will help with some of those.

I think that the other point you raised was around the potential cost impacts. Again, it depends, as Rebecca made the comment, on how the model is going to evolve going forward. If it is an ownership as opposed to a service issue, the only way that will work is if the vehicle manufacturers get the price of the vehicles down to an acceptable level. People's income is not going to change significantly, so the product has to come to that level. If it is a service—a spotification of that model—then I think you will see that the whole concept of how you pay and how you interact with transport will be different. That is more getting familiar with how that might evolve.

Just to be clear, I think we are talking about a significant number of years before any of this becomes the dominant way that people will travel on any of our roads in Australia. Some of the technology is here and it is advancing quite fast, but to get to that full completely integrated mobility as a service offering is, in our view, significantly far away, as is the full automation of all of the vehicles where you can drive anywhere, anytime, no hands.

Dr Michael: I would like to add to that. When we research our members, only about a third actually trust autonomous technology at the moment. There is a significant public trust and awareness issue out there, and it is important that we take our members and Queenslanders on the journey. We need to be able to demonstrate their safety in those environments—the different use cases. It is not about just running a trial down at some closed network in Brisbane. It is about going out to those communities and expanding the demonstrations of safety and getting people to understand that they could safely be used in their vehicles in particular circumstances. There will be particular advantages to autonomous technology in rural and remote Queensland once it comes online. To speak to Stephen's point, it will be a significant number of years.

When we are looking at technology and the impact on regional Queensland, the biggest issues that we see coming relate to EV uptake and the setting of CO₂ emissions targets. That will threaten the transport options that regional Queenslanders have available to them. It is important that that is worked through at a state and a federal level to make sure that the rights and the needs of Queenslanders are maintained as we move towards trying to encourage more fuel efficient technologies and the uptake of those. We have a particular task here and we need to make sure that we can still undertake that task.

I think when we see more electric vehicles and the incentives being offered to increase the uptake of electric vehicles, when that comes online there will be greater pressures around road-user charging. Again, that will significantly disadvantage those who live in rural and remote areas. Those issues as derivatives of improved technology also need to be considered in tandem when we are thinking about how they will roll out into the Queensland context.

Mrs MILLER: To take that a little further, people in my electorate are quite poor. The reality is that through Saint Vinnies, Anglicare and so on, we feed our own people. They are the working poor. People in my electorate who are the working poor and those in poverty will not be able to access this new technology, I suspect. I want to know if they will be left out in terms of service from this new technology coming in. For example, will areas like Goodna, Riverview, Bundamba and other suburbs that are particularly poor be left out when this technology comes? I do not care when it comes in, whether it is 10 years or 20 years. I am trying to protect my own people who currently can afford to buy a cheap car and get around with, say, 10 bucks worth of fuel in it. However, they will not be able to access this transport at all. I am interested in your comments.

Dr Michael: Can I clarify what kind of technology you are talking about coming in?

Mrs MILLER: I am talking about automated cars, in particular. At the moment, their access to public transport is quite poor anyway in terms of buses in the area. They might be able to pay \$1,000 or a couple of thousand dollars for an older model car. They are stuffed, aren't they, in relation to new technology if you cannot give a guarantee that they can have access to automated vehicles?

Dr Michael: Undoubtedly there will be benefits that will not be conferred. Unfortunately, they will be safety benefits. Autonomous vehicles, newer vehicles, are safer vehicles. Increases in V2X or vehicle-to-everything—

Mrs MILLER: Let's take out the safety aspect of it. We will assume that they are all safe. Are people in my area going to be able access automated cars at a price that is cheap enough for them to access and to be able to get around?

Dr Michael: To speak to Stephen's point, it is going to be a significant period before autonomous vehicles will be on the road. We know that the vehicle fleet turns over between every 10 and 12 years. The RACQ projects that we will not see mass deployment of autonomous vehicles for well beyond that. My colleagues here may disagree, but I still think it will be closer to 25 years before we see those vehicles.

