

**Submission  
No 9**

## **EMISSION FREE MODES OF PUBLIC TRANSPORT**

**Name:** Mr John Morandini

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1<sup>st</sup> July 2022

Mr Tim James,  
Legislative Assembly Member, and  
Chair, NSW Legislative Assembly Committee on Transport and Infrastructure

Dear Mr James,

I refer to the Inquiry into Emission Free Modes of Public Transport, by the NSW Legislative Assembly Committee on Transport and Infrastructure.

The Inquiry brings the opportunity to improve strategic decision-making in this crucially important area and I trust it will consider the following perspectives.

In my view there are two fundamental matters that stand out:

- (1) The extraordinary expectation that the electricity grid can grow quickly and massively, to electrify cars, buses, etc., when more diversified strategies would have important benefits including greater autonomy and resilience, and where options like green hydrogen and green ammonia are potentially feasible.

Green hydrogen is hydrogen produced from renewable sources. It is stored and transported in bulk as a gas and can either be used in hydrogen fuel cell electric motors, or liquefied at high pressure and low temperature, and used in hydrogen-internal combustion engines. Both hydrogen options work off grid and potentially have a wide range of transport applications, including in public transport where hydrogen buses are already in service.

Ammonia, traditionally produced in large quantities from fossil fuels, is trucked and shipped widely and used as a fertiliser in agriculture. A toxic gas of chemically bonded nitrogen and hydrogen, ammonia is liquified at low-pressure and can then be transported, stored and used when and where needed. Like green hydrogen, green ammonia is made from renewables and works off grid. Much work is under way around the world into large scale applications of ammonia in the transport sector and for electricity generation.

- (2) The other is the pressing need to improve the efficiency and sustainability of road and transport operations right across our urban areas, otherwise we will continue to waste precious energy resources. And because the transition to a low emissions future presents unprecedented challenges, it would be a good idea to manage demand more proactively into the future than in the past.

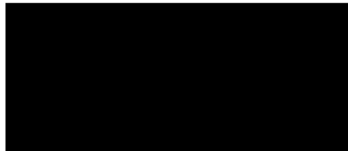
Sydney is a classic case of a car dependent city, with around 80% of all person-kilometres travelled by car. This situation can be addressed to reduce the inherent traffic congestion and energy inefficiencies, by setting public transport and cities strategies that are economically, socially and environmentally doable, and relevant to our times, as explained in the attachment.

Attention to these matters would contribute to making low emissions public transport more feasible into the long term and to putting Sydney and NSW on a more sustainable path.

I raise the ideas following a career of more than 40 years in NSW public agencies, including key roles in planning and implementing Sydney's Olympic transport strategy.

I have no pecuniary interests in relation to this Inquiry or the matters in my submission and am happy to answer any questions arising.

Yours sincerely,



John Morandini

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## ***Improving NSW's Road and Transport Strategies***

### KEY POINTS

**Road-based travel outstrips all other means of travel across NSW, including in Sydney.**

**And like growing cities around the world, Sydney suffers seriously from ever-rising traffic congestion, a product of high car use, an unsustainable path, and a critical challenge.**

**Worldwide, travel delays per person are lower in smaller than in larger cities.**

**Delays are also lower in cities with more public transport services than in cities of similar size with less public transport. So, a more sustainable future would evolve if:**

- 1. Public transport is boosted widely and quickly across Sydney, which can be done by operating the urban road system more productively with a remastered bus network; and**
- 2. More priority is given to decentralising urban growth, to take pressure off Sydney, including through improved aviation, road and rail schemes for regional NSW.**

### CURRENT POSITION

Massive infrastructure projects continue to be rolled out in Sydney, including motorway and railway schemes, a second international airport and light-rail lines.

The main effect will be to propel our capital to megacity proportions, shaped by similar infrastructure investment priorities that have Australians residing much more in very large than in smaller cities by international comparison.

Other than Sydney, NSW cities are comparatively small, with the biggest of them (Newcastle, Wollongong, Central Coast, Blue Mountains, and the Southern Highlands) located close to Sydney.

In Sydney, public transport has dominated in and around the central business district. But of all the travel throughout Sydney (in person-kilometres), roughly 80% has been by car, 15% public transport, and 5% other modes, including walk and cycle. Across smaller cities, the car share well exceeds 90%.

During the pandemic, the car share is even higher than normal, public transport's share is lower, and total travel volumes have fluctuated.

Working from home, online shopping and other factors have altered travel patterns and raised more questions about the prevailing capital-city centric focus.

Through regional NSW, upgrading of the Hume Highway (Sydney-Melbourne) and Pacific Highway (Sydney-Brisbane) are virtually complete following many decades of staged construction.

