



Transport Academic Partnership

2018–2019 Annual Report

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Message from TAP Steering Group Chair



Julie Mitchell

Deputy Director General (Policy, Planning and Investment), Department of Transport and Main Roads

The Department of Transport and Main Roads (TMR) is proud to partner with the Motor Accident Insurance Commission, Griffith University, Queensland University of Technology and the University of Queensland through the *Transport Academic Partnership (TAP) 2015–2020 Agreement*.

As Deputy Director General of TMR's Policy, Planning and Investment Division, I am pleased to see this partnership facilitating strong relationships between TMR and the academic sector. Collaborative and innovative research and development is key to our role in developing strategies, policies and investment planning for an integrated, safe and efficient transport system for all Queenslanders.

The TAP Agreement touches on all the TMR values, especially by providing a direct opportunity for our people to put 'ideas into action' by challenging the norm, suggesting solutions, embracing new ideas and working across boundaries.

Thank you to our TAP university partners for another 12 months of hard work and dedication to collaboratively delivering better transport outcomes for the people of Queensland. I look forward to working with you to deliver more great outcomes in 2019–20.

Transport Academic Partnership Transport Chair messages



Griffith University

Associate Professor Matthew Burke, *Cities Research Institute*



These are exciting times for the team at Griffith as we deliver on our many TAP projects and deepen our engagement with officers across more of TMR. Our projects are large and small, involving key faculty and a growing set of honours and PhD students. Our large Australian Research Council (ARC) project on public transport funding continues on. And we have new innovative student projects starting, like our analysis of novel transport planning approaches such as 'tactical urbanism' and pop-up bike lanes. Thanks to those staff who provided the necessary datasets to enable us to analyse what is happening on the transport system.

We are especially grateful for how TMR is 'embedding' our PhD students within the department and framing real-world research topics with us. This includes Ben Kaufman's research on the Logan Demand Responsive Transit trial for Translink, and Yiping "Jackie" Yan's research on mode choice modelling to improve the Brisbane Strategic Transport Model. This innovation ensures the next generation of transport researchers are working directly on important Queensland transport projects and research agendas. It was one reason our team was ranked equal best in Australia for transport planning engagement with industry in a recent national evaluation.



Queensland University of Technology

Professor Alexander Paz,
Chair of Transport



It is an honour to be the incoming QUT Transport Chair. I have enjoyed interacting with people across the partnership organisations. I have already been involved in many interesting and diverse research projects including traffic operations and safety, active transport, and traveller behaviour.

The complexity of the TAP projects has brought together multidisciplinary groups of researchers to share expertise and skills across disciplines. We are currently delivering research and development outcomes to inform operational and planning decisions and improve the overall transport network performance in Queensland.

Through TAP, QUT has been able to attract other resources to deliver more transport outcomes for Queensland, including: an iMOVE Cooperative Research Centre (CRC) grant to study parking and congestion problems in Brisbane; and a role as research partner investigating logistics and supply chain distribution for the new Commonwealth funded Future Food Systems CRC.

QUT was recently ranked 41st in ShanghaiRanking's Global Ranking of Academic Subjects 2019 – Transportation Science and Technology. We will continue to leverage the opportunities provided by the TAP Agreement to deliver the highest possible outcomes for Queenslanders. We look forward to continuing to work with TAP partners and the broader community to expand our research activities and resulting impacts.



The University of Queensland

Professor Mark Hickman,
Chair of Transport Engineering



The University of Queensland is a proud participant in the TAP Program, under the collaborative framework with TMR staff and with QUT and Griffith University.

We believe our transport research and expertise at UQ can support better solutions and outcomes to the long-term challenges in Queensland.

This collaborative program has made it possible for researchers at UQ to make significant strides in understanding the safety of Queensland's existing road network; the dynamic patterns of movement among public transport passengers and road vehicles in South East Queensland; the needs and possible solutions for better mobility among older Queenslanders; and the challenges of a future world of connected and automated vehicles.

Through this research and other direct engagement with TMR, UQ seeks to enhance the practice of transport planning, engineering and management in Queensland and throughout Australia.

About us

The Transport Academic Partnership Agreement

The **Transport Academic Partnership** (TAP) Agreement is a partnership between the **Department of Transport and Main Roads** (TMR), the **Motor Accident Insurance Commission** (MAiC), **Griffith University** (GU), **Queensland University of Technology** (QUT) and **The University of Queensland** (UQ).

TAP facilitates outcomes-focussed, innovative research and development (R&D) activities that:

- address **future** transport challenges
- advance **strategic** transport capability
- improve **collaboration** and knowledge sharing.



Transport Academic Partnership objectives



Foster a collaborative partnership and strong alliance between government, industry and the academic sector



Fund and enable transport related research and development activities that deliver positive outcomes for the transport system and the Queensland community



Build transport research excellence and capability in Queensland



Our performance

The success of TAP is measured against 10 key performance indicators as outlined in Schedule 2 of the Agreement. The performance indicators are reported against by the university TAP Transport Chairs at the end of each financial year.

Objective 1

Build transport research excellence, innovation and capability in Queensland.	
Performance Indicator	2018–19 Performance
Academic staff at Griffith’s Urban Research Program, QUT’s Transport Research Group and UQ’s Centre for Transport Strategy.	Above satisfactory
Higher-degree research students (PhD, Masters by Research and Honours Research) undertaking transport related research at the universities and synopses of study areas.	Above satisfactory
University students, undertaking transport related research or studying transport related subjects, who have gained work experience, placement or internships within agencies or other organisations in the transport sector, if known.	Satisfactory*
Transport-related continuing professional development courses/programs offered to agencies by universities.	Needs improvement
Transport-related workshops, seminars and technology transfer activities delivered by Universities that are relevant to Agencies’ priorities.	Above satisfactory

Objective 2

Foster a collaborative partnership and strong alliance between government, industry and the academic sector.	
Performance Indicator	2018–19 Performance
Activities where Chairs/post-docs/associated staff have worked on joint collaborative R&D initiatives with government, industry and/or the academic sector, undertaking the Annual Work Program, including in-kind support.	Above satisfactory
Organisations involved in collaborations that value add to the partnership.	Satisfactory