In terms of the benefits that people living in poorer socioeconomic areas might accrue, that will be largely where autonomous vehicles may be deployed earlier—the freight and the public transport sector. Personally, I think that we will see that is where autonomous technology will merge earlier than passenger transport. We will have more PT running at a cheaper cost. We will also have an increase in, again, freight deliverables also running at a cheaper cost. Can we qualify what that benefit would be? I do not think so, but I think that that is where those benefits will be accrued in some of those areas that you are talking about.

Mrs MILLER: What is your view of a situation with 'spotification', where companies might want to put cars into certain areas? Can we make it mandatory for companies that want to put it in, say, rich areas like the inner city areas also provide the equivalent service in the poorer suburbs of Queensland?

Dr Michael: We are seeing an increasing prevalence of GoGet locations, for example, that are outside of what you refer to as the rich areas. It depends on the model. Undoubtedly, owning and operating a vehicle costs a significant amount of money regardless of what the purchase price is. The people in your electorate are paying the same amount to operate their vehicle. In some cases, someone with an EV or an electric vehicle is paying a lot more. The actual operation costs are largely socioeconomic neutral in terms of these organisations putting those services into a broader community. It is the purchase cost that is the significant disadvantage for people in those communities. Potentially, if we saw an increased uptake—and I will keep calling it 'spotification', but it is basically vehicle subscription or vehicle access or car share—yes, I think they would have the potential to deliver significant benefits in those communities and I do not think income would be a financial barrier to that.

Mr Kasparian: One of the elements to the questions that you asked was around affordability and so on. If we talk about automated vehicles, automated vehicles are typically not made in Australia and the affordability, frankly, is set by the price of the vehicles that come in. There are some things that governments and others could consider from a minimum standards requirement. There is a duel in the communications area where there are minimum standards provided in various cities. It could be determined, for example, for connected vehicles. It is possible to retrofit a vehicle with a box that allows vehicles to talk to infrastructure and vehicles to talk to vehicles, for example. They are able to connect. They are able to get certain benefits and a number of benefits, but they do not turn your car into an automated vehicle. It would be a question of the affordability of that.

Frankly, I think it would be the government that would take a view as to whether there was perhaps a minimum standard, given the benefit. It would be a cost benefit, but is it worth installing that \$1,000 box to operate in every vehicle to achieve the outcomes of a connected vehicle environment? I think that a few questions like that could be asked. I would stress, as others on this panel have said, that I suggest it will be many years before people are not driving their vehicles. I think there are a number of benefits that could still be affected, but they will cost money. I suspect it will come down to policy.

Mrs MILLER: It may be many years, but we never thought that we would have computers on our phones, either. I am suggesting to you as professionals that you go away, do your homework and work out how this technology is going to impact tens of thousands of people in areas like mine. Quite frankly, they are frightened. They are really frightened. I will not have people in my area—who because of their own circumstances will never be able to afford to buy cars like this—disadvantaged by this technology. For example, I think that you should put on your thinking caps and think about ensuring that those people who live in, as you call it, low socioeconomic areas—we describe ourselves as high community—do not miss out on access to this technology and that it be at a reasonable price.

Mr SORENSEN: One of you said something about user pays. Talking about this technology and electric cars, there is no fuel tax on electricity at this point in time. There is no tax coming in that way. User pays is a system in other countries where you hop on a freeway and you pay for how many kilometres you go. Do you see more of that happening in Queensland? To follow up on Jo's question, I have been following what is happening in France at the moment and the way that they have taxed

the poor in that country, which is why there is a rebellion going on over there. We have to be careful about how we are going to pay for all this technology, the roads we have to build and the technology that has to go into those roads. Who will pay?

Mr McDonald: I can start the ball rolling. You are absolutely right: the technology will have a big impact on the funding that will come to roads based on the current system that we have. You must not forget—and it is one of the findings that came out of the study that we ran around road-user charging—that people do not understand how they currently pay for roads. The fuel excise system is essentially a user-pays system at the moment. The downside is that it is just inherently unfair. As you pointed out, somebody living in Brisbane with an electric vehicle does not pay anything, but somebody living in some of the regional areas who has a fuel-inefficient vehicle is paying significantly more. There is a fundamental flaw there already. One of the things that that will impact is the sustainability of the entire transport network. The money has to come from somewhere, so we have to start thinking about alternative ways of doing that.

