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Brisbane Metro
Brisbane City Council
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Submitted via email: metro@brisbane.qld.gov.au

Dear Sir/Madam

Brisbane Metro: Draft Design Report

Engineers Australia and its members have an interest in improving the effectiveness and efficiency in the planning, construction and ongoing management of the state's assets. We are pleased to be able to contribute to the Brisbane City Council (BCC) *Draft Design Report (DDR) for consultation*.

About Engineers Australia

Engineers Australia is the peak body for the engineering profession. We are a member-based professional association with approximately 100,000 individual members. Established in 1919, Engineers Australia is a not-for-profit organisation, constituted by Royal Charter to advance the science and practice of engineering for the benefit of the community.

Brisbane Metro: Draft Design Report (DDR) – Consultation Comments

An initial review of the Key Findings (KF) section of that DDR has identified the following observations and comments.

1. Project Governance

1.1 Project Capex is estimated as $944m (P9 of KF) and BCC is committed to providing 2/3 of the project cost (KF Foreword by Lord Mayor, P3). With $300m now committed by Federal Government, albeit likely with conditions yet to be fully clarified, the project capex now appears to be funded with State Government contribution limited to donation of land for the new bus depot and through the Cultural Centre precinct. However, no significant reference is made in the DDR Key Findings to the Opex (Operational costs) which will be recurrent and which typically are significantly greater over the full life cycle of the project.

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1.2 Much of the existing infrastructure necessary to be modified is under the control of the State Government and the DDR Key Findings do not appropriately reflect this aspect and its implications for the necessary project approvals prior to moving to project delivery phase.

1.3 All public transport services in SEQ are currently provided through operator contracts managed on behalf of the state by Translink, as the State Government's Authority for the provision of integrated public transport. Apart from a cursory reference to Translink on P36 of DDR KF report, the draft report implies BCC has full control over the provision of the proposed services. Similarly, much of the necessary infrastructure and associated systems are maintained by DTMR on behalf of the State Government. No significant reference is made to State Government as a key stakeholder in the KF section of the DDR, or to the Opex costs associated with the operation of the Metro services post-commissioning.

2. Project Planning

2.1 The proposed Brisbane Metro will not operate in isolation. It must be planned and operated as part of the public transport system of SEQ. As such, its planning must integrate with the other transport network elements within the planning instruments referenced on P20 of the DDR KF report. However, from reading the KF report you would think that only the bus system is suffering from capacity and congestion challenges. The Connecting Brisbane report is referenced (P20), and yet without the Cross River Rail Project proceeding then the Brisbane Metro project will not realise its full potential. This dependency is not appropriately reflected within the DDR KF's and some additional discussion on how services and interchanges would integrate would demonstrate an appreciation of this important inter-dependency.

2.2 Constraints affecting the current bus operations are in summary,

- Mixing of traffic and buses at the signalised intersections each end of Victoria Bridge, which has necessitated complex and inefficient signal phasing;
- Too many peak period buses (due to capacity/vehicle & increasing patronage);
- Inadequate pick-up & set-down kerb space in CBD (due to number of vehicles);
- Inadequate capacity in infrastructure 'pinch points';
- Shared road space with private vehicles & pedestrians affecting reliability;
- Boarding and ticketing processes slowing dwell times.

BCC is congratulated for tackling these constraints through the Brisbane Metro concept by proposing to modify existing infrastructure (particularly Cultural Centre precinct, Adelaide Street and Victoria Bridge), removing general traffic from Victoria Bridge, and shifting bus operational procedures to those already adopted by higher capacity mass transit vehicles, eg multiple door loading, off-vehicle ticketing, advanced passenger information systems, etc. However, the KF report does not discuss planning for other system 'pinch points' (such as at Woolloongabba

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Junction) or associated staffing practices typically associated with higher capacity mass transit systems, such as platform staff at key interchange nodes.

2.3 The planned traffic alterations associated with the removal of cars from Victoria Bridge will provide significant reduction in bus congestion. The implications for vehicle traffic movement in and around the Cultural Centre precinct, South Brisbane and alternate access routes to the Brisbane CBD and surrounds need further consideration. It is understood the State government, through TMR is to commence an extensive transport study over West End and South Brisbane based on changes to Victoria Bridge. Recommendations of this study should be delivered in concert with the Metro proposal.

2.4 The KF report raises the issue of 'Hybrid Operations' (P36) as "evolving the bus network", identifying the roles of feeder services and trunk services, but should clarify that this will involve passengers transferring from one service to another within the same journey. Whilst this is a necessary outcome in efficient service planning, and is already adopted in most major mass transport systems worldwide, it is not confined merely to bus travel and its real benefits are only realised when all modes within the transport system are planned cohesively. Trunk services are typically characterised by longer route distances and higher occupancy rates/vehicle.

2.5 In addition to the new 'Hybrid Operations' discussion, some further comment within the DDR would be useful for the anticipated implications for existing bus service operations and operational efficiency when mixed types of bus vehicles share the same infrastructure and stops.

2.6 The proposed 24m bi-articulated buses are quoted as having a passenger capacity of up to 150 passengers (KF P33). However, it is not clear how this capacity is made up of seating capacity vs standing capacity, though it is understood similar buses operating in the northern hemisphere require up to 60-70% of passengers to stand. It is not clear whether this carrying configuration includes provision for people with a disability. This is typically a key operational characteristic of 'Metro' services since journey lengths are typically very short and seating configuration will also influence dwell times at key nodes. This should be clarified at this time, or at least some discussion around this design parameter should be incorporated into the DDR, especially for passenger journeys with longer journey travel times. Similarly, the choice of vehicle traction technology, and the planning impacts on infrastructure due to the increased turning circle patterns of the longer vehicles should be discussed in more detail, particularly given the cost on the infrastructure to facilitate the 3 section bus.