Above satisfactory	≥10% improvement since 2017–18
Satisfactory	≥-5% - ≤10% improvement since 2017–18
Needs improvement	≤-5% improvement since 2017–18

Objective 3

Fund and enable transport related Research and Development activities that deliver positive outcomes for the transport system and the Queensland community.	
Performance Indicator	2018–19 Performance
Universities demonstrate that they have matched Program Funding provided by agencies through in-kind contributions and funds leveraging, including list of projects and associated funds receiving leveraged funding.	Above satisfactory
Transport-related outputs (such as research papers, advice, peer review,) delivered by the universities (and provided to agencies) on issues that: <ul style="list-style-type: none"> - have direct relevance to agency business needs and research priorities, and/or - have clear policy outcomes and/or - have practical application which can be implemented by agencies and/or - can demonstrate transport innovation (e.g. proof of concept projects). 	Above satisfactory
R&D activities delivered by the universities are completed within agreed timeframe and budget.	Satisfactory

* Assessment rating adjusted due to unavailability of reliable data.

TAP university partners ranked among top performers in the *Engagement and Impact Assessment 2018-19 National Report from the Australian Research Council*

The national report gives a detailed understanding of how Australia's universities and their researchers are collaborating with industry, government and the community, and how their research impacts are translated into economic, environmental, social and other benefits.

The universities were assessed by panels of researchers and research end-users who assessed:

- Research engagement activity based on engagement narrative, a small suite of quantitative indicators, and an indicator explanatory statement, and
- Research impact and institution's approach to impact based on qualitative impact studies that detailed the impact, the research associated with the impact, and the approach to impact.

TAP university partners; Queensland University of Technology, University of Queensland and Griffith University **ranked among the top ten** of the 40 participating universities.

For more information about the 2018–19 national report, refer to the ARC website: <https://www.arc.gov.au/engagement-and-impact-assessment>.



Image: (L-R) Associate Professor Matthew Burke, Professor Alexander Paz, Associate Professor Jonathan Bunker, Ms Michelle Connolly, Professor Mark Hickman



Developing warrants for implementing fully controlled right turns

Project lead: Emily Plath, Safer Roads Infrastructure, TMR

Partner: University of Queensland

Emily Plath, a Civil Engineering graduate from the University of Queensland, was exposed to road safety as a work experience student with TMR's Safer Roads team. Following this experience, Emily was recruited in 2018 to work on this project with Professor Mark Hickman. Her knowledge of road safety objectives and her networks within TMR made this partnership ideal.

Whilst studying full-time, Emily worked with the team part-time, allowing her to grow her experience in the road safety portfolio. She flourished in this role and developed specialist knowledge and technical skills, including the ability to display rigour in analysis of data and research, manage projects independently and communicate results to a professional industry standard.

The project was focussed on demonstrating the safety implications of providing filter right turns at intersections and investigating the factors that influence how appropriate the provision of a filter right turn may be. The results of this project will be used to provide Queensland based substantiation of the *Austrroads Guide to Traffic Management: Part 9* and to support TMR's Road Safety Policy.

Utilising the knowledge, skills and networks developed during her involvement with the TAP project, Emily has since secured a full-time position with TMR post-graduation.

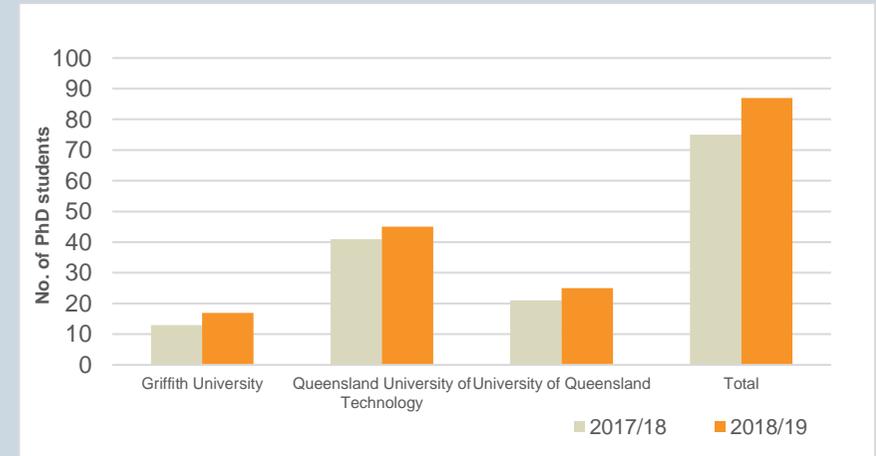
Objective 1: Build transport research excellence, innovation and capability in Queensland

The performance measures for this objective are intended to quantitatively capture the number of transport-related academic staff and students and development opportunities created and/or delivered by the University Partners. A major objective of the Agreement is to ensure that major Queensland universities maintain relevance and continued progress within the transport research and development field.

