



# Transport Academic Partnership

Annual Report 2022–2023



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# A message from the Transport Academic Partnership (TAP) Steering Group Chair

Healthy partnerships between academia, industry, and government, provide substantive benefits for the community. In light of this, attention is being given to developing cutting-edge research and development programs in collaboration with our partners for those most likely to use or benefit from the outcomes. In order to sustain these relationships, we need to stay responsive, focused and inclusive.

Through the Transport Academic Partnership (TAP) Agreement 2020–2025 (the Agreement), the Department of Transport and Main Roads (TMR), has continued to support the work of our TAP University Partners and their researchers to deliver transport-related research outcomes. This research also helps TMR inform transport policy, contribute to the public discourse, and build on our agency's capacity to deliver a safe and accessible transport network.

The TAP University Partners provide world class education programs in a broad range of disciplines which directly align with TMR's core business. This will continue to ensure our agency is well placed to meet future emerging transport challenges.

Throughout 2022–2023, the TAP University Partners have worked hard to meet the objectives of the Agreement, and this Annual Report (Report) documents these achievements.

The Report outlines how the objectives of the Agreement are being met by the University Partners and how they have progressed on meeting their key performance indicators (KPI). The report and the case studies also highlight how these activities align with TMR's vision of creating a single integrated network accessible to everyone.



**Andrew Mahon**

Deputy Director-General

Policy, Planning and Investment Division

Department of Transport and Main Roads

# Messages from the TAP Partners

## Motor Accident Insurance Commission (MAIC)

MAIC remains proud of our continued involvement in the TAP Program and the value derived from the work of our academic partners based at the major Queensland universities and the opportunity for continued collaboration with TMR.

MAIC's involvement in TAP brings a road safety lens to this collaboration. It is pleasing to see projects that are either underway or planned into the future focused on senior roads users, motorcyclists and how the use of autonomous technologies can be introduced in the most effective way possible.

I also note that the University Partners have commenced research around transport planning in relation to major events occurring in South East Queensland over the next decade.

So again, thank you to our TAP University Partners and TMR for another effective year focused on delivering better transport outcomes for the people of Queensland. Through your endeavours you also deliver associated benefits to MAIC and the Queensland Compulsory Third Party scheme through contributing to a reduction in road trauma.

MAIC looks forward to our continued association with the TAP Program in 2023–2024 and the opportunity to build on these outcomes.



**Neil Singleton**

Insurance Commissioner

Motor Accident Insurance

Commission Queensland

## Queensland University of Technology (QUT)

QUT's Transport Group is excited about our research activities with multiple stakeholders across TMR, the Motor Accident Insurance Commission (MAIC), Brisbane City Council (BCC), iMOVE, the Department of Infrastructure, Transport, Regional Development, Communications and Arts (DITRDCA), Griffith University, the University of Queensland, and the University of Nevada.

Our TAP Program delivered research projects in the areas of traffic operations, road safety, travel behaviour, accessibility, water vessel management, transport modelling, and Mobility as a Service (MaaS). As a keen advocate of active and safe travel, QUT remains committed to delivering projects that benefit the community and seek a future with an integrated, multi-modal, efficient, and inclusive transport system.

We continued delivering research outcomes and recommendations to improve the overall transport network performance. Our deliverables included statistical analysis, revised models, an Activity Based Model prototype for Brisbane, software tools, and recommendations.

Our group continues leveraging opportunities provided by the Agreement to deliver the best possible outcomes. TAP has facilitated the attraction of additional resources for QUT, with two new iMOVE grants for a total of \$860,000 and has secured a new \$126,000 Linkage grant from the Australian Research Council (ARC).



**Professor Alex Paz**

Transport and Main Roads Chair

School of Civil and Environmental Engineering

Queensland University of Technology (QUT)



## Griffith University (Griffith)

Griffith has never participated in such a diverse program of TAP projects. These ranged across a wide variety of topics including MaaS, cybersecurity in transport, Movement and Place, enforcement and regulations for personal-mobility-devices and the public transport options for major employment clusters, just to name a few.

A special thanks needs to go out to the staff who helped us with this body of research, and who helped develop the future program of Griffith-led TAP projects. Griffith also thanks TMR for the continued support to run the TAP Program and for putting together another great annual TAP Showcase.

Griffith has recruited five new PhD students to work on transport-related projects for major events over the next decade. Both Usman and Rafayet, who were the first to arrive, have been embedded within TMR for two days per week, and have been warmly welcomed to the team.

Griffith has begun a long-term strategy to build up our inclusive design capacity, including Dr Vincent Moug in the Griffith College of the Arts and Design, who will be working with TMR's Accessible Transport Network team on a new TAP project over the next two years. As such, Griffith is broadening the number of researchers involved in TAP, and the fields-of-research we are bringing to help explore these major problems. We look forward to working together in partnership over the next two years of the Agreement.



**Professor Matt Burke**

Transport and Main Roads Chair

City Research Institute

Griffith University

## The University of Queensland (UQ)

UQ remains a proud participant in the TAP Program, under the collaborative framework established with TMR, QUT and Griffith University staff.

We believe our research and expertise at UQ, across our schools and faculties, can support better solutions and outcomes to the long-term transport challenges facing 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 vulnerable road users, public transport passengers, and road vehicles in South East Queensland; the needs and possible solutions for better mobility among passengers and freight using zero-emissions technologies; and the challenges of a future world of connected and automated vehicles.

We are also exploring better ways to use large data sets and video imagery to improve our understanding of road infrastructure and traveller behaviour within the transport system.

Through this research and other direct engagements with TMR, UQ seeks to enhance the practice of transport planning, engineering, and management in Queensland and throughout Australia. We are proud to work with TMR to continue investigating these research themes moving forward.



**Professor Mark Hickman**

Transport and Main Roads Chair

School of Civil Engineering

University of Queensland



## About us

The \$3.7 million Agreement enables strategic transport Research and Development (R&D) projects and strengthens transport capability within the university sector, TMR, MAIC, and industry, to address future transport challenges in Queensland.

The Agreement establishes collaborative and cooperative arrangements to fund the delivery of research, learning and development outcomes to contribute to an integrated, safe, efficient, and reliable transport system in Queensland.

This annual report highlights the progress and achievements against KPIs of the program during the 2022–2023 financial year. The total expenditure for the 2022–2023 period was \$765,000 which was divided evenly amongst the three TAP University Partners. Nine projects were delivered in the period, eleven new projects were approved by the Steering Group and 13 projects were progressed, including carry over multi-year projects from previous years (2020–2021 and 2021–22).

In addition to providing funding, the Agreement outlines the objectives of the partnership and sets out the required performance indicators and reporting arrangements. The research and development outcomes are intended to deliver on the agencies' strategic priorities and provide support for the broader Queensland Government innovation priorities.

The Agreement also establishes guiding principles to sustain relationships, apply good program governance and share expertise. Responsibility for implementing and delivering the Agreement is shared by all parties. Program oversight is provided by the TAP Steering Group, consisting of representatives from TMR, MAIC, and TAP University Partners. The group is chaired by Andrew Mahon, Deputy Director-General (Policy, Planning, and Investment), TMR.

The Steering Group meets at least twice each calendar year and is responsible for:

- developing and endorsing the Annual Work Program
- assessing project nominations against agreed criteria and identifying a list of priority projects
- overall project management.

## University rankings

In 2022–2023, the TAP universities ranked among top universities in the world for transportation science, technology, and engineering. The Shanghai rankings placed QUT in the top 75 universities in the world for transportation science technology and engineering. And not to be outdone, UQ was ranked in the top 50 universities in the world (47) in the academic rankings with Griffith ranking in the top 300 universities in the world.

# TAP Interim Review 2022

In December 2022, TMR conducted an interim review as required under the Agreement, to examine the research outcomes, achievements and benefits delivered by the program.

The Review found the TAP University Partners had met the objectives of the Agreement and were delivering value for money. The review also examined the University Partners' performance reporting during the review period and identified several areas of improvement. These included a need for UQ and Griffith to improve project management and project delivery timeliness, reporting and communication with TMR staff.

As a result of the review, TMR has developed recommendations to address these areas for improvement and to increase the overall effectiveness of the TAP Program. The recommendations will be supported by an implementation plan which will outline specific actions to be undertaken by TMR and University Partners to improve the management and delivery of TAP work programs and inform the development of the 2025–2030 TAP Agreement.

# Project highlights

## Travel behaviour in Queensland using behavioural economics – QUT

A considerable amount of research interest is aimed at understanding the behavioural processes underlying travel choices, like the mode and destination choices people make every day.

As part of TMR's effort to understand how people make these choices, researchers from QUT established this 3-year TAP project to investigate insights from previous studies and develop a framework.

Researchers adopted a decision assistance tool, which will support TMR analysts gain insights regarding behaviour.

The broad objectives of the project included:

- Identifying meaningful and best-fit decision variables for the estimation of discrete outcome models with minimal dependency on the analyst,
- developing generalised mode choice models for Queensland that can explain heterogeneity in preferences,
- determining the non-linear effects of attributes on mode choice behaviour, and
- correlation among observed explanatory variables.

To test the flexibility of the algorithms, two experiments including different data sets and choice processes were conducted to evaluate the performance of the framework.

The results of the tests of the new algorithm models provided valuable insight into travel behaviour and will be applied to every-day situations and further assist TMR when planning and scheduling transport services.

The experiments also validated the ability of the preferred approach to use the knowledge gained and to seek additional insight into decision making.

In addition, the knowledge gained has provided multiple solutions for choice variations and goodness-of-fit, thereby providing relevant starting points for future model development.

The results from the project have been used to improve TMR's knowledge of this branch of economics in order to try and better understand how people act taking into account factors like emotions, beliefs, cultural influences and cognitive biases.

Research such as this can also be used to inform public policy, because it provides a way to understand how people are influenced and how they make transport decisions.

