

16 May 2022

Ganesh Vengadasalam & Chris Roberts

NSW Branch President & Vice President

Australian Institute of Traffic Planning and Management (AITPM)

**RE: AITPM Young Professional Awards Nomination 2022 – NSW**

Dear Mr Vengadasalam and Mr Roberts,

My name is Edwin Lai and I am excited to put forward my nomination for the AITPM Young Professional Award 2022 for NSW. I am currently a Graduate Transport Engineer at Jacobs in the Sydney Transport Planning team, having recently graduated with a Bachelor of Civil Engineering (Honours Class 1) and a Bachelor of Commerce (Finance) with Distinction from the University of New South Wales (UNSW) in 2020.

**My Journey in Transport**

***University/Undergraduate Experience***

My passion for transport began in 2017 when I participated in the UNSW Engineering Society's Advisian Sustainability Challenge, which tasked students to propose a solution to transition NSW's current fleet of internal combustion engine buses to electric buses. I led a 4-person team to research and ideate a multi-layered strategy to address infrastructure implementation, customer satisfaction and continuous innovation of electric buses. This was a challenging problem due to multiple constraints in the project brief, but it sparked my interest in sustainable transport modes and the integration of infrastructure policy, human-centred design and strategic planning. Despite the steep learning curve, my team was fortunate to receive 1<sup>st</sup> place out of 40 teams and we were invited to present our solution at the Advisian head office.

During university, I had the privilege of receiving the prestigious Australian Government New Colombo Plan (NCP) Scholarship, which supported me to study and work in Korea, Singapore and Japan for 12 months from 2017-2018. My exchange semester at the Korea Advanced Institute of Science and Technology (KAIST) in Korea, named as Asia's most innovative university, gave me the opportunity to experience first-hand of their green transportation policies and sustainable infrastructure design. I became fascinated at how data and technology influenced the planning of transport systems when undertaking a research project with KAIST's Transportation Research and Urban Engineering Laboratory.

As part of the NCP Scholarship Program, I also had the opportunity to intern at Arup in Singapore for 6 months in their Transport & Resources group. This was a turning point in my early career as it was where I first heard of the field of Transport Planning and fell in love with it. I learnt directly from industry leaders while working on projects such as the Thomson-East Coast MRT Line, Sentosa 2030 Master Plan and Changi Airport Terminal 5, all of which taught me the importance of placemaking, integrated planning and sustainable design. I also contributed to a research paper titled "Walkability in the Tropics", which involved a desktop study and analysing travel data to improve walkability in seven tropical Asian cities.

Upon returning to Australia, I wanted to continue deepening my transport planning knowledge so I took as many relevant university courses and professional electives as possible. One of these courses was "Civil Engineering Practice", a project-based course exploring the role of engineers in planning, designing and managing the transport system. This was undoubtedly one of the most interesting courses I had ever completed as I learnt how to use Aimsun and SIDRA for network design, signal optimisation and public transport planning. I was fortunate to receive First in Course (out of 389 students) with a mark of 100. I also received High Distinctions for other transport-related courses including "Urban Transport Planning Practice" and "Transport Systems – Network Analysis".

My strong desire to gain further industry experience in transport planning led me to an internship in AECOM's Transport Advisory team. In this role, I gained a better understanding of transport engineering, planning and modelling through major infrastructure projects. A highlight was working on the South East Sydney Transport Strategy, which involved strategic planning on future transport needs in the region. It was challenging at first as I was exposed to many new areas, including analysing thousands of data points from Transport Performance and Analytics and visualising the findings through ArcGIS. However, it was

instrumental in teaching me the importance of considering the end-user at the heart of each step. I also had the privilege to receive an Encore Award from the Project Manager for having a diligent work ethic and delivering key project outputs within tight deadlines.

In my final year of studies, I completed my honours thesis on the Greater Sydney rail freight network as I wanted to explore a different side of transport planning. My thesis consisted of a feasibility study on creating a major freight and logistics precinct in Western Sydney to take advantage of the future Western Sydney Airport (WSA)'s 24/7 operations and support the growing freight task. The study focused on the strategic corridor between the WSA and Port Botany, where I analysed existing shared-use rail corridors, dedicated freight corridors and intermodal terminals in Greater Sydney in relation to capacity constraints and freight forecasts. The results indicated a combination of track duplication, passing loops and operational enhancements were required to increase existing network capacity. A new dedicated freight corridor and new intermodal terminals close to the WSA were also found to be necessary to support logistics operations. My thesis achieved a High Distinction and motivated me to continue researching about ways to improve the transport network to move people and goods more efficiently.

### ***Graduate Transport Engineer Experience***

My university and undergraduate experiences led to my current role as a Graduate Transport Engineer at Jacobs. I have had the opportunity to work on a diverse range of transport planning, engineering and modelling projects across NSW and Australia, learning from some of the best in the industry. I feel honoured being able to work closely with government clients, industry stakeholders and local residents to shape the future of transport in our country while knowing it will directly improve the liveability and connectivity of communities. I have come to appreciate the importance of collaboration between engineers, planners, modellers, architects and designers in creating appropriate solutions for all end-users.