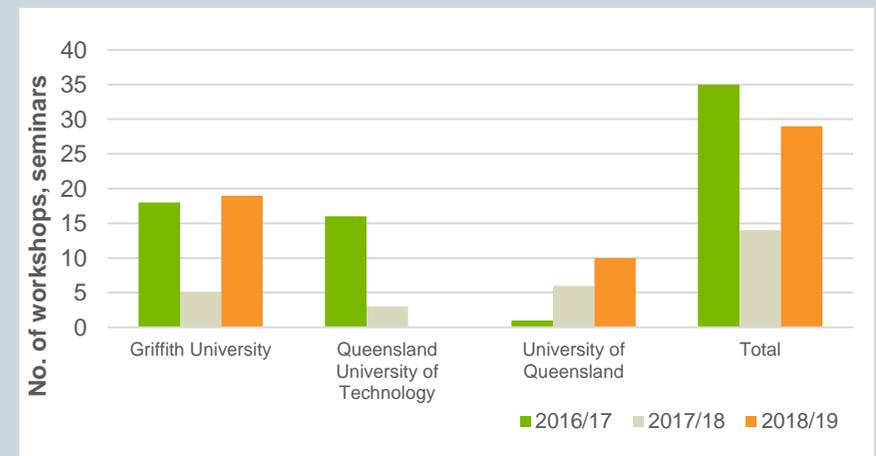
Progress in 2018–19

- Measuring the number of academic staff working in each university partner's transport areas helps demonstrate how the TAP Agreement fosters transport research capability in the academic sector. From 2017–18 to 2018–19 the number of employed transport-related staff at the universities grew by almost 12 per cent, which is a 14.35 per cent growth from the first year of the TAP Agreement.
- The number of higher-degree students undertaking transport-related research gives a good indication of the influence of the TAP Agreement on transport research innovation. This indicator has shown good growth across the years of the TAP Agreement with a 16 per cent increase in numbers since 2017–18, following a 13.64 per cent growth from 2016–17 to 2017–18.
- Key performance indicator 3 is unfortunately not measurable in practice due to an inability to accurately capture the data. University partners cannot capture the number of students undertaking work experience, placements or internships with the transport sector due to privacy restrictions. TMR also does not consistently capture this data across the department so cannot provide an accurate number.
- The number of transport-related professional development courses or programs offered to agencies by the university partners has continued to decline since the commencement of the TAP Agreement, with a 75 per cent decline from 2017–18 to 2018–19. Observational evidence suggests this is due to lack of communicated demand from TMR, as well as resource restrictions within universities.
- Transport-related workshops and seminars delivered by university partners contribute to building transport research excellence and capability in the transport sector. Activities of this nature in 2018–19 rose significantly after a sharp decline in 2017–18. The gap in activities delivered by QUT is due to the transition of the Transport Chair. Continued efforts by the university partners and TMR to encourage and facilitate knowledge sharing opportunities will see this measure continue to improve over the life the TAP Agreement.

Performance Indicator 2 demonstrates a 16 per cent increase in the number of higher-degree students undertaking transport-related research.



Performance Indicator 5 demonstrates the decline in the number of workshops and seminars from 2016–17 to 2017–18 and the recovery from 2017–18 to 2018–19.



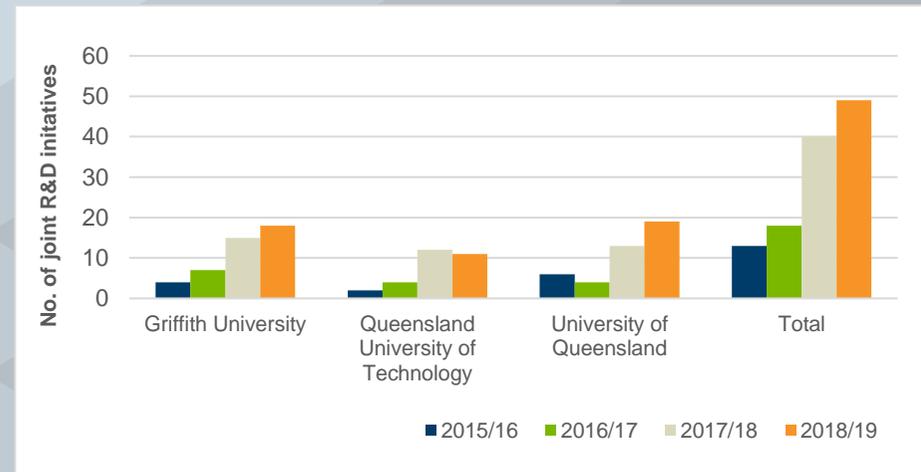
Objective 2: Foster a collaborative partnership and strong alliance between government, industry and the academic sector

The performance measures for this objective are intended to demonstrate the influence of the Agreement on improved collaboration between allied agencies and organisations. TAP is structured as a partnership rather than a funding agreement to create a collaborative environment, which encourages open communication and strong relationships between partners.

Progress in 2018–19

- The number of collaborative research and development activities being undertaken by university partners has consistently increased since the commencement of the TAP Agreement, with a total of 49 activities undertaken in 2018–19. This is an increase of 22.5 per cent since 2017–18 and more than double the number of activities undertaken in the first year of the partnership.
- Collaborative activities include delivery of the TAP annual work program, in-kind support on transport-related research projects, and membership on transport-related boards and committees.
- University partners reported collaborating with 50 organisations on transport-related research in 2018–19. This is a shift of 8.7 per cent from 2017–18 and again more than double the number reported in the first year of the partnership.
- Collaborating organisations include; local governments, state government agencies, cooperative research centres, other Australian and international universities, industry, advocacy groups and advisory bodies.

Performance Indicator 6 demonstrates the consistent increase in the number of research and development activities (including work program and in-kind support) since the start of the TAP Agreement.



Spotlight: Providing Age-Friendly Transport Services for Queenslanders

Partner: University of Queensland

University of Queensland post-doctoral research fellow Kelly Bertolaccini and Professor Mark Hickman are undertaking a research project to gather information on the travel behaviours and preferences of older adults and learn their preferred means of researching and navigating transport services. The project will gather data on a demographic which is currently underrepresented in available transport behaviour datasets.

An online survey of more than 600 people aged between 65–75, was undertaken between November 2018 and January 2019. The survey was distributed by TMR, the Department of Communities, Disability Services and Seniors (DCDSS), the Council of Aging (COTA) and several regional councils. The initial findings suggest that when older people stop driving and/or rely on public transport, significantly fewer social trips are made. It also found that non-drivers were significantly less likely to own a smartphone. The next phase of the project is conducting focus groups across the state to gain a better understanding of challenges faced in rural and regional areas.

The data and findings from this project will help TMR and other organisations plan and design transport that is more inclusive, providing better options to an aging population in a largely car-reliant environment.