## Prototype solution for TMR's digital video road (DVR) data – UQ

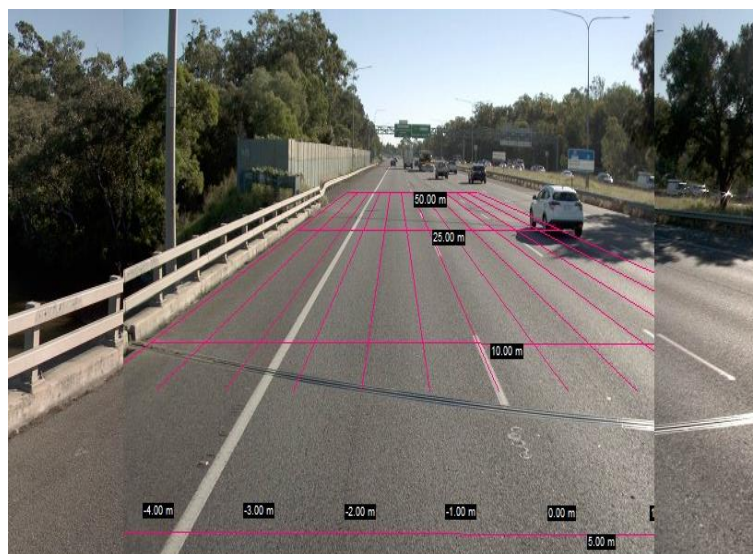
This TAP project investigated the barriers and constraints to accessing and using the DVR data TMR collects on the road network and looked for ways to create a more streamlined platform.

The investigation found that when data users and researchers needed to access the DVR data, each area needed an individual licence agreement between themselves and TMR. This led to delays for both parties and was compounded by the mechanism used to access the data being unwieldy and difficult to use and obtain quality data.

To look for solutions to the problem, researchers focussed on investigating tools and techniques to facilitate effective analysis and data derivation using artificial intelligence and machine learning (AI/ML) training data. The researchers also investigated computer vision and image processing techniques, (especially AI/ML algorithms), to deal with large quantities of data without sacrificing the quality of the images.

The project delivered a prototype solution called 'DVR Federation' which makes digital video images accessible via a web browser and catalogues images and incorporates open data sets (non-DVR) such as crashes. This enables the user to upload their own spatial data sets and TMR to undertake administration and use of Machine Learning to generate the object recognition of signs.

A framework for a user-based approach to object recognition called Ground Truth Generation was explored and developed. At this stage, the DVR Federation platform is largely only available for research and evaluation purposes. Furthermore, this project has helped UQ researchers derive insights from the data and share these insights with TMR and other users of the DVR imagery.



Caption 1: A digital video road data recorder in action

## Mobility opportunities for people living with disability – QUT

This QUT project looked at building a better understanding about the mobility opportunities that support a physical and psychologically safe and dignified transport experience for people with disability. The project embraces the principle of constructing a transport network that is genuinely universal, fulfilling the needs of all users and paves the way for a more reliable, efficient, and sustainable transport system, promising significant societal benefits.

The research determined that mobility, social inclusion, and the level of access to essential services are important indicators associated with disadvantage. People need decent housing, food, medical care, and transport, because not having these necessities has a detrimental effect on the physical, financial, and emotional wellbeing of people who live with disability.

The research also found that every transport system should be designed to support broad public mobility and hence, social inclusion of people with disability. However, freedom of movement is sometimes limited or constrained due to different environments associated with public transport and that barriers to freedom of movement may violate a person's human rights. The outcomes of the project will establish a research baseline and help to gain a better understanding of the attributes of an inclusive and safe mobility for people with a disability.

The outputs will also be used to support and deliver co-designed transport solutions for people with disabilities or other access needs and to support and inform policy and investment decisions within TMR's *Accessibility and Inclusion Strategy and Action Plan*. Through this research TMR is demonstrating research leadership to embed human rights as a core policy direction.



Caption 2: Having access to public transport is a human right.



## Third party bus services accessed on the Translink app – Griffith

There are a number of timetabled non-Translink public transport services that are freely available to members of the public in Queensland that are not included in Translink’s journey planner and other scheduling tools. This means that some useful services do not appear on smartphone applications that use these data feeds.

Griffith University conducted research to help Translink overcome these issues by piloting a proof-of-concept project. Researchers developed a best practice approach for third parties to engage with the department and potentially have off-contract services included in future data feeds.

Three workshops involving staff from TMR’s Translink Division were conducted to design and test the proof-of-concept. The workshops included consideration of third-party non-contract service requests and a range of policy, legal and technical issues, including everything from lost property to customer service inquiries, and how to report changes in timetables. Griffith researchers used surveys to gauge the impact of the introduction of third-party services on the Translink app (MyTranslink) and other services on customers.

The end result saw the first intercampus bus travelling the Nathan Campus–Mt Gravatt route (South–East Busway) added to TMR’s Journey Planner using the third-party proof-of-concept data sharing model developed by Griffith. Surveys have revealed a very good customer response to the additions.



Caption 3: Griffith University bus link service



## Examination of injuries experienced by young road users – QUT

Children are vulnerable road users, with each age group presenting unique risks, depending on developmental and environmental milestones.

Statistics show that road trauma is now a leading cause of death among Queensland children and young adults, with transport-related injuries are a leading cause of death for children aged 1–14 years, and the second leading cause for young adults aged 15–24 years. Children and young adults represent about 24 per cent of lives lost on our roads.

This TAP Sourcing Strategy project looked at injury patterns and severity amongst age, mobility, sex, modality, remoteness, socioeconomic status and temporal trends (youth), to gain an understanding of how or if injury patterns change between groups.

To undertake the study TMR’s Road Safety Research Team employed the services of an epidemiologist/road safety injury data specialist with access and use of Queensland Injury Datasets. This included familiarisation with the way in which data is coded, to enable the researchers to examine and explore transport related incidents among young persons aged 0 to 24 years in Queensland.

It is envisioned the study will directly assist the revised TMR strategic plan and priorities as it will help generate "improved safety, security and well-being of our customers", and provide a much-needed evidence base to assist TMR in delivering and supporting road safety actions under the Queensland Road Safety Education Blueprint.



Caption 4: Children and young adults are overrepresented in transport related injuries. TMR is undertaking research to gain a better understanding of why this is happening.

## Performance snapshot

The success of TAP in meeting its three objectives is measured against nine key performance indicators (as outlined in Schedule 2 of the Agreement) that are reported on at the end of each financial year.

Each of the objectives is supported by Key Performance Indicators (KPI) which are measured by the percentage they have increased or decreased compared to reports from last year and an average taken from previous reports.

The performance snapshot on page 15 is a comparison from the 2021–2022 TAP Annual Report:

Table 1: Performance snapshot

Number	Key Performance Indicator description
<b>KPI 1</b>	Number of transport-related academic staff employed and number of non-transport-related academic staff providing support (paid or in-kind) to TMR.  <b>Rating:</b> >5% – 10% increase on 2021–2022
<b>KPI 2</b>	Number of higher degree research students (PhD, Masters, by Research and Honours Research) undertaking transport-related research at the universities, including synopsis of study area; agencies engaged and their involvement; and relevancy to the Agreement objectives.  <b>Rating:</b> 0 to 4% limited or no increase on 2021–2022.
<b>KPI 3</b>	Number of university students enrolled in transport-related subjects.  <b>Rating:</b> 0 to 4% limited or no increase on 2021–2022.
<b>KPI 4</b>	Name and number of transport-related workshops or seminars delivered by universities that contribute to the objectives of the Agreement.  <b>Rating:</b> >5% to 10% increase on 2021–2022.
<b>KPI 5</b>	List of activities where university 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.  <b>Rating:</b> 0 to 4% limited or no increase on 2021–2022.
<b>KPI 6</b>	List of organisations that participate in projects supported by the Agreement.  <b>Rating:</b> 0 to 4% limited or no increase on 2021–2022.

<b>KPI 7</b>	Universities demonstrate that they have matched program funding provided by agencies through in-kind contributions and funds leveraging. <b>Rating:</b> >5% to 10% increase on 2021–2022.
<b>KPI 8</b>	Number of transport-related outputs (published papers, conference papers, formal reports (not published), formal advice, or peer reviewed papers/articles) provided by the universities through this Agreement. These must be an output of activities undertaken through the association with this Agreement. <b>Rating:</b> 0 to 4% limited or no increase on 2021–2022.
<b>KPI 9</b>	The R&D activities delivered by the Transport Chairs and dedicated staff funded by the Agreement are completed within the agreed timeframe and budget. <b>Rating:</b> 0 to 4% limited or no increase on 2021–2022.

### **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 Queensland universities maintain relevance and continued progress within the transport research and development field.

#### **Performance in 2022–2023**

Measuring the number of academic staff working in each partner's transport areas helps demonstrate how the Agreement contributes to transport research capability in the academic sector. This year, there was a 5 per cent increase in staffing numbers, which is a positive result as the national trend in the engineering and related technologies field has been trending downwards since 2019 ([dese.gov.au/higher.edu](https://dese.gov.au/higher.edu)). The gain in staffing numbers can be largely attributed to a new transport-related course offered at Griffith University (Bachelor's degree in Urban and Environmental Planning).

Figure 1: KPI 1 – Number of transport related academic staff employed

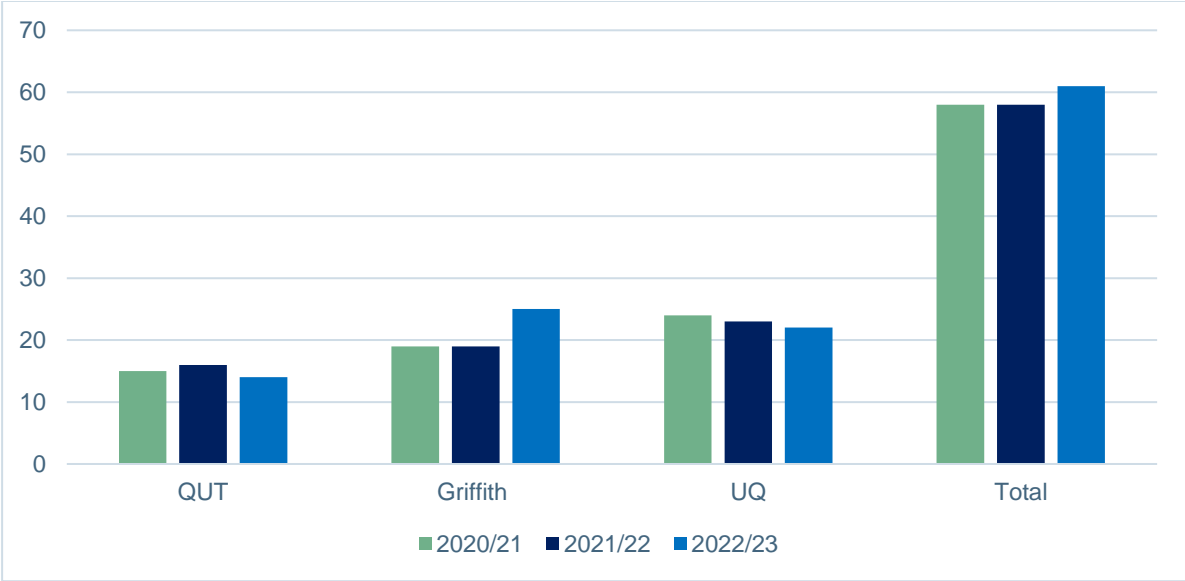


Table 2: KPI 1 – Number of transport related academic staff employed

University	2020/21	2021/22	2022/23
QUT	15	16	14
Griffith	19	19	25
UQ	24	23	22
<b>Total</b>	<b>58</b>	<b>58</b>	<b>61</b>

The number of higher-degree research students (PhD, Masters by Research and Honours Research) undertaking transport-related research at the Universities has decreased by over 14 per cent in 2022–2023. This is a consequence of the difficulty of recruiting students over the last few years (COVID) and to quality students opting to undertake higher paid positions in industry, rather than positions in graduate studies in academia.