Similar long-term endeavours along other highways, including the Great Western Highway (Sydney-Bathurst) and the Princes Highway (Sydney-NSW far south coast) are under way.

The inland rail line (Melbourne-Brisbane through NSW) is being built.

However, the four main rail lines out of Sydney into regional NSW (and beyond) encounter mountainous terrain and outdated track alignments. Higher speed rail alternatives are at an early stage of consideration.

Many NSW regional towns and cities have air transport links to Sydney (a few have interstate services), all disrupted through the pandemic. Air fares are considerably higher than for comparable capital-city based flights to interstate destinations.

#### BOOSTING SYDNEY'S PUBLIC TRANSPORT WIDELY AND QUICKLY

Generally, bus service upgrades and walking and cycling get less attention, less priority and much less funding than the major infrastructure programs, and the potential for buses to provide sustainable, whole-of-city road and transport solutions remains largely untapped.

Buses account for less than 1% of all road-vehicle-kilometres travelled across all our cities, highlighting a game-changing opportunity, to save road space, increase road productivity, enable many more people to leave their cars behind, and trigger a traffic-shrinking effect.

The Sydney 2000 Olympics (albeit short-lived) demonstrated this effect.

Sydney focused on getting the best out of its existing road and transport infrastructure. Thousands of buses were hired from other towns and cities, widely boosting public transport and helping to reduce traffic congestion, while more people than ever travelled across Sydney during that time.

Many questioned "Please, can this be done all the time?" It wasn't.

The point is any city can permanently replicate the traffic-shrinking effect by design, and readily increase public transport capacity at an affordable cost, with a remastered bus network, by comprehensively increasing bus fleets, and then:

- Raising service levels on existing bus routes; and
- Ensuring that all business centres and busy corridors are well served by buses, with high-frequency services; and
- Overlaying a set of cross-city bus routes (crisscrossing the whole urban area), operating on the main road system, with limited-stops, frequent, and interconnected services, to create an easy-to-understand express bus system.

Cross-city buses would help deliver a decentralised, main road-based service layout, with high-quality services, and provide a widely available alternative to using cars so much.

New bus-stops and bus-stopping bays can be built off-lane where practical, to keep through-traffic flowing past the bus-stops.

The traffic-shrinking effect would reduce the need for new bus-only lanes (other than around bus-stops), or other major infrastructure, while the bus sector, including bus manufacturing, operations, and maintenance, would be invigorated.

New or expanded bus depots would be required. Low-emission buses are on the way to being adopted, using energy derived from renewable sources.

**All this is doable and is a positive way to increase road productivity and sustainability, whereas business-as-usual approaches, opting for combinations of new road and rail infrastructure, fail over and over to reverse persistently rising car dependence and traffic congestion (because the main effect of new infrastructure is to stimulate growth).**

Firstly, a concept development phase is needed, to include designing new bus routes, quantifying bus service level upgrades, surveying demand for mode-shifting, estimating costs, modelling traffic-effects, preparing public communications plans, and consulting with industry and community.

Next, business cases need to compare this remastered bus network concept with major road and rail proposals, on sustainability, value for money, and other economic, social and environmental criteria, and prioritise funding accordingly.

This bus concept has great potential to rank favourably.

Prioritising walking and cycling schemes would further improve sustainability.

Once the focus is about optimising road productivity (i.e., getting the most out of the road system first and in choosing surer ways of reducing traffic congestion in the foreseeable future), then major infrastructure questions become less imperative.

By so doing, Sydney can turn its unenviable position on traffic into a showcase, raising the prospect of other cities following suit, and taking its Olympic transport success one step further, into the realm of more liveable cities, all the time.

Remastered bus networks are applicable in regional towns and cities too, to get the best from their road systems first and buy time to do costly infrastructure works later, if required.

## STIMULATING GROWTH IN NSW REGIONAL TOWNS AND CITIES

Getting the most out of our road system could potentially achieve net savings in public funding, beyond moneys needed to remaster buses.

Such savings could be applied to boosting regional economic growth, including regional road, rail and air transport upgrades, so easing growth pressure on Sydney.

Better air transport services can play a crucial role, to bring high-quality connectivity sooner rather than later, whereas upgrading highways and railways are long-term propositions, even with accelerated funding.

To improve air services, larger regional airports can be modernised to handle domestic passenger jets, and services apportioned at one airline per route, to enable higher volume operations, better economies of scale and lower air fares to Sydney.

Improved interurban bus and coach links could also contribute to better connectivity, especially where quality road infrastructure exists.