

Case Study: Brisbane City Council's Brisbane Metro project

Delivering an inclusive public transport solution



Highlights at a glance

Brisbane City Council (Council) is committed to ensuring Brisbane is an [accessible city](#) for everyone by providing equitable high-quality public transport. Through the \$1.7 billion [Brisbane Metro](#) project, Council has worked collaboratively with the accessibility sector through a unique co-design process. Formed in 2019, the Brisbane Metro Accessibility Working Group (BM-AWG) includes accessibility advocates and residents with lived experience and interests in mobility, disability services and hearing and sensory impairments. The group provides strategic advice, informing accessibility outcomes for the metro vehicle design, infrastructure designs and customer experience.

A key part of Brisbane Metro is the introduction of a [new fleet](#) of 60 metros. Through a co-design process with accessibility representatives, the vehicle design not only exceeds compliance with relevant accessibility acts and standards but reflects the diverse needs and feedback of the community. A key objective was to evolve the vehicle's accessibility design through two key stages:

Stage 1: 3D model / mock-up – before finalising the vehicle design, the BM-AWG reviewed and tested both virtual 3D model and life-sized vehicle mock-ups. During this process, the BM-AWG provided feedback that structurally changed the vehicle design.

Stage 2: pilot metro testing – in June 2022, the BM-AWG completed onboard testing of the [pilot metro](#), identifying further design amendments that will be implemented across the metro fleet (60 vehicles).

Outcomes:

1. Providing independence – co-located mobility bays

- Feedback: People with accessibility needs shared with us that they are often unable to travel with friends on buses if mobility aid bays are already in use and must wait for the next available service.
- Outcome: Co-location of three mobility bays in the first passenger compartment, requiring a structural redesign of the entire vehicle to remove the fourth passenger door. This enables people with accessibility needs to travel together and provides more space for their support personnel.

2. Enhancing dignity – large mobility bays

- Feedback: When using mobility devices, people with accessibility needs shared that they feel stressed and anxious navigating into mobility bays in front of a vehicle full of passengers.
- Outcome: Increased the size of mobility bays (beyond DSAPT requirements) to provide more space and flexibility for people using mobility devices to manoeuvre in and out of mobility bays.

3. Creating choices – options providing equity

- Feedback: People with accessibility requirements are diverse, have varying needs and physical abilities, and there is a need to provide options to cater for these diverse needs.
- Outcome: Positioning the mobility bays on both the left- and right-hand sides of the vehicle, and varying railing positions and help points at different heights to provide options for people with various dexterity abilities.

More than 45 vehicle design changes implemented following engagement.

Takeaways:

1. Co-design process is a best practice approach to ensure people with lived experience inform outcomes that improve their experience on public transport.
2. Early engagement with key stakeholders enables meaningful feedback to be implemented early to achieve improved long-term design outcomes.
3. Creating long-term relationships with key stakeholders delivers outcomes that better reflect the diverse communities that governments represent.

Key search words: Public, local government (transport), to design an accessible public transport vehicle, co-design, collaborate

1.0 Objectives

Engagement

Council collaborates with key stakeholders across the public transport and accessibility sectors to ensure Brisbane Metro is an inclusive and accessible public transport option. At a minimum, Council ensured the project complied with the *Disability Discrimination Act 1992* (Cth) and the relevant Disability Standards under the Act. The introduction of Brisbane Metro also provided an opportunity to exceed compliance and better reflect the needs of the accessibility community as informed by the community.

The BM-AWG is a diverse representation of accessibility advocates and people with lived experience, including representatives from:

- Aged and Disability Advocacy Australia
- Better Hearing Australia
- CPL – Choice Passion Life
- Department of Transport and Main Roads
- Federation University research participants
- Functional Neurological Disorders Living
- MS – Multiple Sclerosis Queensland
- Spinal Life Australia
- Translink
- Vision Australia.

Since 2019, the BM-AWG has met more than 28 times and completed 18 in-person testing days, providing feedback on the metro vehicle design, infrastructure designs and overall customer experience.

Objectives

The key objective of forming the BM-AWG was to provide people with lived experience and advocates the opportunity to share their feedback, insights and ultimately evolve the project's design outcomes. The guiding principles were to provide greater independence, dignity and choices for people with accessibility needs when using public transport.

Organisation: Brisbane City Council

Sector: Public

Project: Brisbane Metro

Project overview: Introduction of 60 electric metros, operating along dedicated busways.