One of my proudest achievements so far has been working on multiple projects within Victoria's Western Rail Plan (WRP) in a COVID-19 environment, including Geelong Fast Rail. This required multidisciplinary teams working remotely across Australia and New Zealand to deliver tasks within tight deadlines while meeting dynamic client expectations. In addition, my key achievements to date at Jacobs include:

- Leading a team of 5 on the development of an Integrated Transport Plan for a major rail project to identify movement outcomes and opportunities to improve precinct access for over 10 stations.
- Static pedestrian modelling of 8 stations to understand design capacities and performance of station infrastructure due to use of new rolling stock and service plans.
- Microsimulation using Aimsun and intersection modelling using SIDRA to determine traffic impacts due to proposed changes in network conditions.
- Undertaking Traffic Impact Assessments on a range of small to large infrastructure projects, identifying suitable traffic calming measures for proposed impacts.
- Receiving 4 internal staff awards for positive client feedback, delivering high-quality projects well ahead of schedule and having a can-do attitude.

Aside from projects, I have also had the opportunity to work directly with the Technical Director of Future Mobility to grow the Future Mobility business area involving emerging technologies such as Mobility as a Service (MaaS), Connected and Autonomous Vehicles (CAVs) and Electric Vehicles (EVs). I have personally focused on building capability in MaaS so far, including co-authoring a paper with the Technical Director titled "Physical Infrastructure Requirements of MaaS: Lessons from Europe" in collaboration with a major Australian transport authority. This paper was recently accepted for presentation at two upcoming conferences: ITS Mobility 2022 in Sydney (15-16 June) and ITS Australia Summit 2022 in Brisbane (16-18 August). I would love to contribute towards the latest developments in the field of Future Mobility as I am very excited about the potential for more sustainable and personalised modes of transport that can meet the needs of a rapidly changing society.

### **Benefits Expected from Attending the National Conference**

I was fortunate enough to attend the AITPM 2021 Online Conference Series, which was my first industry conference. This exposed me to the broad spectrum of transport planning where I particularly liked the presentations on Micromobility and Transport Planning for the Future. I believe it is very important to continually innovate the way we consider transport infrastructure and plan everything with the end-users

in mind. Although the conference was virtual, I thoroughly enjoyed the opportunity to learn from transport professionals and ask thought-provoking questions on potential issues and opportunities.

With the 2022 National Conference being held in-person in Sydney for the first time after two years of COVID-19, I am sure many others like myself cannot wait to get back to meeting and connecting with everyone in person. I am very excited at the chance to meet industry experts and share our unique ideas during the conference on the themes of Climate, Communities and Inclusivity. While all the topics are fascinating, I am especially interested in sustainable planning and finding solutions to decarbonise the transport sector, while ensuring the network is resilient and adaptable. I would like to meet thought leaders in this space and potentially work together to find innovative ways to minimise our carbon footprint.

By experiencing the 2022 National Conference first-hand, I hope to encourage other young professionals to engage more with AITPM and also attend future National Conferences by sharing my stories. I believe attending the conference would broaden my perspectives and inspire me to create meaningful and creative solutions to solve the transport issues of today. Now more than ever, I cherish the relationships I make in-person and hope to make lasting connections while bringing together people with similar goals and interests. I also wish to undertake a postgraduate degree in transport in the next five years, so would like to keep learning about the latest industry trends and gain a deeper understanding of critical issues our communities face.

### **Young Professional Representative on the NSW Branch Committee**

It would be an honour to be the Young Professional Representative on the NSW Branch Committee. I would love to continue the great work of the NSW Branch Committee while contributing innovative ideas on how we can grow capability, encourage the exchange of ideas and facilitate greater collaboration across the industry. As a Young Professional Representative, one of my key goals would be to strengthen AITPM's engagement with university students in NSW as I hope to inspire the next generation of leaders to become engineers, especially within the transport industry.

I am very passionate about giving a voice to young professionals and this has been demonstrated through my contributions in and out of the workplace. I took the initiative to join the AITPM NSW Young Professional's Network (YPN) Committee in June 2021 as I wanted to help young professionals learn more about the transport industry through engaging events. I have organised social events (2021 End of Year Drinks and 2022 Meet and Greet) to better connect young professionals and am currently organising a technical event titled "Data Innovations in Transport" with speakers from academia and industry. I also recently volunteered to be part of the 2022 National Conference organisation committee as I would like to make this event an unforgettable experience for everyone.

As a Digital Events Director at the ASEAN-Australia Strategic Youth Partnership, I co-lead a team of 8 to organise and deliver social and professional events for thousands of young people across Southeast Asia and Australia. This role has enabled me to become more open-minded and improve my cross-cultural collaboration, which are key transferable skills that I can bring to AITPM to make this peak body more inclusive and diverse than ever before. I had the privilege of receiving the 2021 Volunteer of the Year and 2021 Team of the Year awards, a testament to my passion for youth empowerment.

At Jacobs, I am currently the Co-Chair of the NSW University Engagement Committee and a Professional Development Lead in the ANZ Graduate Committee. To date, I have successfully organised and delivered 7 events to hundreds of graduates and interns while creating a welcoming environment where everyone can have fun and meet others in the industry. I have also raised awareness of the transport sector to university students of all backgrounds through industry projects, networking events and careers fairs. These experiences would allow me to contribute to AITPM's vision of providing leadership to the transport industry and give back to a community that has been pivotal to my career so far.

Thank you for your time and consideration. Please do not hesitate to contact me should you require further information.

Yours sincerely,

Edwin Lai

Graduate Transport Engineer