Figure 2: KPI 2 – Number of higher degree research students undertaking transport-related research

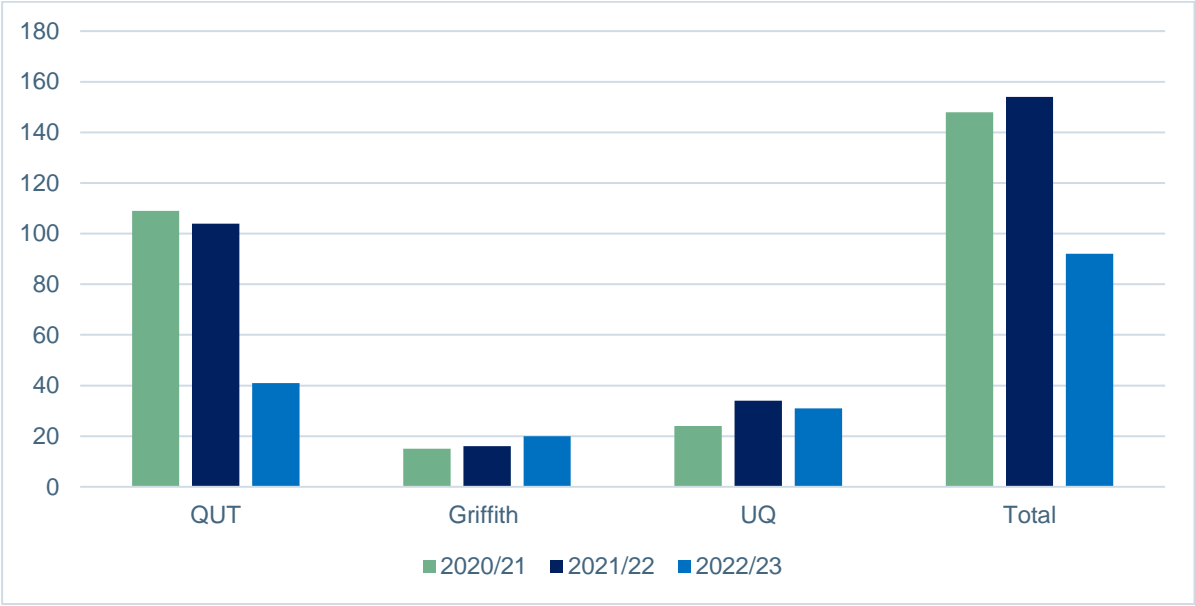


Figure 3: KPI 2 – Number of higher degree research students undertaking transport-related research

University	2020/21	2021/22	2022/23
QUT	109	104	80
Griffith	15	16	20
UQ	24	34	31
<b>Total</b>	<b>148</b>	<b>154</b>	<b>131</b>

The number of students undertaking transport-related courses dropped by 15 per cent in 2022–2023. In previous years this was attributed to Australia's strict entry requirements, imposed because of the pandemic (Mitchell Institute Victoria University).

Figure 4: KPI 3 – Number of students enrolled in transport related subjects

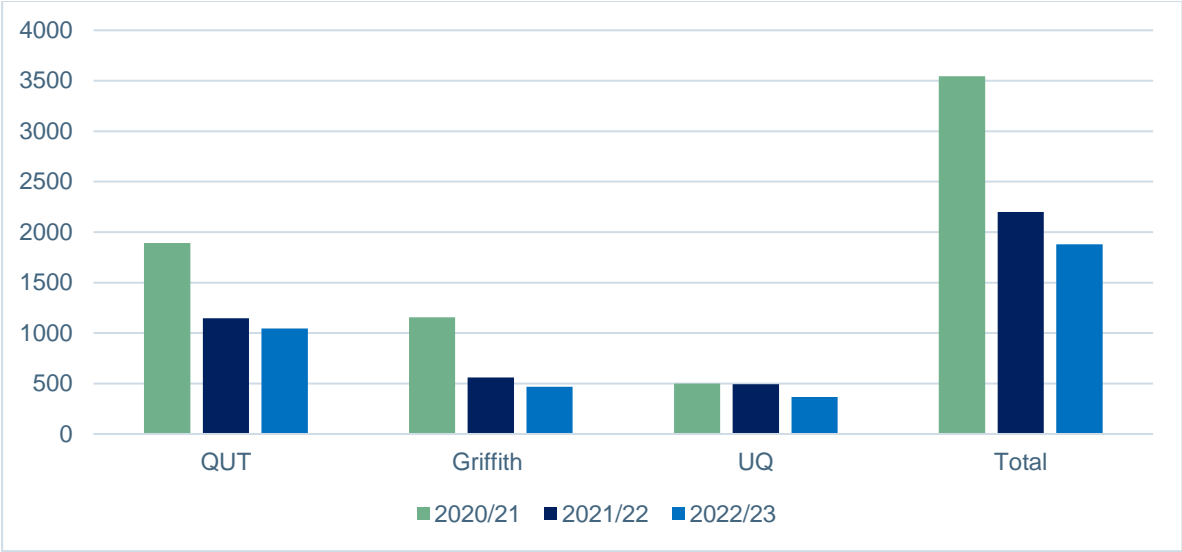


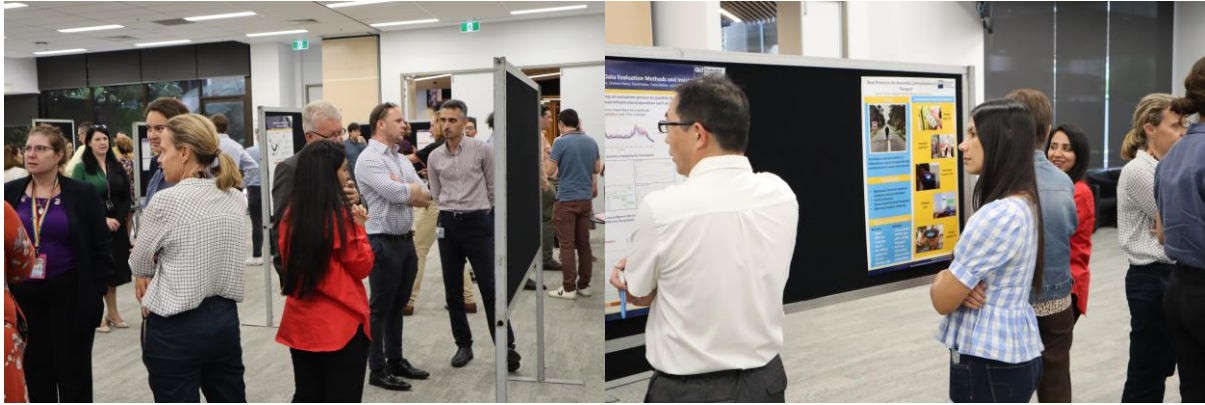
Table 3: KPI 3 – Number of students enrolled in transport related subjects

University	2020/21	2021/22	2022/23
QUT	109	104	80
Griffith	15	16	20
UQ	24	34	31
<b>Total</b>	<b>148</b>	<b>154</b>	<b>131</b>

However, the Age reported that the university dropout rate in Australia has risen (The Age – 26 April 2023) and many other Australian media outlets, including the ABC, have reported that the cost-of-living increases have been particularly hard on students, and many are opting to postpone their full-time studies to gain paid employment.

Transport-related workshops and seminars delivered by the University Partners contribute to building transport research excellence and capability in the transport sector. Face-to-face opportunities are gradually returning to pre-COVID levels (50 per cent increase from 2020–2021).





Caption 5: The TAP Poster Showcases are an excellent way to see the type of transport research going on around the department.

Some of the transport-related workshops and seminars that took place in 2022–2023 included a 3-day Urban Economics short course and a presentation to the 2023 Electric Transport Industry Transformation Forum (Griffith). QUT delivered a workshop titled: Investigation and Treatment of Crash Locations; and Road Safety Audit and an evaluation of transport improvements using sensor data, in June 2023.