2.7 The finalisation of Metro vehicle parameters will also have implications for vertical grade designs adopted. Technical specification of existing northern hemisphere bi-articulated vehicles are understood to have a 'startability' limit of 8%, which would have implications for vertical road gradient alignments on Victoria Bridge in the vicinity of the Cultural Centre. Given the constraints of in the Cultural Centre precinct, this operational requirement should also be clarified.

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3. Project Integration

3.1 The DDR focuses too heavily on the Brisbane Metro as a stand-alone transport system rather than recognising it as an integral part of the overall SEQ transport system. Whilst to some extent this is understandable, as an initiative primarily driven by BCC, this will result in confusion for the travelling public. The ability to transfer seamlessly between modes and/or services at key interchanges will become a key characteristic of this project, as it is with any other Metro system worldwide.

3.2 An example of the missed opportunity for discussing better integration is the 'Cultural Centre Station' cross-section (KF P26) and the associated aerial photo (KF P27) which highlights the newly created proximity to South Brisbane Rail station, and yet does not identify dedicated passenger pathways between these two nodes. When a similar opportunity was identified in 2002 with the busway station at South Bank and the Vulture Street (as it was then known) Rail Station, they were subsequently integrated and the rail station name changed to Southbank to indicate that this was in fact a single interchange within the transport system, rather than two disconnected transport locations. This has significant appeal to travelling public and encourages service transfers at this node.

3.3 It is likely that adopting the terminology for the proposed Metro stops as 'Stations' may create some confusion amongst passengers, since historically that term has been used for railway stations within the Public Transport system. It is suggested that a new hierarchy of terminology should be adopted with the introduction of the Metro scheme, so that 'Interchanges' identify locations where mode transfers are possible, bus stops and rail stations maintain their historical terminology to avoid introducing confusion, and new 'Metro stops' are introduced where different passenger operational practices are adopted (eg ticketing, boarding, etc) to differentiate from traditional Bus Stops. This approach would further assist with the integration of the Metro into the overall SEQ public transport system.

3.4 It is vital to include key Queensland Government Departments and Agencies in the consultation process and in all the design phases as major stakeholders. There will be ongoing requirements to effectively communicate with the Agencies delivering other major transport infrastructure such as the Cross River Rail etc in order to maximise the success of the project. Furthermore project such as Sydney's George St Light Rail retro-fitting as a good example of how NOT to manage a construction project.

4. Project Impacts

4.1 The discussion on the implications of constructing part of the new Cultural Centre Station beneath the existing rail corridor seems somewhat over-simplified (KF P26, P27, P43 & P50). The performance of the suburban rail system, particularly in peak periods, is extremely sensitive to any disruptions in this vicinity, as was demonstrated when the track duplication work in this area was undertaken in early

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1990's. Some recognition of this sensitivity would assist in the future impacts planning for Brisbane Metro works.

4.2 Recognition of the Heritage Listing of South Brisbane railway station would also assist in easing any concerns of the public regarding construction implications of proposed works.

4.3 The short-term implications of new tunnelling under Adelaide Street (presumably by cut and cover) cannot be under-estimated, as was the case in Sydney with the George Street Light Rail retro-fitting (which is on-going). It is suggested that some additional discussion in the DDR should be included to appease any concerns regarding the impacts from such a major reconstruction of one of our key CBD streetscapes, not to mention its key role within the current public transport system infrastructure.

4.4 Whilst Brisbane Metro "can be delivered with significantly fewer impacts than a major new dedicated transport corridor" (KF P47), it should also be acknowledged that by staying within the existing busway corridor it will not open any new public transport catchments. Unless there is future planning for increasing residential densities and commercial activation around the major Metro Stops, and/or interchanges as part of an integrated land use plan, then Metro will only attract additional passengers to the public transport system through improvements to current travel times once they have transferred from the feeder services. It would be useful to include some discussion around plans for integrated land use plans above/adjacent to Metro nodes.

Summary

In summary, there remain a number of project issues to be addressed.

Consequently, it is considered at this time the Draft Design Report could only be considered a Concept Design Report. Further, it is considered that the community could not reasonably be considered to effectively comment on the project with the level of parameters currently unresolved and so it is appropriate that the community consultation processes should be ongoing.

Before progressing to a Reference Design, it is considered:

- Additional service integration design is necessary with the overall public Transport system;
- Additional vehicle design is required to establish operational parameters affecting infrastructure;
- Additional construction risk mitigation considerations are undertaken, particularly those impacting on the passenger rail services;
- Additional consultation and project agreements are reached with State Government; and
- Additional infrastructure integration opportunities are explored for land use planning, interchange planning, and private sector participation in project outcomes.

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Conclusion

This submission has been prepared by Engineers Australia with support from representatives from the organisation's relevant technical committees (particularly Transport Australia society).

Engineers contribute significantly to the community in the regulation, planning, design, construction, maintenance, operation, monitoring, management and assessment of resources and infrastructure. Engineers provide these services while meeting clear ethical responsibilities to the Australian community.

Engineers Australia thanks Brisbane City Council for the opportunity to provide input to the *Brisbane Metro: Draft Design Report.*

We look forward to continuing to work with state and federal governments and council in the future to address the transport challenges facing Brisbane.

Yours sincerely

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