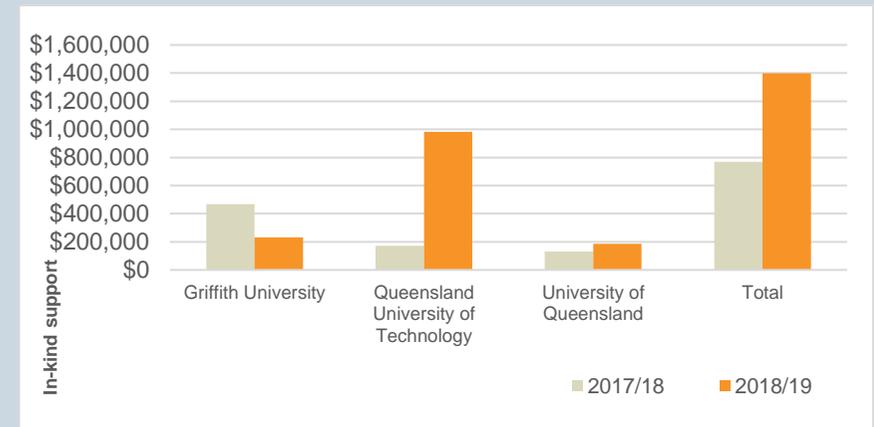
Objective 3: Fund and enable transport related research and development activities that deliver positive outcomes for the transport system and the Queensland community

The performance measures for this objective are intended to demonstrate the value of the research and development activities delivered through the Agreement, including capacity of universities to leverage other funding sources and the number of outputs delivered.

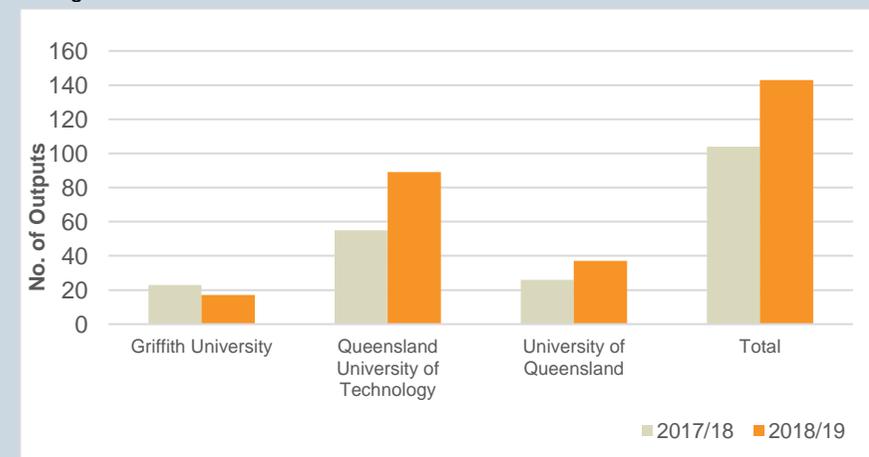
Progress in 2018–19

- TAP university partners collectively contributed \$1,398,809 worth of in-kind contributions and leveraged funding to the delivery of the TAP Agreement objectives. This exceeds the annual allocation of funding paid to the partners under the Agreement for 2018–19 (total of \$616,391 ex. GST). The expenditure is an 81.73 per cent increase since 2017–18.
- Transport-related outputs from the university partners in 2018–19 increased by 37.5 per cent from 2017–18. Outputs included a total of 143 research reports, journal articles, conference papers, and journal peer reviews.
- A total of three TAP annual work program projects were completed in 2018–19, with a further ten being carried over onto the 2019–20 work program. Of the ten carry-over projects, half were expected to continue, and half have experienced some delays or unforeseen issues.
- Key performance indicator 10 is difficult to quantitatively assess accurately due to the complex nature of research and development project delivery. However, based on a combined completion and carry-over rate of more than 70 per cent and qualitative performance across the year, the performance has been deemed satisfactory, albeit slightly under the 2017–18 performance.
- Three projects from the 2018–19 annual work program were discontinued. Two projects were not started due to lack of interest and demand from the relevant TMR business area, and the other was dependant on winning a funding grant bid which was unfortunately not successful.

Performance Indicator 8 demonstrates an 81.73 per cent increase in matched funding through in-kind contributions and leveraged funds since 2017–18.



Performance Indicator 9 demonstrates a 37.5 per cent increase in the number of transport related outputs produced through the TAP Agreement since 2017–18.



Pedestrian Level of Service Metrics

Project lead: Cycling and Walking Team, Policy, Planning and Investment Division, TMR

Partner: Griffith University

The purpose of this project was to determine and prioritise the most important factors for consideration when assessing the quality of pedestrian facilities to develop a Pedestrian Level-Of-Service (PLOS) methodology. The project combined a quantitative literature review of past models with a Delphi study of experts, intercept surveys of pedestrians and data analysis to form a proposed PLOS model.

The project found that factors affecting PLOS can generally be classified into five categories; safety, attractiveness, cohesiveness, comfort, and directness. Factors were also weighted depending on their level of importance to pedestrians and influence on footpath use. The PLOS model calculates a final score based on the total of the individual grades of the 33 weighted factors.

The project is a great example of research collaboration, with the initial research by Professor Matthew Burke undertaken with support from the Australian Research Council (ARC) – Discovery Future Fellowship (FT 120100976), and Ph.D student, Nowar Raad's research supported by the Higher Committee for Education Development in Iraq (HCED) (D-12-1352). Members of the Pedestrian and Bicycle Transport Institute of Australia (PedBikeTrans) were also involved during the Delphi process.

What Are the Most Important Factors for Pedestrian Level-of-Service Estimation? A Systematic Review of the Literature by Nowar Raad and Matthew Burke was published in the Journal of the Transportation Research Board in 2018.



Developing a practitioner's toolkit for simulation the current complexity of arterial traffic signal control application

Project lead: Network Optimisation Team, Infrastructure Management and Delivery Division, TMR

Partner: University of Queensland

The aim of this research project was to address the arterial network optimization issues under various existing and emerging practical signal control operational complexities, including; phase transition, vehicle priority, preemption, hold the red, heavy vehicle operations, pedestrian protection and emerging connected vehicles.

The project first involved a desktop review of various policy constraints and related factors through case studies on real intersections with complex control strategies, using STREAMS data. Emergency Vehicle Preemption (EVP) emerged as the most complex, so the scope was focussed onto this operational complexity, and later expanded to include Hold the Red.