Figure 5: KPI 4 – Transport-related workshops and seminars delivered by the universities

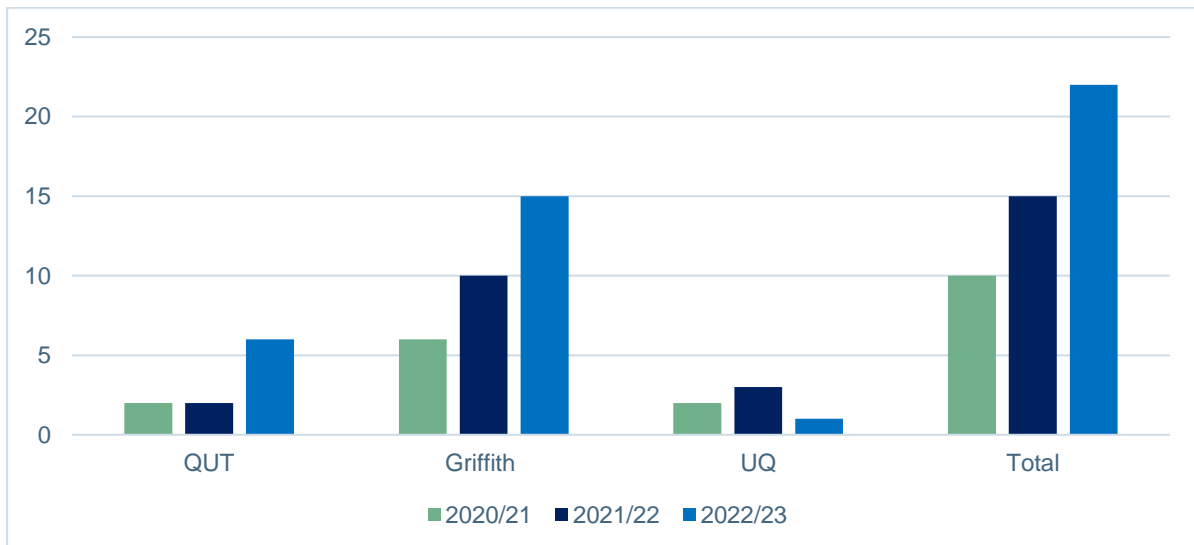


Table 4: KPI 4 – Transport-related workshops and seminars delivered by the universities

University	2020/21	2021/22	2022/23
QUT	2	2	6
Griffith	6	10	15
UQ	2	3	1
<b>Total</b>	<b>10</b>	<b>15</b>	<b>22</b>

All three TAP University Partners participated in the November 2022 TAP Poster Showcase. Overall, the TAP partners delivered over 22 transport-related workshops/seminars in the 2022–2023 period, which was a 47 per cent increase on the previous year.

**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, which encourages open communication and strong relationships between partners.

**Performance in 2022–2023**

The number of collaborative R&D activities undertaken by University Partners has remained steady throughout the period with 47 activities undertaken in the 2022–2023 financial year. This is a positive given the current economic situation, and also shows that businesses and organisations understand the importance of collaboration in that it encourages new expertise and innovation.

The TAP University Partners continued to work collaboratively with industry and the academic sector throughout the 2022–2023 period. QUT has built on the relationships with both national and international agencies through activities including research with the University of Nevada and Perdue University, and the University of Cauca.

Figure 6: KPI 5 – Collaborative R&D initiatives with industry, government and academia

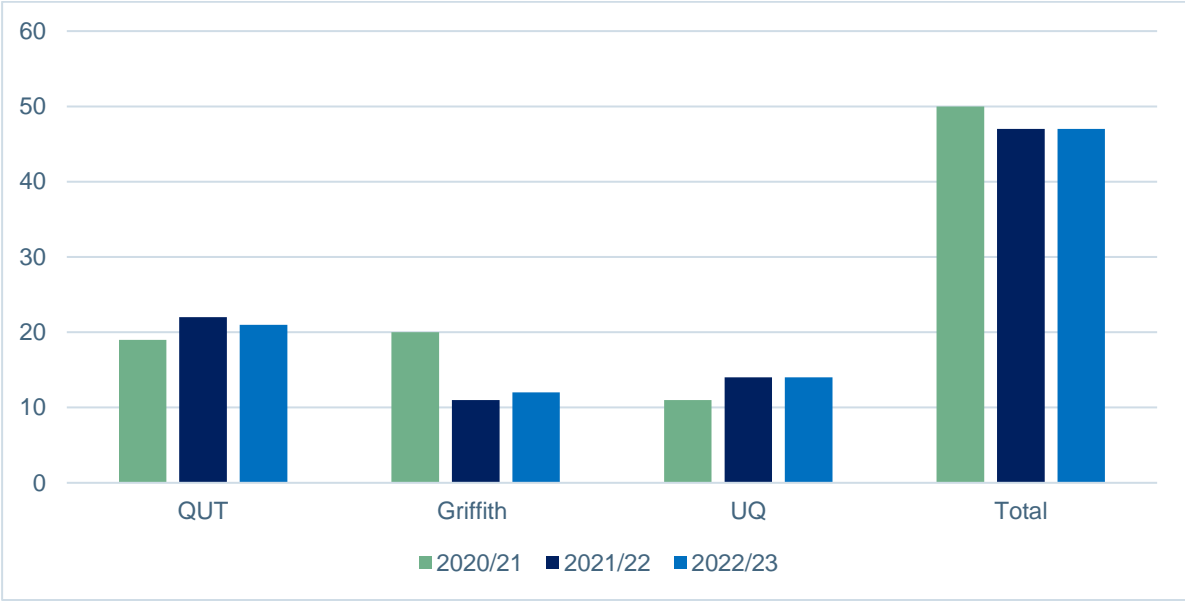


Table 5: KPI 5 – Collaborative R&D initiatives with industry, government and academia

University	2020/21	2021/22	2022/23
QUT	19	22	21
Griffith	20	11	12
UQ	11	14	14
<b>Total</b>	<b>50</b>	<b>47</b>	<b>47</b>

The TAP University Partners, have also participated in multiple committee meetings, such as Bicycle Queensland, the Board of Governors of Intelligent Transportation Systems Society, and the Standing Committee on the Effects of Communication (Travel choices) Brisbane City Council (BCC) and Gold Coast City/Active Transport Committees. Participation on these committees means the TAP University Partners have had a hand in ensuring the quality of academic research is maintained and that evidence-based decisions are made.

Collaborations have also been undertaken with local governments, state government agencies, cooperative research centres, other Australian and international universities, industry, advocacy groups and advisory bodies.

Figure 7: KPI 6 – Number of organisations the participate in projects

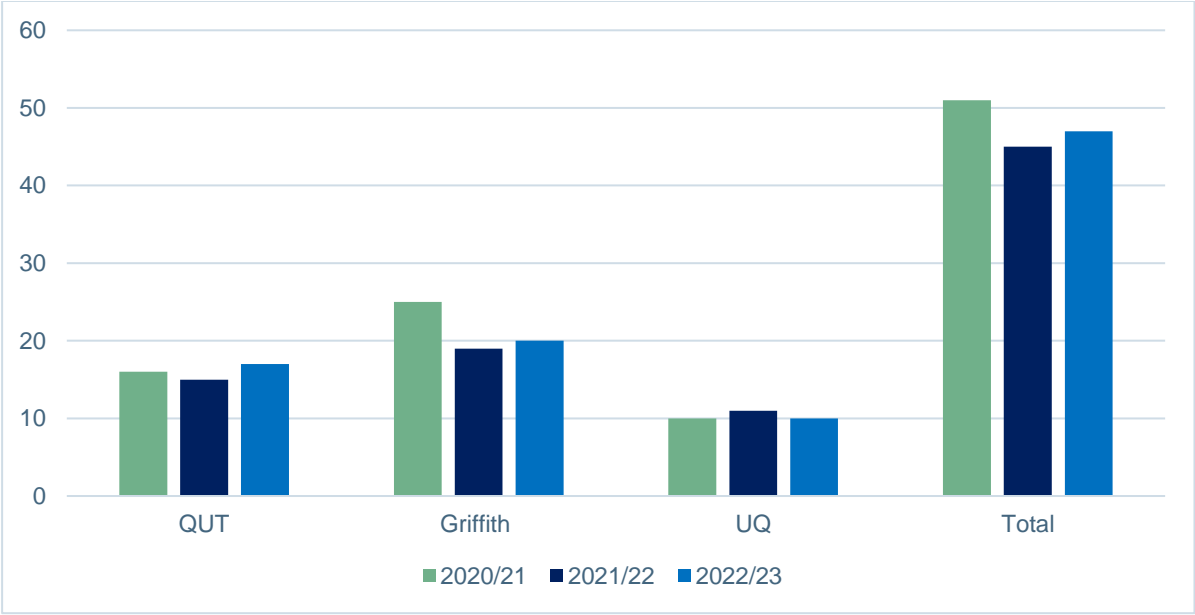


Table 6: KPI 6 – Number of organisations the participate in projects

University	2020/21	2021/22	2022/23
QUT	16	15	17
Griffith	25	19	20
UQ	10	11	10
<b>Total</b>	<b>51</b>	<b>45</b>	<b>47</b>

TAP University Partners have also:

- fostered collaborative engagements with organisations including the BCC and iMOVE Australia.
- leveraged their professional networks to draw on a broad range of industry experts to help deliver on TMR's transport-related research challenges
- built strong relationships with a wider range of technology companies, local government, state and federal government departments and agencies, transport service providers, and logistics' companies such as the Australian Automobile Association, Bicycle Queensland, and Tourism Queensland.
- QUT secured a \$150,000 per annum grant from BCC to undertake transport research and analysis.

Although there was a 4.5 per cent decrease from 2021–22, this area has shown signs of recovery, evidenced by the small increase in the number of organisations participating in projects supported by the Agreement. Two of the three universities have shown an increase in the period.

**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.

**Performance in 2022–2023**

Over the past three years, the amount of leveraged funding secured by the TAP University Partners has increased. This long-term funding enables universities to recruit and retain highly qualified academics with ongoing specialisations to undertake transport research in Queensland.

The TAP University Partners have collectively contributed \$2.48M (above TAP) of in-kind contributions. They have used this leveraged funding to support the delivery of the Agreement objectives and work program projects. This is a 32 per cent increase on last year and a 97 per cent increase from the three-year average from 2017–2020. QUT continues as the standout, having bid successfully for funding grants from BCC, iMOVE and the federal Department of Infrastructure, Transport and Regional Development. Griffith has secured a 3-year Fellowship from Advance Queensland. UQ has also secured iMOVE grants.