Key accessibility features:

- three large mobility aid bays
- automated on-request ramp
- low-floor design from front to rear for accessible boarding
- 10 priority seats
- next stop audio and hearing loops.

Completion: Co-design process is ongoing with metro services expected to commence in late 2024.

Innovation: Collaborative co-design process with the accessibility sector to help design the Australian-first metro vehicle.

Following the Queensland Government's New Generation Rollingstock trains' compliance review, 24 recommendations were provided. Some of these recommendations helped inform BM-AWG objectives, including:

- Provide online and in-person opportunities for members to provide feedback as part of a collaborative co-design process to inform project outcomes
- Enable members to influence design outcomes through early engagement to provide greater independence, dignity and choice
- Report on feedback outcomes quarterly and proactively communicate actions to address feedback, timings and reasoning if feedback couldn't be implemented
- Create a safe and open environment to encourage collaboration, share lived experiences and provide best practice accessibility advice
- Undertake consultation if the project proposes to rely on equivalent access in accordance with clause 33.4 of the Disability Standards for Accessible Public Transport 2002 (Cth).

Scope

Stage one: vehicle 3D model / life-sized timber mock-up

To develop and refine the pilot metro vehicle design before the manufacturing process commenced, the BM-AWG reviewed and tested a virtual 3D model, to-scale footprint and life-sized physical mock-up of the front compartment.

Phase 1 – consultation on initial vehicle design	Used a virtual 3D model to consult on internal vehicle layout to inform design changes
Phase 1a – floor and door layout design reviews	Redesign floor layout through BM-AWG consultation
Phase 2 – floor taping exercise	Test manoeuvrability via floor taping exercise
Phase 3 – Federation University study	Test manoeuvrability of 35 mobility devices
Phase 4 – test to-scale interior mock-up	Test to-scale interior mock-up of first passenger compartment

Stage two: pilot metro testing

In early 2022, Council received a [pilot metro](#) to undertake testing and identify design amendments to implement across the metro fleet.

Phase 5 – onboard pilot metro testing	In-person onboard vehicle testing
Phase 6 – onboard automatic ramp testing	Undertake equivalent access process to assess redesigned ramp

Supporting decision-making

The BM-AWG played a critical role in decision-making by:

- Testing virtual 3D designs and a life-sized physical mock-up of the metro vehicle, structurally evolving the initial design
- Onboard testing of the pilot metro identifying further design enhancements that were implemented across the metro fleet.

Communication materials

Project information and testing outcomes were shared with members in an accessible format to enable inclusive and meaningful engagement, including:

- 3D vehicle model to facilitate engagement
- Accessibility training for presenters to meet the diverse needs of members
- Presentations reviewed by the project's accessibility advisor and provided in advance to members.

2.0 Methodology

Governance and engagement approach

The project has a governance framework, guiding how project decisions are made. Once feedback provided by the BM-AWG is endorsed by the Vehicle Project Manager, these recommendations are provided to key stakeholders for approval. Once approved, these are shared with the manufacturer for actioning. The BM-AWG is chaired by Brisbane Metro's Deputy Project Director and facilitated by the project's Governance and Strategy Manager. Project Managers who are responsible for key project deliverables attend the sessions, alongside our accessibility advisor. Council also collaborates with Federation University who provide research and technical insights.

	Phase 1 <i>Consultation on initial vehicle design</i>	Phase 1a <i>Review updated floor and door layout design</i>	Phase 2 <i>Test manoeuvrability via floor taping exercise</i>	Phase 3 <i>Federation University study</i>
Timing	2019–2020	July 2020	September 2020	September 2020
Objective(s)	Consult on the internal vehicle layout, including mobility bays	Identify layout that accommodates required mobility bays / considerations identified in Phase 1	Test manoeuvrability of the vehicle design using mobility devices	Test 35 different mobility aid devices to assess manoeuvrability before finalising vehicle design
Methodology	<ul style="list-style-type: none"> • Use a virtual 3D model to consult on internal vehicle layout • Undertake optioneering / discuss negotiables and non-negotiables • Collaborate with manufacturer on design changes 	<ul style="list-style-type: none"> • Present new layout to the BM-AWG to review updated design • Capture layout redesign requirements for manufacturer 	<ul style="list-style-type: none"> • Test layout using a taped outline replicating the front passenger compartment • Test manoeuvrability and usability of mobility bays 	<ul style="list-style-type: none"> • Computerised assessment of 35 different in-market mobility devices
Key outcomes	<ul style="list-style-type: none"> • Increase mobility aid bays from two to three • Increase priority seats from 8 to 10 • Provide an on-demand automatic ramp at the first passenger door 	<ul style="list-style-type: none"> • Vehicle exterior and interior redesigned to remove fourth passenger door • Proposed design changes from phase 1 implemented • Confirm location of mobility bays / co-locate in first compartment 	<ul style="list-style-type: none"> • Design modifications to remove obstructions in first compartment 	<ul style="list-style-type: none"> • Provide assurance to inform final design