Using reverse engineering, the implemented EVP in STREAMS was understood and the EVP framework empirically verified. The knowledge generated by the project will be utilised to develop high level Aimsun API framework and identification of API functions, which provides a basis for future development of the toolkit in Aimsun.

A better understanding of the increased complexities of signal operations helps TMR to improve network safety and efficiency, and better prepares TMR for deployment of emerging technologies through evolutionary enhancement of the current system. The project has established a foundation for research on an integrated traffic control on both motorways and arterials in agile manner.

2018–19 Work Program

University Partners work with TMR business areas to undertake and deliver an annual Work Program of research and development projects.

In 2018–19, seventeen projects were undertaken by the TAP university partners, three have been completed, three discontinued and ten are ongoing to be completed as part of the 2019–20 Work Program.

TAP work program projects can include:

- projects that meet agencies' strategic priorities
- trial projects such as proof of concept or pilot projects
- joint projects with other universities; and/or industry partners and other ad-hoc/emerging issues
- Australian Research Council linkage proposals and other leveraged funding opportunities.

The Work Program can also include in-kind and knowledge transfer activities, capability building, training, professional development and work experience opportunities.

Table 1 outlines the 2018–19 projects, defining their scope, alignment to TMR strategic priorities and status at the end of the period.



Table 1: Transport Academic Partnership 2018–19 Work Program, including status at 30 June 2019.

Project	TMR Strategic Priority					Scope	Expected outcomes	Status at end of 2018–19	Partners
	Customer focus	Liveable Regions & active cities	Innovation	Investing in the future	Building prosperity				
<p>*Funding on the line*: public transport financing and property value uplift <i>Australian Research Council – Linkage Project</i> Estimate project value: \$1m</p>				X		<ul style="list-style-type: none"> • Modelling the timing and spatial patterns of property value uplift from recent investments in rail, busways and ferries to develop a potentially feasible scheme for implementation. 	<ul style="list-style-type: none"> • Development of a property value scheme to provide alternative funding for public transport investment. • Provides detail on the timing and spatial patterns of property value uplift from recent investment in rail, bus and ferry infrastructure. 	Ongoing – expected completion June 2020 Output: Land value uplift studies. Outcomes: Land value uplift studies are all complete, with the final willingness-to-pay survey being piloted for field roll-out in Aug–Sep 2019. Project on track for completion in June 2020.	University: Griffith TMR, Policy, Planning and Investment Division, Transport Policy Branch
<p>Pilot course in traffic operations / incident management</p>		X	X			<ul style="list-style-type: none"> • Develop and run a pilot professional development course for TMR staff in traffic operations/ incident management. 	<ul style="list-style-type: none"> • Improved management of traffic operations and incident management. • Potential to become a part of Post Graduate Certificate. 	Discontinued Output: Nil Outcomes: This project was discontinued in Jan 2019, when it was officially confirmed that the project had not commenced and that it was no longer required as existing courses already exist and any remaining tasks are considered business-as-usual for the business area.	University: UQ TMR, Infrastructure Management Division, Engineering & Technology Branch
<p>Tactical Urbanism and Cycling Estimate project value: \$15,000</p>		X	X	X		<ul style="list-style-type: none"> • Research how agencies might use the tactical urbanism approach to trial, test and win support for changes to built environments which encourage cycling. • Appraisal of the City of Gold Coast's Tactical Urbanism program. 	<ul style="list-style-type: none"> • Develop an industry friendly report, and a publication in either a peer-reviewed conference or journal on how tactical urbanism can be used to encourage cycling. • Possibly present research through seminars and workshops. 	Ongoing – expected completion December 2019 Output: Honours student undertaking student placement with TMR to deliver project. Outcomes: This project has experienced significant delays due to resourcing issues, a new Honours student has now been nominated and work is underway, with completion expected in December 2019.	University: Griffith TMR, Policy, Planning and Investment Division, Transport Strategy and Planning Branch
<p>Pedestrian Level of Service Metrics Estimate project value: \$170,000</p>	X	X				<ul style="list-style-type: none"> • Research and develop a Pedestrian Level of Service (PLOS) audit tool. • Develop recommended improvements to Austroads guidance for PLOS calculations. 	<ul style="list-style-type: none"> • PLOS audit tool. • Develop an industry friendly report, and a publication in either a peer-reviewed conference or journals. 	Ongoing – expected completion August 2019 Output: Nil Outcomes: This project has some experienced some delays but is almost complete. Final tested PLOS tool and full thesis from PhD student expected in August 2019.	University: Griffith TMR, Policy, Planning and Investment Division, Transport Strategy and Planning Branch