Figure 8: KPI 7 – Leveraged funding

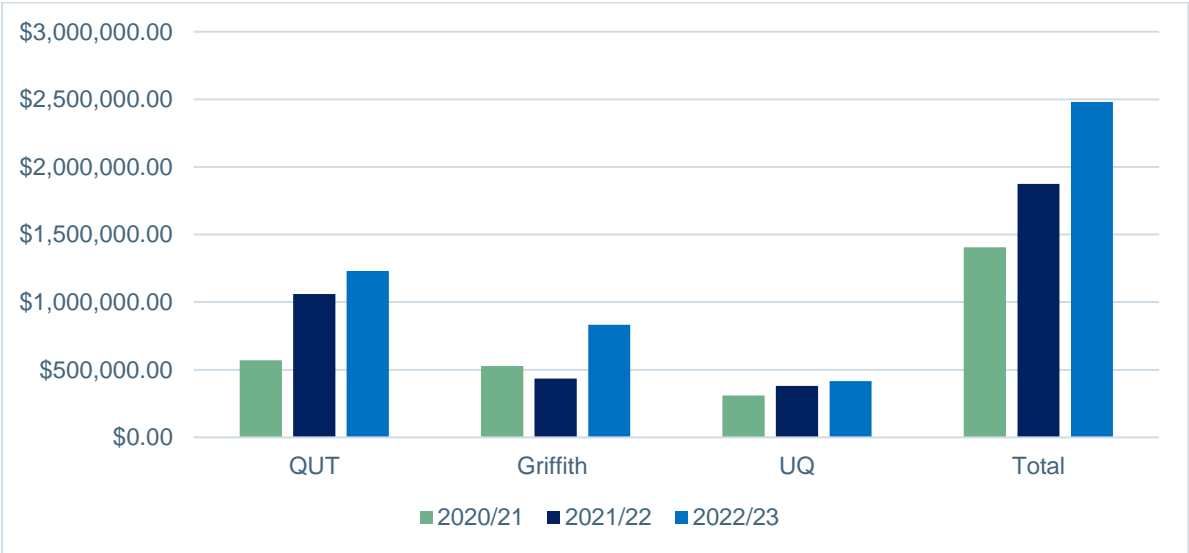


Table 7: KPI 7 – Leveraged funding

University	2020/21	2021/22	2022/23
QUT	\$570,116.00	\$1,059,000.00	\$1,229,750.00
Griffith	\$526,689.00	\$434,515.00	\$832,508.00
UQ	\$309,000.00	\$381,600.00	\$417,000.00
<b>Total</b>	<b>\$1,405,805.00</b>	<b>\$1,875,115.00</b>	<b>\$2,479,258.00</b>

TAP University Partners contribute to several national and international journals and publications annually. The number of publications has fallen by 15 per cent, over the period (2022–2023) with the Australian National University (PostAc) attributing this decrease to a global 'slowdown' of research activities. Which in part was due to the dramatic changes seen over the past few years within the research workforce academic environment and the drop in demand for researchers outside the university environment due to industry funding constraints and in line with the decline in international enrolments at the universities during the pandemic.

Twenty-seven TAP projects were progressed through the 2022–2023 annual work program. The total monetary value of the TAP projects was approximately \$1.49M and includes TAP funding and in-kind support.

Figure 9: KPI 8 – Number of transport–related publications

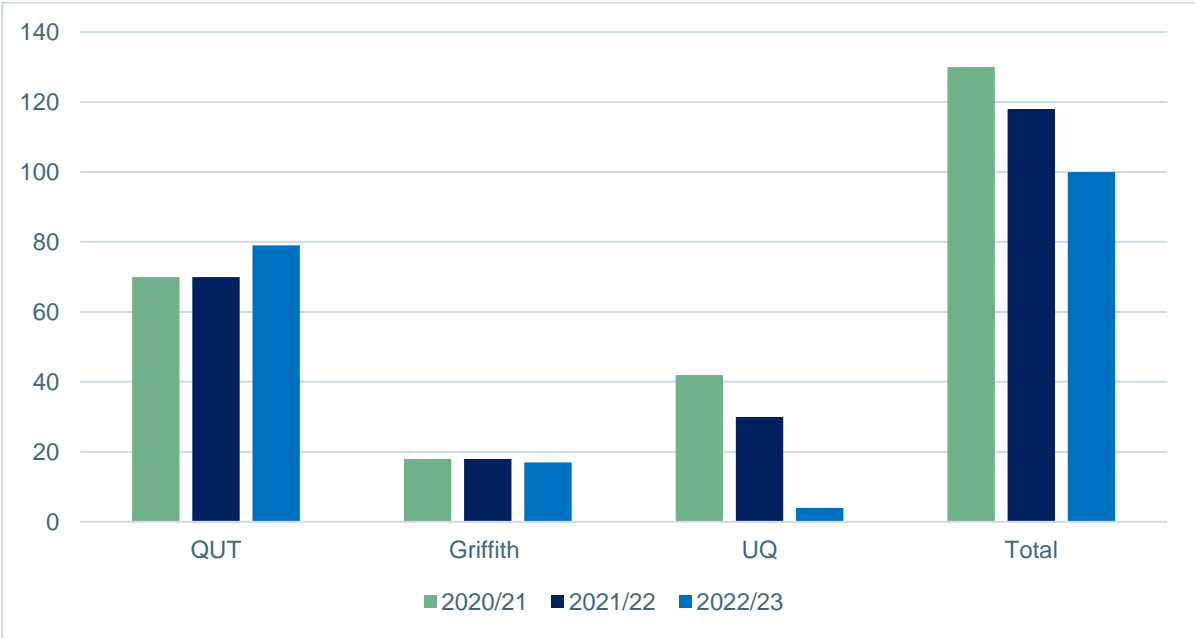




Table 8:KPI 8 – Number of transport–related publications

University	2020/21	2021/22	2022/23
QUT	70	70	79
Griffith	18	18	17
UQ	42	30	4
<b>Total</b>	<b>130</b>	<b>118</b>	<b>100</b>

Of the twenty-seven projects on the work program, five are multi-year projects and will carry over to the 2023–2024 work program. Of the remaining projects, 13 were due for completion before June 2022. Nine projects were completed within the time period and one was completed prior to the publishing of this report (Jul–Oct 2023). Of the remaining projects, several have not fully delivered on their milestones in the allotted time due to unavailability of key staff. QUT have delivered 100 per cent of their projects on time and on budget.

Figure 10: KPI 9 – Project completion rates

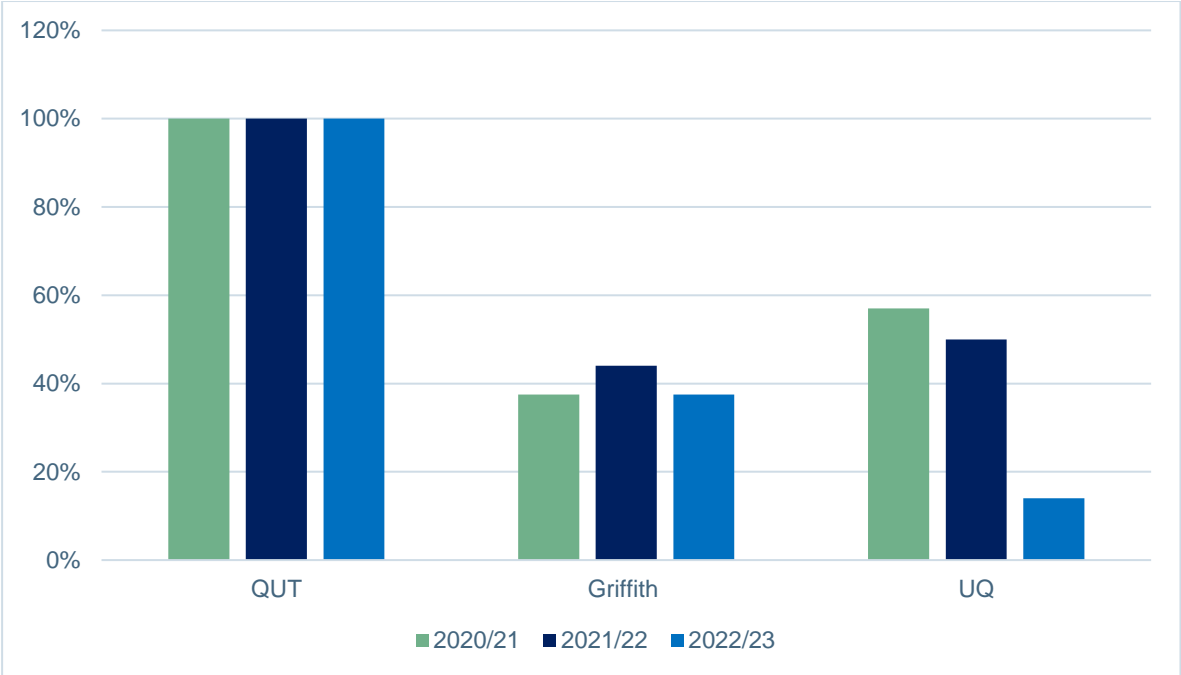


Table 9: KPI 9 – Project completion rates

University	2020/21	2021/22	2022/23
QUT	5	5	5
Griffith	2	1	1
UQ	3	3	3
<b>Total</b>	<b>10</b>	<b>9</b>	<b>9</b>

**Exploring a sustainable future for derelict ships – QUT**

This QUT project explored successful best practices from other jurisdictions in the disposal of derelict ships and how these methods may be implemented in Queensland.

The current management practices for abandoned end-of-life boats (ELBs) are inefficient and the recycling of recreational boats is difficult with the high dismantling costs. Numerous ELBs are left abandoned, illegally dumped in landfills or sunk causing environmental damage, health risks and navigation hazards. Marina and local authorities face additional costs in handling abandoned boats. The inefficiency of the boat ownership tracing systems makes it challenging to effectively monitor and enforce ELB regulation.

One of the main challenges associated with the disposal of old boats is the fact they are made of so many different materials (plastic, aluminium, wood, fibreglass, composite materials and steel). Wooden and steel boats can easily be recycled through scrap yards unlike composite (fibreglass) boats.

The primary objective is to achieve end-of-life management that leads to either reuse (re-purposing) or recycling. Especially in Queensland, these goals require focused efforts to prevent increasing conflicts with natural resources and unregulated disposal of Fibre Reinforced Polymer/Plastic waste, which have environmental repercussions.

The outcomes from the project found successful best practices from other jurisdictions and a step-by-step approach on how these could be implemented in Queensland. The project also noted this was a global challenge and its crucial to recognise that one size-fits-all solution does not exist for this issue and that specific local circumstances are likely to require customised approaches.



Caption 6: An abandoned vessel in Eprapar Creek in Queensland

# **TAP Sourcing Strategy highlighted projects**

## **Data evaluation methods and insights – expanded study – QUT**

This TAP Sourcing Strategy study contributed to the development of a formal evaluation process to quantify the effects of upgrades to road infrastructure such as signal timing plan changes on corridors across the state.

Previous research (Paz, et al., 2021) proposed an evaluation process based on the empirical Cumulative Distribution Function (eCDF) of travel times as a performance assessment mechanism. The eCDF was suggested by university because it provided great visualisation that is easy to comprehend and an efficient and effective mechanism to compare before and after scenarios.