	Phase 4 <i>Testing of interior mock-up (to-scale) of first compartment</i>	Phase 5 <i>Onboard pilot metro testing</i>	Phase 6 <i>Onboard automatic ramp testing (equivalent access process)</i>
Timing	January 2021	June 2022	February 2023
Objective(s)	Test proposed layout of first compartment and capture feedback to inform vehicle design	Test the pilot metro design, features and functionality	Undertake an equivalent access process to process to assess redesigned ramp
Methodology	<ul style="list-style-type: none"> Test the to-scale mock-up of the first passenger compartment / inform pilot metro design changes 	<ul style="list-style-type: none"> Test onboard usability and functionality of accessibility features Collated feedback to workshop with manufacturer / finalise the metro fleet design 	<ul style="list-style-type: none"> Phase 5 participants tested redesigned automatic ramp Rated equivalent access criteria – amenity, availability, comfort, convenience, dignity, safety
Key outcomes	<ul style="list-style-type: none"> Layout and manoeuvrability options validated 	10 changes made to the metro fleet, including: <ul style="list-style-type: none"> Additional audio announcements Movement of help points Redesign of grabrails and handrails 	<ul style="list-style-type: none"> Updated automatic ramp design scored stronger in all categories Implementation of improved ramp on metro fleet

Data collection tools

Engagement was a combination of online (Microsoft Teams) and face to face where participants can collaborate and share their insights and feedback together. During in-person testing, attendees were partnered with a project team member to capture their feedback. They also completed a survey at the end of testing sessions to capture any additional insights. Feedback was recorded in a master spreadsheet before being provided to the manufacturer.

Budget

Costs included constructing a life-sized mock-up (phase 3), ongoing accessibility expert consultants and overall manufacturing costs for significantly evolving the vehicle's design.

Engagement overview



Alignment with IAP2 Core Values

IAP2 Core Values	Example of how this was considered in the design of your project methodology
1. Public participation is based on the belief that those who are affected by a decision have a right to be involved in the decision-making process	Members were selected through an independent process to ensure they were representative of accessibility sector. The unique co-design process ensured they had input into the outcomes that will impact their future journeys on public transport.
2. Public participation includes the promise that the public's contribution will influence the decision	Members were advised of the purpose of the group via an overarching terms of reference charter outlining their role and level of influence. Members were provided with updates on how their advice was implemented, or alternatively, why it was unable to be actioned. This process provided members with the confidence that their input was being actioned as each engagement phase progressed.
3. Public participation promotes sustainable decisions by recognising and communicating the needs and interests of all participants, including decision-makers	The co-design process allowed for transparent discussions between members and the project team. Outcomes were highly visible and reported on regularly to the governance body of the Brisbane Metro project.
4. Public participation seeks out and facilitates the involvement of those potentially affected by or interested in a decision	BM-AWG members are public transport users and represent groups with lived experiences and interests in mobility, disability services, access, age-related functional limitations, hearing and vision impairments. During onboard testing, a wide cross-section of customers with lived experience were involved to increase qualitative feedback.
5. Public participation seeks input from participants in designing how they participate	The project team followed advice from members to facilitate more in-person site visits as the vehicle design progressed. This was highly effective in improving the overall engagement experience for members.
6. Public participation provides participants with the information they need to participate in a meaningful way	Presentations and project information was provided before meetings and prepared in an accessible format. This allowed for more time for meaningful conversations during meetings, as BM-AWG members were prepared.
7. Public participation communicates to participants how their input affected the decision	Presentations and discussions were held with members throughout the process to outline how their feedback was implemented in the metro design for each engagement phase.

‘The co-design process with the BM-AWG has proven to be the most effective way to truly understand accessibility requirements and find solutions that provide real value for the accessibility sector.

Seeing those solutions become a reality is not only a truly rewarding experience but has also led to a better vehicle design. Thank you to the amazing contribution by our members and our technical team for implementing it!’