Project	TMR Strategic Priority					Scope	Expected outcomes	Status at end of 2018–19	Partners
	Customer focus	Liveable Regions & active cities	Innovation	Investing in the future	Building prosperity				
<p>*Age friendly mobility services Estimate project value: \$150,000</p>	X	X	X			<ul style="list-style-type: none"> Gather data on the travel behaviours and preferences of older adults. Identify priority projects that can effectively improve older adult access to transport services. 	<ul style="list-style-type: none"> Contribute to a data gap regarding the travel behaviours and related technological preferences of older adults in Queensland. Influence transport planning, policy and decision making in Queensland, improving the lives of aging Queenslanders. 	<p>Ongoing – expected completion August 2019</p> <p>Output: Online survey – initial findings report</p> <p>Outcomes: The initial online survey was completed by more than 600 Queenslanders over the age of 65. The initial findings have been drafted in a report and have helped form a series of focus groups across Queensland which are currently underway. The focus groups are expected to be complete, with findings summarised in a final report by the end of August 2019.</p>	<p>University: UQ</p> <p>TMR, TransLink Division</p>
<p>Development of Motorcycle Safety Review Methodology Estimate project value: \$205,674</p>	X	X	X			<ul style="list-style-type: none"> This project will develop a guide detailing the motorcycle specific safety review methodology, risk assessment method including BCR estimation, instrumented motorcycle data analysis and reporting of motorcycle risk. 	<ul style="list-style-type: none"> TMR will use these safety reviews to better identify risks to motorcycles. It is expected that findings of Motorcycle Safety Reviews using the instrumented motorcycle would help to identify and treat high risks motorcycle locations across the state. 	<p>Ongoing – expected completion July 2019</p> <p>Output: Two new safety assessment methods developed.</p> <p>Outcomes: Draft final report received, expected to be finalised by end July 2019. Two new important safety assessments methods have been developed: (1) motorcycle specific road safety audit methodology, and (2) a motorcycle specific risk assessment model within QRAM framework for risk rating of roads for motorcycle crash risk.</p>	<p>University: QUT</p> <p>TMR, Infrastructure Management and Delivery Division, Engineering and Technology Branch</p>
<p>Alternative model forms and structures for a SEQ Travel Demand Model Estimate project value: \$190,000</p>			X	X		<ul style="list-style-type: none"> The intention of this research is to identify a more robust methodology, other than the current state of replicating the same form of the smaller strategic models for the whole SEQ using larger transport model zones. The process should be sensitive enough to forecast changes in trip distribution and mode choice between the sub-regions of SEQ due to changes in demography, and changes in the transport system. 	<ul style="list-style-type: none"> The results of this study will be used to scope the effort required and the benefits that could be achieved by adopting a new model form, compared to using a SEQ-wide version of the BNE model. The outcomes will be disseminated through a final project report and presentation to relevant TMR staff. 	<p>Ongoing – expected completion June 2021</p> <p>Output: PhD student placement in TMR.</p> <p>Outcomes: This project is now focussed on the issues of market segmentation for mode choice modelling in the Brisbane and SEQ travel demand models. Griffith PhD student has been placed with the Transport Analysis Unit in TMR to deliver the project. An initial paper on difference in public and private school travel behaviour has been accepted in the ATRF conference. Modelling approaches and methods have been identified, project on track for completion in 2021.</p>	<p>University: Griffith</p> <p>TMR, Policy, Planning and Investment Division, Transport Strategy and Planning Branch</p>
<p>Identify potential applications of blockchain technology in the Queensland Government's provision of transport and mobility services Estimate project value: Costs not yet available</p>	X		X	X		<ul style="list-style-type: none"> The intent of this project is to expand TMR's awareness of potential applications of blockchain technology as they apply in the transport sector for market/industry use, or as potential options for TMR's future provision of services. Including recognising how the market may block chain in transport and how this will impact TMR's governance role (e.g. regulatory oversight or reform may be needed). 	<ul style="list-style-type: none"> Literature reviews to be undertaken on three specific topics: <ul style="list-style-type: none"> - digital identification (licensing) - visibility of chain of responsibility for hazardous and dangerous materials - tracking vehicle, trailer and caravan ownership & registration. Recommendations on other research, projects or actions that should/could be undertaken by TMR will be based on review findings. 	<p>Ongoing – expected completion June 2020</p> <p>Output: Three specific topics identified, and projects scoped.</p> <p>Outcomes: A TMR-wide workshop was held to facilitate discussion around various business areas interest and work in blockchain technologies. The workshop helped Transport Policy Branch identify the three major themes. Each university partner agreed to undertake one topic and work on the literature review and recommendations report. Commenced in May–June 2019.</p>	<p>University: Griffith, QUT, UQ</p> <p>TMR, Policy, Planning and Investment Division, Transport Policy Branch</p>
<p>Behavioural drivers of sharing economy</p>	X	X	X			<ul style="list-style-type: none"> This project will examine the rise of the sharing economy and the factors that underpin choices to participate in the sharing economy. The project will identify success factors and red flags, as well as what measures could be put in place to encourage people to participate in ride share schemes. 	<ul style="list-style-type: none"> The results will be used to inform policy and regulatory decisions to support trip sharing. Possible publication of research paper. 	<p>Discontinued</p> <p>Output: Nil</p> <p>Outcomes: Griffith & UQ planned to undertake this project collaboratively. Unfortunately, Griffith was not successful in winning a bid which would have funded the delivery of the project. No work has been undertaken.</p>	<p>University: Griffith & UQ</p> <p>TMR, Policy, Planning and Investment Division, Transport Policy Branch</p>