## **Road Safety Climate Scale – validation and testing – Griffith**

To give a better understanding of community road safety behaviours and how to tailor responses to best suit the environment this project aimed to show that safety culture is a multifaceted concept comprised of norms, values, beliefs, and assumptions. In order to support the governments understanding of cultural change this project sought to examine and evaluate road safety initiatives.

## Vessel waterway management – QUT

Maritime Safety Queensland (MSQ) is seeking to improve safety, access, and amenity of a particular waterway for waterway users. QUT developed a program of initiatives using a set of questions to address waterways management issues for the waterway and public consultation was undertaken for the proposed options.



Caption 7: Midge Point (Queensland) boat ramp.

## Study into the impact of MaaS trials on public transport usage – Griffith

This project provided a better understanding of the way the general public use transport to help TMR form policy and transport strategies for determining a willingness to pay and to inform policy using evidence-based research.



Caption 8: Train at Roma Street station in Brisbane

Table 10: Table 2: List of TAP projects for 2022–2023

<b>No.</b>	<b>Project</b>	<b>Status</b>
1	Relationship between speed, traffic and road geometry on crashes	Complete
2	Universally designed autonomous people mover (Phase 2)	Complete
3	Encouraging the use of e-bikes survey	Complete
4	Sustainable disposal of derelict ships	Complete
5	Improved research utilisation of TMR's Digital Video Road Data	Complete
6	Evaluation of Right-turn Signal Phasings at Signalised Intersections	Complete
7	Literature review of planning for constrained multi-modal corridors	Complete
8	Alternative model form & structures for SEQ travel demand model	Complete
9	Improving regulations for personal mobility devices	Complete
10	Understanding the mobility needs of senior road users	Ongoing
11	Cybersecurity – Education and training	Ongoing
12	Towards improved community transport	Ongoing
13	Transforming Queensland Tourism	Ongoing
14	Study of customer behaviour regarding MaaS (Phase 2)	Ongoing
15	Making Australia resilient to airborne disease	Ongoing
16	Review of operations & safety at Two Aspect Signalised slip lanes	Ongoing
17	Strengthening public transport for climate change and wet weather	Ongoing
18	Heavy vehicle fleet safety standards	Ongoing
19	Designing and modelling for major events	Ongoing
20	Automation of movement and place for dynamic kerbsides	Ongoing
21	North Brisbane Bikeway	Ongoing
22	Cycle track case studies	Ongoing
23	Providing sustainable PT services and infrastructure	Ongoing

24	Active transport planning and assessment tools	Ongoing
25	Accessible public transport infrastructure study	Ongoing
26	Better use of public transport ticketing data	Ongoing
27	Optimised sampling of transport modelling uncertainty	Ongoing



# Transport Academic Partnership 2022–2023 Work Program: Project Status Report

University Partners work with TMR to undertake and deliver an annual work program of research and development projects. In 2022–2023, there were 27 projects undertaken by the TAP University Partners. Of these, nine were completed between July 2022 and June 2023, and 18 were ongoing. The TAP work program projects 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 Projects 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 2 outlines the 2022–23 projects, defining their scope, alignment to TMR strategic priorities and status at the end of the period.

Table 11: Transport Academic Partnership 2022–2023 Work Program Status Report

No.	Project	Scope/description	TMR Strategic Objectives	Status at end of 2022–2023 FY	Partners
1	<b>Relationship between speed, traffic volumes and road geometry on heavy vehicle crash rates</b>	This project is to determine how the type, mass and length of heavy vehicles affects the type, severity and rate of crashes. The objective of this specific piece of research is to determine how parameters such as speed limits, traffic volumes and road infrastructure affects the type, severity and numbers of heavy vehicles crashes.	This project is: <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Completed – June 2023</b> Output: Final report and data spreadsheets. Outcome: Ability for TMR to better analyse the relationships between certain road factors to make informed decisions about how to implement crash mitigation strategies for heavy vehicles.	University: QUT TMR: Infrastructure Management and Delivery Division. Engineering and Technology Branch.
2	<b>Universally designed autonomous people mover Phase 2</b>	This project is about determining how autonomous vehicles may be designed using universal design principles and goals to provide access for everyone.	This project is: <ul style="list-style-type: none"> <li>• Creating liveable regions and active cities</li> <li>• Building prosperity</li> <li>• Customer focused</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Completed – June 2023</b> Output: Literature Review and recommendations Outcome: Able to inform implementation of the TMR Access and Inclusion Strategy and Action Plan to measure its success. Gain a broad understanding and address gaps in the network.	University: QUT TMR: Accessible Transport Network – Office of the Director-General

No.	Project	Scope/description	TMR Strategic Objectives	Status at end of 2022–2023 FY	Partners
3	<b>Queensland electric bikes (e-bikes) part 2: Understanding opportunities to encourage use (multi-year project)</b>	This project builds on the findings of a previous TAP project, the Queensland Electric Bike Owner Survey (2019). It will be undertaken in two stages over two financial years.	This project is: <ul style="list-style-type: none"> <li>• Creating liveable regions and active cities</li> <li>• Customer focused</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Completed – December 2022</b> Output: A comprehensive report and analysis drawn from survey results. Outcome: A better understanding of the motivators and experiences of e-bike riders and owners.	University: QUT TMR: Policy, Planning and Investment Division, Active Transport.
4	<b>Sustainable disposal of derelict ships</b>	The purpose of this project is to investigate best practice in the disposal of derelict ships and how these methods may be implemented in Queensland.	This project is: <ul style="list-style-type: none"> <li>• Creating liveable regions and active cities</li> <li>• Customer focused</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Completed – June 2023</b> Output: Report outline Best Practice for vessel disposal Outcome: That, derelict vessels are dismantled and disposed of in an environmentally friendly way and the potential geographic and other constraints, principles, and outputs/metrics to measure success can be guided by good policy development.	University: QUT TMR: Maritime Safety Queensland (MSQ)
5	<b>Improved research utilisation of TMR's Digital Video Road (DVR) data (two-year project).</b>	The scope of this project includes the development of an overarching licence agreement for use of DVR and Artificial Intelligence (AI) for research purposes.	This project is: <ul style="list-style-type: none"> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Completed – June 2023</b> Output: Final report including various advanced crash data analyses models. Outcome: Identification of key, likely crash contributing factors involving heavy vehicles.	University: UQ TMR: Infrastructure Management and Delivery Division. Engineering and Technology Branch.
6	<b>Safety Evaluation of Right-turn Signal Phasings at Signalised Intersections: Applications of Advanced Video Analytics (two-year project)</b>	This two-year project aims to undertake a comprehensive safety evaluation of permissive to part-time protected right-turn signals at intersections by utilising advanced video-based traffic conflict analysis (video data) at several sites identified in collaboration with TMR.	This project is: <ul style="list-style-type: none"> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Completed – June 2023</b> Output: Licence agreement for the use of data. Outcome: Accessible convenient transport outcomes may be improved by utilising AI and Machine Learning to provide better insights on asset conditions.	University: QUT TMR: Infrastructure Management and Delivery Division. Engineering and Technology Branch.



No.	Project	Scope/description	TMR Strategic Objectives	Status at end of 2022–2023 FY	Partners
7	<b>Literature review of planning for constrained multi-modal corridors</b>	This project will deliver a literature review investigating transformative planning proposals like the situation with the South Coast Region Project Plan (SCRPP). It will specifically address key issues around encouraging mode shift, urban renewal, loss of parking and property impacts.	This project is: <ul style="list-style-type: none"> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Completed – June 2023</b> Output: Evaluation methodology Outcome: Ability to make sound investment decisions for infrastructure development methodology.	University: Griffith TMR: Infrastructure Management and Delivery Division. Program Delivery and Operations (South Coast).
8	<b>Alternative model forms and structures for a South-East Queensland Travel Demand Model</b>	The intention of this research is to identify a more robust methodology than the current state of replicating the same form of the smaller strategic models for the whole of South-East Queensland using larger transport model zones. The process should allow forecast changes to be made in trip distribution and mode choice between the sub-regions of South-East Queensland.	This project is: <ul style="list-style-type: none"> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Completed – May 2023</b> Output: PhD student placement in TMR delivered a paper on public and private school travel behaviour. Outcomes: Data that may provide insight into the most efficient mode choice model to adopt after considering market segmentation in Brisbane and South–East Queensland.	University: Griffith TMR: Policy, Planning and Investment Division. Transport Strategy and Planning Branch.
9	<b>Improving Regulation and Guidance for Personal Mobility Devices (PMD)</b>	This project seeks to establish guidelines for enhancing the visibility and audibility of PMDs, to support improved safety and comfort for low vision and vision impaired pedestrians.	This project is: <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Innovative</li> <li>• Investing in the future</li> <li>• Creating liveable regions and active cities</li> </ul>	<b>Completed – June 2023</b> Output: Final report; Fieldwork report Outcome: Clearer guidance for audible warnings and visibility; improved legislation for devices and informed decision making to guide policy initiatives.	University: UQ TMR: Policy, Planning and Investment Division. Transport Strategy and Planning Branch.
10	<b>Understanding the safe mobility needs of Senior Road Users in a changing environment</b>	The aim of this project is to understand the complexity of the various transport needs of different cohorts of road users across Queensland with a specific emphasis on seniors.	This project is: <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Ongoing</b> Output: Literature review; data sets and final report Outcome: Usable tailored information about senior road users to develop journey options specifically suited to senior road users.	University: Griffith TMR: Customer Services, Safety and Regulation, Road Safety Research

No.	Project	Scope/description	TMR Strategic Objectives	Status at end of 2022–2023 FY	Partners
11	<b>Enhancing TMR's capabilities in cybersecurity education and training</b>	The purpose of this project is to provide recommendations about best practice in providing cyber security awareness to staff within a large government organisation (TMR). This involves designing an approach to integrating best practice cyber security educational design principles into a proposed cybercrime prevention initiative.	This project is: <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Ongoing – December 2023</b> Output: Scoping review, Cybersecurity training aids and final report Outcome: An evidence-informed and organisation specific understanding of current cyber security threats that are created and perpetuated by TMR staff existing knowledge and behaviours related to cyber security.	University: Griffith TMR: Corporate, Information Technology Branch
12	<b>Towards improved community transport</b>	The project explores community transport operations in Queensland and how funding arrangements, including under the NDIS, have created inefficiencies in the sector. It also provides insight into new contracting and technological solutions that are helping to overcome transport-related issues.	This project is: <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Ongoing – multi-year project</b> Output: Policy review, concept map, final report. Outcome: Assist the Accessible Transport Network team in their development of future policy, including in disability action planning, and in initiatives to help local governments and operators improve community transport operations in their region	University: Griffith TMR: Office of the Director-General, Accessible Transport Networks Unit.
13	<b>Transforming Queensland Tourism with Micro-Transport</b>	Advance Queensland Fellowship awarded to Dr Abraham Leung worth \$689,000 cash including partner contributions. The project develops and tests the next generation of tourism focused, MaaS trials in regional and metropolitan Queensland for major events happening over the next decade.	This project is: <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Ongoing – multi-year project</b> Output: Literature review; workshop reports; survey report; final report Outcome: Provision of a transport plan that will provide a social and environmental MaaS solution to regional Queensland.	University: Griffith TMR: Office of the Director-General; MaaS Program Team.