The road-user charging and how that gets implemented is ultimately the role for government at all three tiers to understand how that gets implemented. It has the opportunity to also measure or mitigate a number of other concerns around congestion, et cetera, if it is well applied. One of the things that talks to your point is fairness and equity. In the technology for how we apply road-user charging, that fairness and equity piece has to be addressed. One of the findings from our study was exactly that: people wanted to make sure that people in different areas of the country experienced the same quality of roads, the same quality of service and the same safety levels as those in the urban areas. There were concerns around privacy and various other things as well. All of those things need to be addressed in a coherent way.

One of the reasons for doing trials and talking to people is that it is not just gut feel and response that we get; it is real data. How you take people on the journey? How do they understand the changes? How do we share that with people to make sure that we can actually deliver these changes? Some form of change is going to be needed.

Dr Michael: I think when it comes to road-user charging, just to extend those points, we need to do something now. We have seen that the reduction in tax credits from fuel excise is the biggest reduction in tax revenue that we have seen over the past decade. Only 37 per cent of fuel excise funds our infrastructure. That is declining also. We would like to see some form of equitable system where a \$150,000 Tesla owner is paying for their fair share of the network, as is someone driving a \$5,000 vehicle. At the moment they do not.

As we see policy settings at a federal government level that will incentivise the uptake of EVs, it is critically important that we offset that reduction in fuel excise, which is effectively a reduction in infrastructure funding. In the past federal budget, Queensland got \$1.6 billion which was down \$400 million from the previous year. Levels are dropping. Therefore, it is important that we actually introduce a system now that ensures that electric vehicle owners are actually paying to access the network, which is offsetting the burden that less fuel-efficient vehicle operators are currently wearing. It would be very difficult to retrofit these policies.

Importantly though, there are a number of challenges, and again Queensland presents the majority of them, where we have some roads that have very low volumes on them and people are paying to access those roads under a road-user charging model. The challenge is around how we then fund that infrastructure, particularly for local roads which have a lot of challenges around collecting road related revenue, but they have to maintain the lion's share of the network. How do they actually get that proportion of road-user charging pool back to maintain their network? There is a lot of difficulty to work through. Irrespective of that, we need to look now to make sure that we are charging electric vehicle owners for their access of the network, and that we are returning a greater proportion of that excise or that charge to the transport network.

Mr Kasparian: I would suggest also that with the benefits that are going to be had from these technologies, people always look at the end state. I do not know the Queensland figures, I am sorry, but nationally we have some 37,000 people hospitalised a year and around 1,200 people killed. There are significant benefits that this technology promises that will create that, together with the efficiencies that get created on the road network. Of course, that will incur significant savings. It is always difficult to do that comparison, but they will be significant. Through savings, we will be able to make a difference in relation to infrastructure, as well. All the other comments I agree with and are valid, but on top of that we will also make savings from the benefits of this technology.

Mr BOYCE: Mr Kasparian, in many places in rural and regional Queensland there are little or no phone services, internet services and those sorts of things. How do you feel this will impact driverless car technology as far as communicating with each other, et cetera, is concerned? What might be the impacts of that?

Mr Kasparian: Certainly it is important that, in order to get the best benefit, the sorts of things that are taken for granted in an urban environment where you do have connectivity will increase the outcomes that you get. In a rural environment, it is important that the maximum benefits will come from connectivity.

Again, this goes back to decisions that government and others need to make about whether they are going to provide a minimum level of service for the benefits that are obtained. I cannot quantify the benefits. There are many studies that can tell you, certainly in urban suburbs and even somewhat rural type environments, the sorts of benefits that you get. Those minimum services are key and important to realising the benefits of this technology, as well as the decision to rollout infrastructure on the poles or on the intersections or wherever to also get the benefit from that. All of these are decisions that are typically infrastructure and primarily, I suspect, lay at the government's end, as well as at the private industry end. I suspect they will not roll it out because of the cost benefit from their perspectives.

CHAIR: As there are no further questions, I will close this hearing. No questions have been taken on notice. Once again, thank you all for your attendance. A transcript of these proceedings will be available on the committee's parliamentary web page in due course. I declare this hearing closed.

The committee adjourned at 10.32 am.