Project	TMR Strategic Priority					Scope	Expected outcomes	Status at end of 2018–19	Partners
	Customer focus	Liveable Regions & active cities	Innovation	Investing in the future	Building prosperity				
Developing Warrants for Implementing Fully Controlled Right Turns Estimate project value: \$20,000		X				<ul style="list-style-type: none"> The purpose of the project is to develop a set of warrants for implementing fully controlled right turns at intersections in order to provide definite design and operational guidance for practitioners when they need to consider converting 'filter' right turn scheme into fully controlled right turns. 	<ul style="list-style-type: none"> The research findings will be implemented into a Technical Note that will include guidance on the warrant analysis at right turn movements. 	Complete Output: Safety Advice Document – supplementary document to the TMR Road Safety Policy. Outcomes: This project was slightly rescoped to align with the Austroads update to the Austroads Guide to Traffic Management Part 9: Traffic Operations. The project output was revised from a technical note to a safety advice document, to be used as an appendix or supplementary document to the new TMR Road Safety Policy.	University: UQ TMR, Infrastructure Management and Delivery Division, Engineering and Technology Branch
Developing a practitioner's toolkit for simulating the current complexity of arterial traffic signal control application Estimate project value: \$50,000		X	X	X		<ul style="list-style-type: none"> Review the current state-of-the art and practices of various policies and relevant strategies for signal control. The knowledge gained from the review is utilised to propose a high-level framework needed for the development of the microsimulation toolkit. 	<ul style="list-style-type: none"> Structured documentation of the relevant policies and practical complexities in arterial signal control. A high-level framework to the development of a micro simulation toolkit that can evaluate the current state of the practice in various signal control policies and their sensitivity to control parameters. 	Complete Output: A paper summarising the research is being prepared in-house by the TMR Business Area. A follow-on project to develop the APIs in Aimsun is being considered. Outcomes: The research performed empirical analysis and visualization of signal operations under Emergency Vehicle Preemption and Hold the Red Events. The knowledge generated supports network optimization and better control of arterials and the case studies performed are base case for the development of the simulation toolkit.	University: QUT TMR, Infrastructure Management and Delivery Division, Program Delivery and Operations Branch
Demand Responsive Transport trial evaluation Estimate project value: \$140,000	X	X	X			<ul style="list-style-type: none"> This evaluation project will help TMR understand the extent to which the Demand Responsive Transport (DRT) Trial, undertaken by TMR in Logan in 2018, achieved increased social inclusion and improved connectivity and accessibility. 	<ul style="list-style-type: none"> The evaluation results will be made publicly available through a published research paper. The paper will detail the review findings and highlight opportunities for future roll-out of micro-transit services in Queensland. 	Ongoing – expected completion July 2021 Output: Initial review finds presented to the Transportation Research Board International Conference in April 2019. Outcomes: Preliminary analysis of the Logan DRT travel patterns is complete. A survey conducted with TMR in early 2019 is being analysed and a systematic review paper is under development. Initial findings have been presented at key transport conferences nationally and internationally. Project tracking ahead of schedule with completion expected by July 2021.	University: Griffith TMR, TransLink Division
Queensland Electric Bike Owner Survey (Sourcing Strategy components) Estimate project value: \$75,820	X	X		X		<ul style="list-style-type: none"> The purpose of this project is to understand who, how, when, here and why people ride electric bikes. The project will also look at the potential for ebikes in Queensland and what could encourage more use. 	<ul style="list-style-type: none"> Peer reviewed report and publications will disseminate the findings of the research. 	Ongoing – expected completion July 2019 Output: e-bike charging report, e-bike owner survey Outcomes: This project is underway, with completion expected in December 2019. The e-bike owner survey closes mid-July 2019, with a presentation of preliminary findings expected late July 2019.	University: QUT TMR, Policy, Planning and Investment Division, Transport Strategy and Planning Branch
A framework for incorporating Bluetooth trajectory information in OD optimization Estimate project value: \$62,246			X	X		<ul style="list-style-type: none"> The project aims to take a novel approach that bypasses overdependence on one set of observations and allows for the calculation of a most likely matrix given a range of inputs and their associated uncertainty/estimated variability. The proposed study area is Brisbane network at SA4 level. 	<ul style="list-style-type: none"> The research will develop and test a new methodology for estimation of OD matrix. The accurate estimation of OD matrix supports the critical requirement for informed transport infrastructure investment. The current research will consider case study on the Brisbane network. The outcomes will be disseminated through presentation within TMR. 	Complete Output: Framework for incorporating additional information from Bluetooth trajectory data for estimation of Origin to Destination (OD) trip matrices. Outcomes: The proposed approach was tested in a controlled environment developed using Aimsun. The developed methodology was implemented using Python and provided to TMR along with demo examples. The tool will enhance TMR's OD estimation processes.	University: QUT TMR, Policy, Planning and Investment Division, Transport Strategy and Planning Branch

Project	TMR Strategic Priority					Scope	Expected outcomes	Status at end of 2018–19	Partners
	Customer focus	Liveable Regions & active cities	Innovation	Investing in the future	Building prosperity				
Improved connectivity and customer experience using a data centric approach	X	X				<ul style="list-style-type: none"> The objective of the project is to increase the comfort and overall satisfaction of TransLink customers at bus stops. The project will seek low-cost, scalable solutions that requires no, or limited, integration with existing equipment on busses and bus stops. 	<ul style="list-style-type: none"> This project will provide a proof of concept installation of the proposed bus stop enhancements along 2 bus routes (determined by TransLink) to test for functionality, scalability and customer acceptance. The solutions for access, localisation, and bus hailing will be independent and not interfere with TransLink's operation. 	Discontinued Output: Nil Outcomes: This project was initiated by QUT, to work with TransLink Division. After much consultation, TransLink confirmed in February 2019 that they did not wish to proceed with the project.	University: QUT TMR, TransLink Division
*Understanding the barriers and prospects for cycle-tourism in Queensland with novel methods <i>Griffith University International Postgraduate Research Scholarship</i> Estimate project value: \$200,000		X			X	<ul style="list-style-type: none"> The broad aims of this study are to help identify current barriers to cycle tourism. Utilising existing secondary sources (tourist surveys, travel surveys, GIS datasets) and complimenting with primary data collection (surveys, field studies), this PhD proposal will undertake several research activities. 	<ul style="list-style-type: none"> Outcomes will include a literature review, jurisdictional comparison research, surveys and modelling works. Published papers and reports. 	On hold Output: Nil Outcomes: This project is on hold due to significant scope downscaling. Griffith has secured a replacement PhD student who will be delivering some of the 2019–20 work program projects, with an expectation that a series of additional work will be leveraged beyond that.	University: Griffith TMR, Policy, Planning and Investment Division, Transport Strategy and Planning Branch
*The road to compliance: Integrating three theories <i>Australian Research Council – Discovery Early Career Researcher Award</i> Estimate project value: \$465,996	X	X	X	X		<ul style="list-style-type: none"> This project aims to reduce young driver deaths and injuries by developing an integrated theory of road policing using the elements of deterrence, procedural justice and third-party policing approaches. The project expects to generate new knowledge in road policing which represents a resource intensive area of policing activity. 	<ul style="list-style-type: none"> The expected outcome of this project is an integrated theory of road policing that can better inform interventions for young driver compliance. This should provide significant benefits including a reduction in the cost of crashes involving young drivers, which cost nearly \$5.5 billion from 2006-2015. 	Ongoing – expected completion 2020 Output: an integrated theory of road policing that can better inform interventions for young driver compliance. Outcomes: PhD student recruited and established; a first online survey of 800 Queensland and Victorian drivers is completed; a second survey of around 240 respondents underway; first paper from Study 1 submitted for publication.	University: Griffith TMR, Policy, Planning and Investment Division, Transport Strategy and Planning Branch

***Leveraged project:** a project initiated and led by a TAP University Partner which will benefit TMR but is not reliant on direct management or input from a TMR business area. No TAP funds are directly contributed towards these projects.

NOTE: Project values are estimate only, based on estimate cost of time and resources from the lead university partner.