Steffen Gerries, Vehicle and Charging Manager

‘Not only are the metro vehicles some of the most advanced electric vehicles in the world, but they’re also one of the most accessible. Our BM-AWG has generously shared valuable insights and feedback that has informed enhancements to the future metro fleet. We simply can’t put a price on delivering transport that is accessible to each person of Brisbane.’

Stephen Hammer, General Manager Major Projects

Participation overview



11 government representatives



10 mobility aid users



9 vision impaired users



1 hearing Impaired user



1 aged advocacy user



1 accessibility advisor

Image 1: Phase 2, layout evaluation, September 2020



Image 2 and 3: Phase 3, life-sized mock-up testing, January 2021

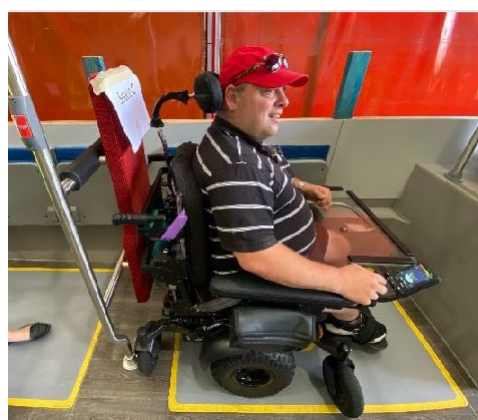
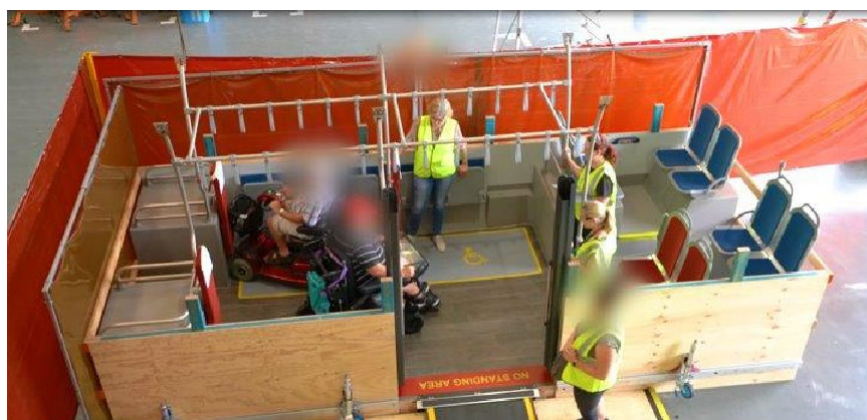


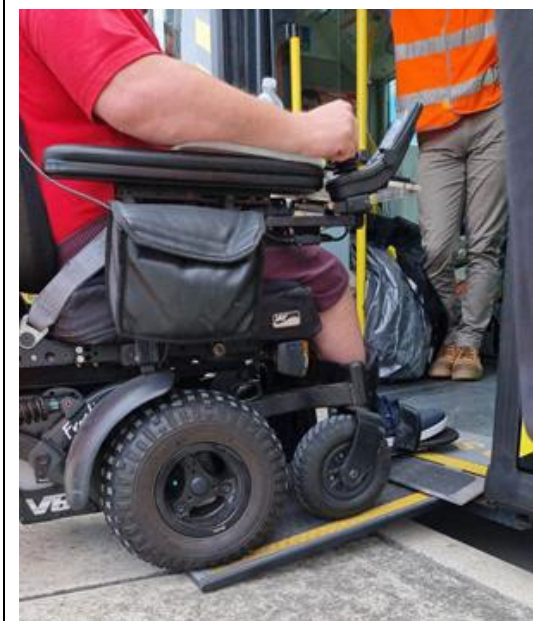
Image 4, 5, 6 and 7: Phase 5, onboard pilot metro testing, June 2022



IMAGES CONTINUE



Image 8 and 9: Phase 6, onboard automatic ramp testing, February 2023



3.0 Manage Engagement

Maintaining meaningful engagement with the BM-AWG during COVID-19

At the start of COVID-19, the safety of members was prioritised and meetings transitioned to an online format. Despite not being able to meet in person and collaborate face to face, members continued to actively participate. Presentations were also provided to the BM-AWG in advance to allow members additional time to consider the topics and prepare their feedback in advance. Despite the challenges during this time, member participation remained strong during this period.