No.	Project	Scope/description	TMR Strategic Objectives	Status at end of 2022–2023 FY	Partners
14	<b>Study of customer behaviour in Southeast Queensland regarding advanced mobility</b>	Behavioural economics can help understand travel choice behaviour and the effects of influencers such as higher public transit patronage, information, and incentives. This research project seeks to gain a better understanding of customer's preferences and attitudes towards emerging and advanced mobility technologies in Southeast Queensland. This approach has achieved considerable success for understanding and estimating choice behaviour.	This project is: <ul style="list-style-type: none"> <li>• Creating liveable regions and active cities</li> <li>• Building prosperity</li> <li>• Customer focused</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Ongoing – multi-year project</b> Output: Mobility choice models. Outcomes: This review helped pave a direction for enhancing TMR's in-house choice modelling capability and improved its suite of transport models, which bolstered TMR's ability to estimate and forecast the effects of policy, infrastructure, and technological changes.	University: QUT TMR: Office of the Director-General; MaaS Program Team.
15	<b>Making Australia resilient to airborne infection transmission</b>	The aim of the proposed project is to expand scientific knowledge and develop practical tools necessary to improve resilience of Australian indoors against airborne transmission of respiratory infections.	This project is: <ul style="list-style-type: none"> <li>• Creating liveable regions and active cities</li> <li>• Customer focused</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Ongoing – multi-year project</b> Output: Comprehensive report Outcome: Evidence based research to inform policy decisions.	University: QUT TMR: Government Partnerships
16	<b>Review of operations and safety at Two Aspect Signalised slip lanes</b>	The overall goal of this project is to gather evidence and analyse to inform practice to better achieve the goal of safety and efficiency for all users at slip lanes.	This project is: <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Ongoing</b> Output: Technical notes; Final report – recommendations Outcome: To achieve safety and efficiency for all users.	University: UQ TMR: Infrastructure Management and Delivery Division. Engineering and Technology Branch.
17	<b>Strengthening Queensland Public Transport in Response to Climate Change and Severe Weather Events</b>	This project will review current climate change science, Government policies, and international practices; as it pertains to public transport infrastructure and services.	This project is: <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Ongoing – multi-year project</b> Output: Research plan; Literature review and report Outcome: Increased departmental capacity and knowledge about the impact of climate change in the transport context, specifically on large infrastructure (roads, bridges and railway tracks).	University: UQ TMR: Translink

No.	Project	Scope/description	TMR Strategic Objectives	Status at end of 2022–2023 FY	Partners
18	<b>Review and evaluation of international and domestic applications of heavy vehicle fleet safety standards</b>	The aim of the project is to review and evaluate where heavy vehicle fleet safety interventions have been adopted and implemented domestically that assist with providing better vision of people walking and riding bikes or scooters	This project is: <ul style="list-style-type: none"> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Ongoing</b> Output: Final report Outcome: Improved and safer vehicles (particular the existing fleet) on Queensland roads.	University: UQ TMR: Infrastructure Management and Delivery Division. Engineering and Technology Branch.
19	<b>Major events – no regrets planning for academic research</b>	In light of the major events planned for Queensland over the next decade – there is potential for TAP partners to contribute to a 'no regrets' research action plan.	This project is: <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Ongoing</b> Output: Literature review Outcome: These outcomes are needed to support TMR in the preparation and execution of transport activities related to major events occurring in Queensland over the next decade.	University: UQ TMR: Policy, Planning and Investment Division. Transport Strategy and Planning Branch.
20	<b>Automation of movement and place/Developing preliminary guidance for dynamic kerbside management (two-year project)</b>	This two-year project will develop preliminary guidance for Queensland practices for dynamic kerbside management, creating more flexible, efficient, and liveable street environments.	This project is: <ul style="list-style-type: none"> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Ongoing</b> Output: Report and preliminary guidance Outcome: The report and preliminary guidelines will help inform the future development of TMR guidelines and policy within the department, including the Network Optimisation Framework and the Priority Lanes Policy.	University: Griffith TMR: Policy, Planning and Investment Division. Transport Policy Branch.
21	<b>North Brisbane Bikeway evaluation (methodology) – Stage 2</b>	This project will finalise the development of a comprehensive methodology for evaluating the impacts of the North Brisbane Bikeway on road users.	This project is: <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Ongoing</b> Output: Stakeholder engagement plan: stage 2 report. Outcomes: Support for improved community connectedness, quality of life, and mental and physical health.	University: Griffith TMR: Policy, Planning and Investment Division. Transport Strategy and Planning Branch.

No.	Project	Scope/description	TMR Strategic Objectives	Status at end of 2022–2023 FY	Partners
22	<b>Cycle track case studies</b>	The project aims to achieve a nation-wide identification and review of the successful retrofit (brownfield) implementations of cycle tracks (physically separated cycleways) in urban areas within Australia and New Zealand.	<p>This project is:</p> <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Investing in the future</li> </ul>	<p><b>Ongoing</b></p> <p>Output: Research report</p> <p>Outcome: Address the issues of interactions with public transport, curbside parking, and traffic.</p> <p>This project has seen significant delays due to the unavailability of key research staff.</p>	<p>University: Griffith</p> <p>TMR: Infrastructure Management and Delivery Division. Engineering and Technology Branch.</p>
23	<b>Providing effective and financially sustainable public transport services and infrastructure in expanding urban areas of Queensland</b>	This rapid pace of growth has implications for Queensland's settlement patterns and has the need to balance outward expansion and urban consolidation to support more efficient use of existing infrastructure, better access to employment, services, and a wider range of lifestyles, and reducing impacts on natural systems and assets.	<p>This project is:</p> <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Innovative</li> <li>• Investing in the future</li> <li>• Creating liveable regions and active cities</li> </ul>	<p><b>Ongoing</b></p> <p>Output: Literature review exploring the merits of national and international approaches to Passenger Transport planning and servicing in expanding urban areas.</p> <p>Outcome: Will enable a more targeted and detailed analysis of options to inform TMR policy/delivery approaches.</p>	<p>University: Griffith</p> <p>TMR: Policy, Planning and Investment Division. Transport Strategy and Planning Branch.</p>
24	<b>Active transport planning and assessment tools</b>	This project will encompass research to improve project evaluation of active transport projects.	<p>This project is:</p> <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<p><b>Ongoing</b></p> <p>Output: Tools created to inform a future research programs.</p> <p>Outcome: Future research programs are targeted and are improved for active travel business.</p>	<p>University: Griffith</p> <p>TMR: Policy, Planning and Investment Division. Transport Strategy and Planning Branch.</p>
25	<b>Accessible public transport Infrastructure</b>	This project seeks to develop guidelines to provide acceptable tolerances for passengers when using passenger transport (buses).	<p>This project is:</p> <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> <li>• Building prosperity</li> </ul>	<p><b>Ongoing</b></p> <p>Output: 3D computer-based model and report.</p> <p>Outcomes: Improved understanding of intended requirements of transport standards.</p>	<p>University: Griffith</p> <p>TMR: Translink.</p>



No.	Project	Scope/description	TMR Strategic Objectives	Status at end of 2022–2023 FY	Partners
26	<b>Better use of public transport ticketing data</b>	This project will develop a model/code/algorithm to analyse go card data to inform transport modelling and facilitate better forecasting and analysis for transport planning projects.	<p>This project is:</p> <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<p><b>Ongoing</b></p> <p>Output: Sound investment model for cashless payment options likely to be published on the TMR website.</p> <p>Outcome: Understanding of how to inform transport modelling systems using customer data.</p>	<p>University: UQ</p> <p>TMR: Policy, Planning and Investment Division. Transport Strategy and Planning Branch.</p>
27	<b>Optimised sampling for targeted evaluation of transport modelling uncertainty</b>	This project will help TMR understand how reliable transport model forecasts could improve confidence in decision making. Scope includes identifying/negotiating inputs, determining the range of input variables against other studies or datasets, and developing and implementing a methodology that can be applied to the latest version of South-East Queensland Strategic Transport Model (SEQSTM).	<p>This project is:</p> <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<p><b>Ongoing</b></p> <p>Output: Forecasting model to compliment a how to guide.</p> <p>Outcomes: The results should show the share of uncertainties relating to forecasting models from different sources.</p>	<p>University: UQ</p> <p>TMR: Policy, Planning and Investment Division. Transport Strategy and Planning Branch.</p>

## Leveraged projects

These are projects initiated and led by a TAP University Partner, which will benefit TMR but are not reliant on direct management or input from a TMR business area. No TAP funds have been directly contributed towards these projects. However, TAP University Partners continue to share the outcomes.