TAP Sourcing Strategy

The TAP Sourcing Strategy was developed to provide a simplified and streamlined procurement process for R&D projects that align with the objectives of the TAP Agreement but are not able prioritised as part of the annual work program.

To be considered eligible projects must meet one or more of the following criteria:

- Research and/ or experimental development must be a key component of the project
- Build on previous research undertaken by the university
- Has the potential to lead to future research projects
- Investigate solution to known research gaps for the department
- Outputs benefit the department and the university (shared/ mutual interest).

In 2018-19, six projects were procured through the strategy, at a total value of more than \$725,000 (ex. GST).

Table 2: TAP Sourcing Strategy projects undertaken in 2018–19

Project	Project cost	Partners	Status at end of 2018–19
Traffic Management and Driver Behaviour Research Project (Truck Mounted Attenuators TMA)	\$63,170	University: Queensland University of Technology TMR Business Area: RoadTek	Complete A final report was delivered in November 2018 and has been shared with stakeholders. The project has informed the deployment of advance warning vehicles and reaffirmed the impact of police presence at roadworks.
Innovative Bicycle Infrastructure Funding Models	\$78,350	University: Griffith University TMR Business Area: Cycling and Walking, Transport Strategy and Planning Branch	Complete A final report detailing current funding streams and their constraints and issues was delivered in March 2019. The project included; a literature review, database of options, workshops with key government and non-government stakeholders.
Video Analytics Trial	\$359,250	University: University of Queensland TMR Business Area: Safer Roads Infrastructure, Land Transport Safety Branch	On track – expected completion June 2020 Four sites have been identified for the deployment, work with the video collection contractor regarding camera placement is ongoing. Learnings are being collected throughout the project, delivery date may be delayed.

Project	Project cost	Partners	Status at end of 2018–19
Hydrodynamics and Hydraulic Design of Standard Culverts, to Assist Upstream Fish Passage at Less-Than-Design Flows	\$153,000	University: University of Queensland TMR Business Area: Engineering and Technology Branch	On track – expected completion late 2019 Advanced computational fluid dynamic (CFD) modelling and flume testing of various baffle and no baffle options is complete. Field trials of various baffle options are being planned. Once trials are complete, a final report and design guideline will be developed.
Traveller Information - literature review	\$40,000	University: Queensland University of Technology TMR Business Area: Engineering and Technology Branch	Complete A literature review on ‘Understanding the effectiveness of Traveller Information’ was completed in June 2019. The literature review provides a snapshot of the current Advanced Traveller Information Systems status in key areas including existing analyses, evaluation methodologies, traveller behaviour, emerging technologies, and research needs.
Longitudinal line marking interactions with members of the public	\$33,066	University: Queensland University of Technology TMR Business Area: Traffic Management Improvement, RoadTek Branch	On track – expected completion August 2019 This project is almost complete, with the delivery presentation and Q&A session planned for July 2019. The project aimed to provide review and analysis of national and international processes for managing interactions between slow-moving convoys (e.g. line-marking activities) and public motorists.

Traffic Management and Driver Behaviour Research Project (Truck Mounted Attenuators)

Project lead: RoadTek, TMR

Partner: Centre for Accident Research & Road Safety – Queensland (CARRS-Q), QUT

Understanding road user interactions with worksites and other vehicles is essential to ensure the safety of workers and road users alike. The Centre for Accident Research and Road Safety – Queensland (CARRS-Q) was engaged to examine driver behaviour in relation to truck-mounted attenuators (TMA) and associated traffic management measures used at roadwork sites.

A literature review, onsite observations, data analysis and interviews with TMR operators were performed to inform the conclusions shared in a final report prepared for TMR. The overall results lead to a tentative conclusion that visible police presence in the buffer area has a positive effect on driver behaviour, while use of a third Tail Vehicle in the advance warning area did not produce any noticeable safety benefit. Further study with a greater number of observations, and examination by vehicle type would be beneficial to produce more robust findings.

“The **Motor Accident Insurance Commission (MAIC)** is proud to collaborate with TMR and the TAP university partners, particularly QUT’s CARRS-Q, to support research and development in the road safety space. Through making our roads safer for everyone, this will result in a **reduction in road crashes** and subsequent injuries resulting in claims to the Queensland CTP scheme.” – Matthew Waugh, Principal Research Officer, MAIC

Conclusion

The overall performance of the TAP partners to deliver the objectives of the TAP Agreement over the 2018–19 financial year was satisfactory, with nine of the 10 performance indicators achieving a satisfactory or above satisfactory rating.

Performance highlights include:

- 12 per cent growth in the number of academic staff employed in transport-related roles at the universities
- increased numbers of knowledge sharing opportunities provided by university partners, recovering from a sharp decline in 2017–18
- continued growth in the number of transport-related outputs such as journal articles and published papers.

Performance against one indicator was identified as needing improvement, including:

- the number of transport-related professional development courses and/or programs offered to agencies by university partners.

Recommendations

The following actions will be undertaken to improve the performance results in 2019–20.

1. Improve communication opportunities between university partners and TMR business areas.
2. Facilitate the development of a knowledge sharing calendar, which partners can easily share details of upcoming seminars, workshops and other training opportunities.

TAP Final Program Review

As the *Transport Academic Partnership 2015–2020 Agreement* nears completion, work has begun on the TAP Final Program Review.

The scope of the Final Program Review includes:

- Review of performance over the term of the Agreement
- Collection and analysis of stakeholder feedback on the Agreement
- Examine strengths and opportunities of the Agreement, including governance, reporting requirements and benefits realisation
- Examination of the strategic alignment of the Agreement to TMR and whole-of-government priorities
- Identification of opportunities for the next 2020–25 Agreement.

The review, which is a required reporting task under Schedule 3 of the current TAP Agreement, will examine the outcomes, achievements and benefits that have been delivered through the Agreement.

Stakeholder consultation and anecdotal evidence will also be captured to examine actual and perceived understanding of the Agreement's direct and indirect benefits.

It is expected that the Final Program Review will be completed late 2019, to allow time to establish a new Agreement to commence in July 2020.

Key milestones