Challenging previous engagement perceptions

It was identified at the commencement of the engagement process that some members had negative perceptions of accessibility engagement from previous experiences, noting the process had not always felt collaborative or felt their feedback had not been heard.

Through early engagement with the BM-AWG, they were able to not only take part in the vehicle's initial design but actively influence ongoing design changes. Their being an integral part of the co-design process improved the project's knowledge of our customer's needs, created a functional solution that enhanced everyone's experience and facilitated more efficient decision-making.

This gave members confidence their feedback was being heard and actioned. This two-way communication process was critical to the development of strong, positive relationships with the project team and BM-AWG members.

Data collection, management, analysis and generation of findings

Data collection and management was key to the design changes being implemented by the manufacturer. Workshops were held between Project Managers and the manufacturer to work through the BM-AWG's feedback and proposed changes. This included workshopping technical and structural constraints. If accessibility recommendations were unable to be made for structural reasons, this was communicated to the BM-AWG to ensure the process remained transparent.

4.0 Outcomes, Impact and Insights

Engagement reflection

Council's collaborative approach to accessibility engagement, through a best practice co-design process, has ensured Brisbane Metro delivers an accessible public transport solution. The positive relationship built with BM-AWG members across four years has been instrumental in maintaining voluntary membership and ensuring a collaborative environment throughout the COVID-19 pandemic. The project team's consistent presence has created strong relationships with members, building trust and friendships between members and the project team.

Outcomes achieved during the collaborative co-design process have been shared and recognised at local, state and federal government levels. Internally, the Brisbane Metro team have shared key learnings and insights to educate on accessibility engagement best practice and the importance of early engagement with the accessibility sector. BM-AWG members have also shared their experiences about their involvement on the Brisbane Metro project within their networks and community. Overall, the project has increased awareness about the importance of early engagement with the accessibility sector to deliver meaningful outcomes to better reflect the community's needs.

Key design outcomes from engagement

Across the four years of collaborative engagement with the BM-AWG, the vehicle design has significantly evolved. Overall, more than 35 design changes have been implemented and will be rolled out across the metro fleet (60 vehicles). This includes:

- Increasing the onboard mobility bays to three in the first passenger compartment and increasing size of mobility bays to improve manoeuvrability for people using mobility devices
- Increasing the number of priority seats from 8 to 10
- Introducing an automated on-request ramp at the first passenger door
- Repositioning of the dynamic route map in the first compartment to increase visibility from the mobility bays
- Additional audio messages to support vision impaired users to be aware if the automatic ramp is being deployed
- Varying railing positions and help points at different heights providing options for people with varying dexterity abilities.

The project team looks forward to continuing to build engagement with the BM-AWG and broader accessibility sector as Brisbane Metro prepares for services commencing in late 2024.

‘Accessible public transport means independence, freedom; you’re not relying on support workers and you can get where you want to go, when you need to get there.’

– Nerine Williams, FND Living

‘Being able to fully test the vehicle, the asset and design, is really important... I’m liking the [automatic] ramp, that’s obvious, because it provides the access. The circulation space will be useful and it’s in a high demand.’

– Nigel Webb, CPL

‘Irrespective of the outcomes from today, thank you for trying to improve the accessibility of public transport and for the effort you have all put into these sessions.’

– Accessibility advocate, February 2023

Innovation and uniqueness

Through a unique co-design process with the accessibility sector, Brisbane Metro is exceeding compliance with the relevant disability standards and guidelines to deliver Australia's leading accessible public transport option. The four-year vehicle engagement process, from concept to ordering the metro fleet, has ensured the Australian-first vehicle sets new standards for accessibility and comfortability, while building strong relationships with the accessibility sector. It is the most significant co-design engagement process Council has undertaken and will transform the future of accessible public transport in Australia.

Acknowledgements and to find out more



Dedicated to a better Brisbane

We would like to thank Brisbane City Council for agreeing to share this case study and insights to advance engagement practice. This case study was co-authored by Ella Patrick, Laura Parker and Amy Driscoll.

At the time of publishing, Amy Driscoll was employed by Brisbane City Council in the position of Governance and Strategy Manager and Laura Parker was Principal Marketing and Communications Lead. Ella Patrick was a Consultant with The Comms Team. All authors have experience in the public transport sector and expertise in accessibility engagement and the use of co-design.

For more information about the Brisbane Metro project, see:

- <https://www.brisbane.qld.gov.au/traffic-and-transport/public-transport/brisbane-metro>
- <https://www.youtube.com/watch?v=rD9weolmi-A>

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