Table 12: Leveraged projects

No.	Project	Scope/description	Outcomes	Status at end of 2022–2023 FY	Partners
1	<p><b>Transforming Community Transport</b></p> <p>Australian Research Council: Linkage Project</p> <p><b>Project cost: \$600,000</b></p>	This proposed ARC-Linkage project aims to transform the way we understand and deliver community transport services. Australia's community transport (CT) services are struggling to meet current levels of demand; and due to Australia's aging population and population growth in outer suburban areas, the demand for CT is expected to grow in coming decades.	New improved policy recommendations for applications in Australia and beyond	<p><b>Ongoing</b></p> <p>Provision of a transport plan that will provide a social and environmental MaaS solution to regional Queensland.</p>	<p>University: Griffith</p> <p>TMR: Office of the Director-General. Transport Access Unit.</p>

No.	Project	Scope/description	Outcomes	Status at end of 2022–2023 FY	Partners
2	<p><b>Transforming Queensland Tourism with Micro Transport</b></p> <p>Advance Queensland</p> <p><b>Project cost: \$679,000</b></p>	The project seeks to develop the next tourism focused, MaaS trials in regional and metropolitan Queensland for major events	This study will contribute to new services and products for tourists in Queensland’s cities and regions, collaborating with innovative transport operators and tourism promoters to help develop Australia’s first tourism focused MaaS prototype.	<p><b>Ongoing</b></p> <p>Output: Literature review; workshop reports; survey report; final report</p> <p>Outcome: Refinement of scope, development of surveys, early procurement of MaaS solution.</p>	University: Griffith

## Tourism and micro-transport – Griffith

As part of their work on micro transport, Professor Matthew Burke and Dr Abraham Leung presented work on Mobility-as-a-Service and on Covid-19's effects in Australia to the World Conference on Transport Research in Montreal in June 2023. Their research was well-received, and they were invited to participate in new initiatives in public transport planning and in improving transport research methods to work with culturally and socially diverse groups. Matthew and Abraham saw first-hand the development of Montreal's new REM light rail system.

## TAP Sourcing Strategy projects

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 Agreement but are not able to be 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 project component
- 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).

Ten projects were procured through the strategy in 2022–2023. The total value was approximately \$573,000 (ex. GST).



Table 13: TAP Sourcing Strategy projects commencing in 2022–2023

No.	Project	Scope/description	TMR Strategic Objectives	Status at end of 2022–2023 FY	Partners
1	<p><b>Study into the impact of MaaS trials on Public Transport Usage</b></p> <p>Project cost \$45,000</p>	Collection of user consent for the release of data to UQ and related activities to support the retrieval of Go Card trip data from Translink	<p>This project is:</p> <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> <li>• Building prosperity</li> </ul>	<p><b>Completed – December 2022</b></p> <p>Output: A comprehensive system analysis report</p> <p>Outcome: To determine a willingness to pay and to inform policy using evidence based research.</p>	<p>University: UQ</p> <p>TMR: Traanslink</p>
2	<p><b>Research into Best Practice for Accessible Communications</b></p> <p>Project cost: \$80,000</p>	This analysis will be used to identify priority actions to improve accessibility of TMR external communications and build employee capability.	<p>This project is:</p> <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> </ul>	<p><b>Completed – June 2023</b></p> <p>Output: Final evaluation report.</p> <p>Outcomes: Understanding the mobility opportunities that support a physical and psychologically safe and dignified transport experience for people with disability.</p>	<p>University: QUT</p> <p>TMR: Accessible Transport Network – Office of the Director-General</p>
3	<p><b>Advanced Data Evaluation: Methods and Insights (Extension project)</b></p> <p>Project cost: \$100,000</p>	This project seeks to formalise an evaluation process to quantify the impact of traffic related changes, such as signal timing plan changes on corridors across the state, using readily available data.	<p>This project is:</p> <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<p><b>Completed – June 2023</b></p> <p>Output: A comprehensive report and analysis drawn from survey results.</p> <p>Outcome: A better understanding of the motivators and experiences of e-bike riders and owners.</p>	<p>University: QUT</p> <p>TMR: Infrastructure Management and Delivery Division. Engineering &amp; Technology Branch.</p>
4	<p><b>Nudging for change: Design and evaluation of roadside messaging to encourage safer road user behaviours</b></p> <p>Project cost \$50,000</p>	The focus of this TAP proposal is the development of appropriate messages for drivers detected engaging in unsafe behaviours and determining the effectiveness of the solution to positively change unsafe behaviours.	<p>This project is:</p> <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> </ul>	<p><b>Ongoing</b></p> <p>Output: Final report</p> <p>Outcomes: Understanding the opportunities to improve road safety for road users.</p>	<p>University: Griffith</p> <p>TMR: Customer Services, Safety and Regulation, Road Safety Research</p>

No.	Project	Scope/description	TMR Strategic Objectives	Status at end of 2022–2023 FY	Partners
5	<b>Estimation of various road safety metrics and models</b>  <b>Project cost: \$30,000</b>	<p>The objective of this project, in conjunction with previous research undertaken by TMR, is to estimate regression models that relate various safety metrics to traffic volume and for various vehicle and roadway types.</p>	<p>This project is:</p> <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> </ul>	<p><b>Completed – June 2023</b>  Output: Final evaluation report and recommended analysis framework.  Outcomes: The analysis framework will allow for improved decision making around reporting changes on the network for road practitioners and road managers.</p>	<p>University: UQ  TMR: Infrastructure Management and Delivery Division, Engineering and Technology Branch.</p>
6	<b>Examination of injuries experienced by young road users in Queensland</b>  <b>Project cost: \$35,000</b>	<p>This project looks at injury patterns and severity amongst age, mobility, sex, modality, remoteness, socioeconomic status and temporal trends (youth).</p>	<p>This project is:</p> <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Innovative</li> </ul>	<p><b>Completed – July 2022</b>  Output: Development of a project report that contains the insights, data and analysis of the research  Outcomes: Commentary about trends to inform decision making through evidence based research.</p>	<p>University: QUT  TMR: Customer Services, Safety and Regulation, Road Safety Research</p>
7	<b>Cultural inclusion of Indigenous Australians in the provision of public services</b>  <b>Project cost: \$100,000</b>	<p>This project is being undertaken as a baseline research and analysis of the cultural inclusiveness and accessibility of TMR's:</p> <ul style="list-style-type: none"> <li>• transport services</li> <li>• products, information</li> <li>• infrastructure</li> <li>• workplaces and work practices.</li> </ul>	<p>This project is:</p> <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<p><b>Ongoing</b>  Output: Literature &amp; Legislation review; final report  Outcome: Creating pathways for advancing the aspiration of the TMR's Accessibility and Inclusion Strategy, to become a leader in the provision of dignified, accessible, and inclusive transport products, services, information, and infrastructure for all customers.</p>	<p>University: Griffith  TMR: Accessible Transport Network – Office of the Director-General:</p>
8	<b>Road Safety Climate Scale – validation and testing</b>  <b>Project cost \$35,000</b>	<p>Safety culture is a multifaceted concept comprised of norms, values, beliefs and assumptions. In order to support the governments understanding of cultural change this project sought to examine and evaluate road safety initiatives.</p>	<p>This project is:</p> <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> </ul>	<p><b>Completed – March 2023</b>  Output: Final report  Outcome: The provision of a validated measure of safety climate (culture) to understand public perceptions and beliefs about road safety in Queensland</p>	<p>University: Griffith  TMR: Customer Services, Safety and Regulation, Road Safety Research</p>

No.	Project	Scope/description	TMR Strategic Objectives	Status at end of 2022–2023 FY	Partners
9	<b>Vessel waterway management</b>  <b>Project cost \$25,000</b>	Maritime Safety Queensland (MSQ) is seeking to improve safety, access and amenity of a particular waterway for waterway users. A program of initiatives was developed using set questions to address waterways management issues for the waterway and public consultation was undertaken for the proposed options.	This project is: <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> </ul>	<b>Completed – April 2023</b> Output: Final report on findings Outcome: Improved vessel management strategies for Queensland waterways	University: QUT TMR: Maritime Safety Queensland (MSQ)
10	<b>Developing and testing of an Activity SIM prototype for South-East Queensland</b>  <b>Project cost \$58,000</b>	Rapid development of an ActivitySim prototype for SEQ. This will involve transferring an existing ActivitySim model of San Francisco to SEQ, using local model inputs (networks, demographics) and assignment methods from SEQSTM.	This project is: <ul style="list-style-type: none"> <li>• Customer focused</li> <li>• Creating liveable regions and active cities</li> <li>• Innovative</li> <li>• Investing in the future</li> </ul>	<b>Completed – October 2022</b> Output: Development of an end project report that contains the insights, data and analysis of the research Outcomes: The prototype will allow for improved decision making on the network.	University: QUT TMR: Policy, Planning and Investment Division. Transport Strategy and Planning Branch.

# Conclusion and Future directions

## Conclusion

The TAP University Partners continued to support the objectives of the Agreement through the delivery of a positive program of work and showed an understanding of the way transport impacts on peoples' every day lives. They provided TMR with valuable transport, infrastructure, and customer behaviour research insights often balancing the social and behavioural side of research with the technological and commercial side in the socio-technical systems that make up the transport system.

The TAP University Partners continued to support our strong governance focus through their participation on the TAP Steering Group.

The success of the TAP Program is due to the continued efforts of our University Partners, both staff and students, who have been responsible for the day-to-day delivery of the transport research program. This work also reflects the supportive, thoughtful, and positive contributions of TMR staff.

TMR continues to look forward to working with the TAP University Partners under the Agreement and to build capability with other Queensland universities through the new Transport Research program.

Performance highlights include:

- University Partners leveraged and matched more funding than the previous two financial years with over \$2.47M contributed to the program. They did this by encouraging more coordination between agencies and funders dealing with transportation in contemporary ways, across all modes of transport.
- TAP partners increased the number of staff working in transport related courses.
- TAP partners increased the number of transport-related workshops and seminars.

In addition TMR staffs' positive input into the Interim Review, which showed that the University Partners had delivered quality research outcomes, including research and solutions in the areas of:

- transport modelling and planning
- road safety
- transport optimisation
- travel and driver behaviours
- active transport
- transport economic assessments
- accessibility
- environmental waste reduction.

## Project highlights

This year the TAP partners were successful in rolling out:

- The universal design standards of an autonomous people mover
- A tool that improves the use of TMR's digital video data
- Ways to motivate more people to travel by walking and cycling
- Methods and a software tool to analyse travel choice behaviour
- A new travel demand model for South-East Queensland.

Another project investigated the safe and 'green' process for the disposal of derelict ships on Queensland's waterways.

## Future directions

There is an increasing need for interdisciplinary research to address existing and emerging complex transport challenges. Both TMR and our University Partners have a role in developing the capacity of future researchers to work together to address complexity through useful system design and strategic design to strengthen research outcomes.

Much has been said about how we use our research to inform the universities curricula and how to prepare for a future that is going to be challenging and very different than it is today. It is vital that at the broadest level researchers should be making cross-disciplinary research a priority.

Research in the future should be focused on improving the lives of communities in which we live and work and there is an increasing need to see an emphasis on transport research that includes research that improves our environment through emission reduction and new ways of thinking about system design to guarantee access, efficiency and safety.

