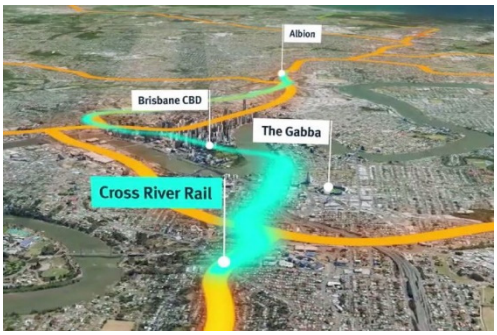
Brisbane Cross River Rail 2.0

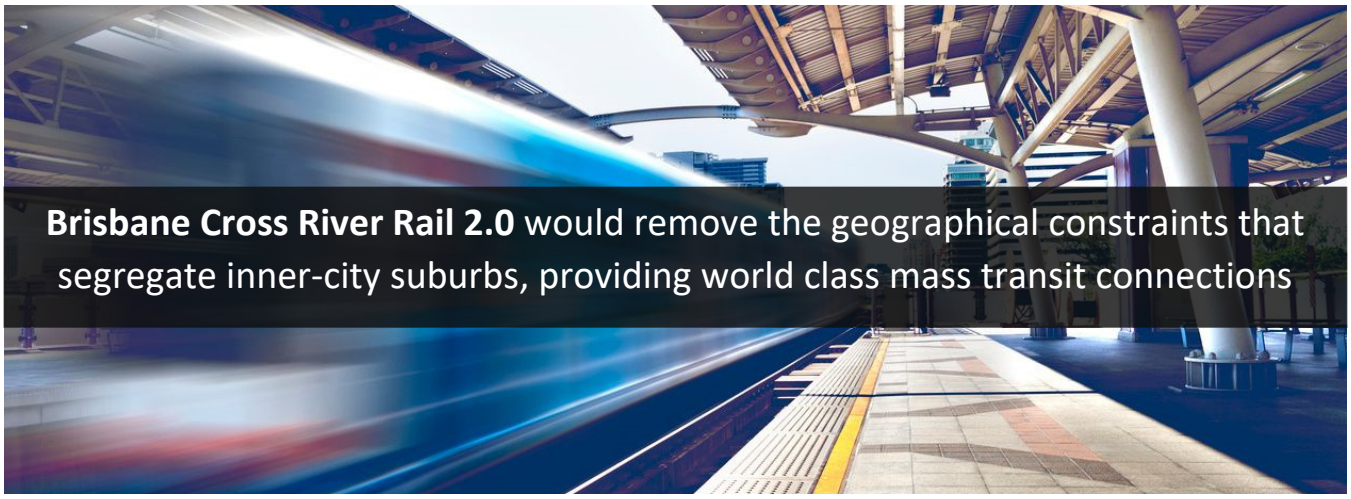
Project Context

With construction of the highly anticipated Cross River Rail project beginning in 2017-18 financial year and contractor shortlist announced for major construction packages, this major piece of transport infrastructure is set to become a reality in the coming years.

Serving as a generational expansion of the South East Queensland rail network, Cross River Rail will add much needed capacity to the rail lines serving the busy north-south corridor connecting the growing cities of the Gold Coast, Logan, Morten Bay and the Sunshine Coast to inner city Brisbane.



This project however, will not address many of the current network constraints in the east-west corridor of inner Brisbane, which are severely limited by the geographic barrier of the Brisbane River.



Project Overview

Known for its meandering calm character, the Brisbane River was integral to the city's development. With its banks and surrounding lands home to the first Australian's for millennia, the Brisbane River formed the very basis of European settlement almost 200 years ago. Providing a gateway for trade during the establishment of the City, early settlement focused around what is today the Brisbane CBD, slowly expanding up & downstream.

21st Century Brisbane remains bound by this geographic feature, which spans from Moreton Bay in the East, across the city and into neighbouring Ipswich in the west. From low-lying plains, to Brisbane's famous green leafy hills and the cliffs of Kangaroo Point, the number of river crossings constructed in the past half century have been outpaced by the continual and exponential growth experienced in Brisbane for more than 30 years.

Designed to eliminate the geographical constraints of the Brisbane River, **Brisbane Cross River Rail 2.0** would provide fast, subterranean mass public transport links between disconnected urban neighbourhoods, linking six river peninsulas and a variety of existing infrastructure nodes across the city.

Proposed Connections

Designed to be constructed in 2 stages, **Brisbane Cross River Rail 2.0** would be comprised of two metro-style lines, linking up to 16 inner city neighbourhoods to existing major transport infrastructure, cultural and educations precincts.

Serving a neighbourhood radius of up to 800m, new stations would offer convenient active transport options for residents, creating walkable, rideable communities. Stations would be positioned to provide multi-modal links to existing bus, ferry, rail and cycleway routes.

Line 1 – UQ St Lucia to Doomben-North Shore

Comprising a 12km dual tunnel with 14 new stations, Line 1 would link the suburbs of St Lucia, West End, South Brisbane, Brisbane CBD, Kangaroo Point, New Farm, Teneriffe, Hawthorne, Bulimba and Hamilton. A connection to the existing rail network at Doomben will provide ease of access to maintenance facilities and rolling-stock stabling, which would ideally be located at Eagle Farm.

Interchanges would link to: UQ Lakes Metro and Busway, West End CityCat and CityGlider, South Brisbane Rail, Metro and CityGlider, Cross River Rail Albert Street Station, New Farm buses, Hawthorne CityCat, Bulimba buses, Hamilton CityCat and the Doomben rail line.

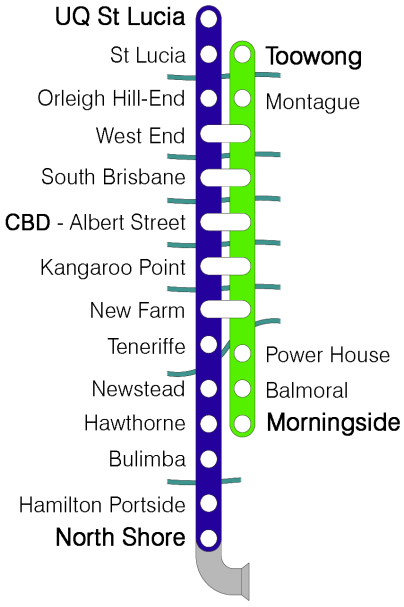


Fig.1
Brisbane Cross River Rail 2.0
System Line Diagram

Line 2 – Toowong to Morningside

Comprising two branch extensions, with 5 additional stations, totalling 4km of additional tunnels, Line 2 will provide additional service frequency to the inner-city core stations, while adding further links to Toowong, New Farm, Norman Park and Morningside.

Interchanges would link to Toowong Rail and western suburbs buses, New Farm Ferry, eastern suburbs buses at Norman Park and the Morningside Railway Station

Connections would also serve cultural precincts, including UQ St Lucia, QUT Gardens Point, Brisbane CBD and Queens Wharf, Southbank Cultural Precinct, Brisbane Powerhouse and Portside Cruise Ship Terminal.

Proposed System Map

Linking up to 16 neighbourhoods across six river peninsulas, **Brisbane Cross River Rail 2.0** would remove the geographic constraint of the Brisbane River, while providing new connections between a variety of existing transport infrastructure, cultural and education precincts.

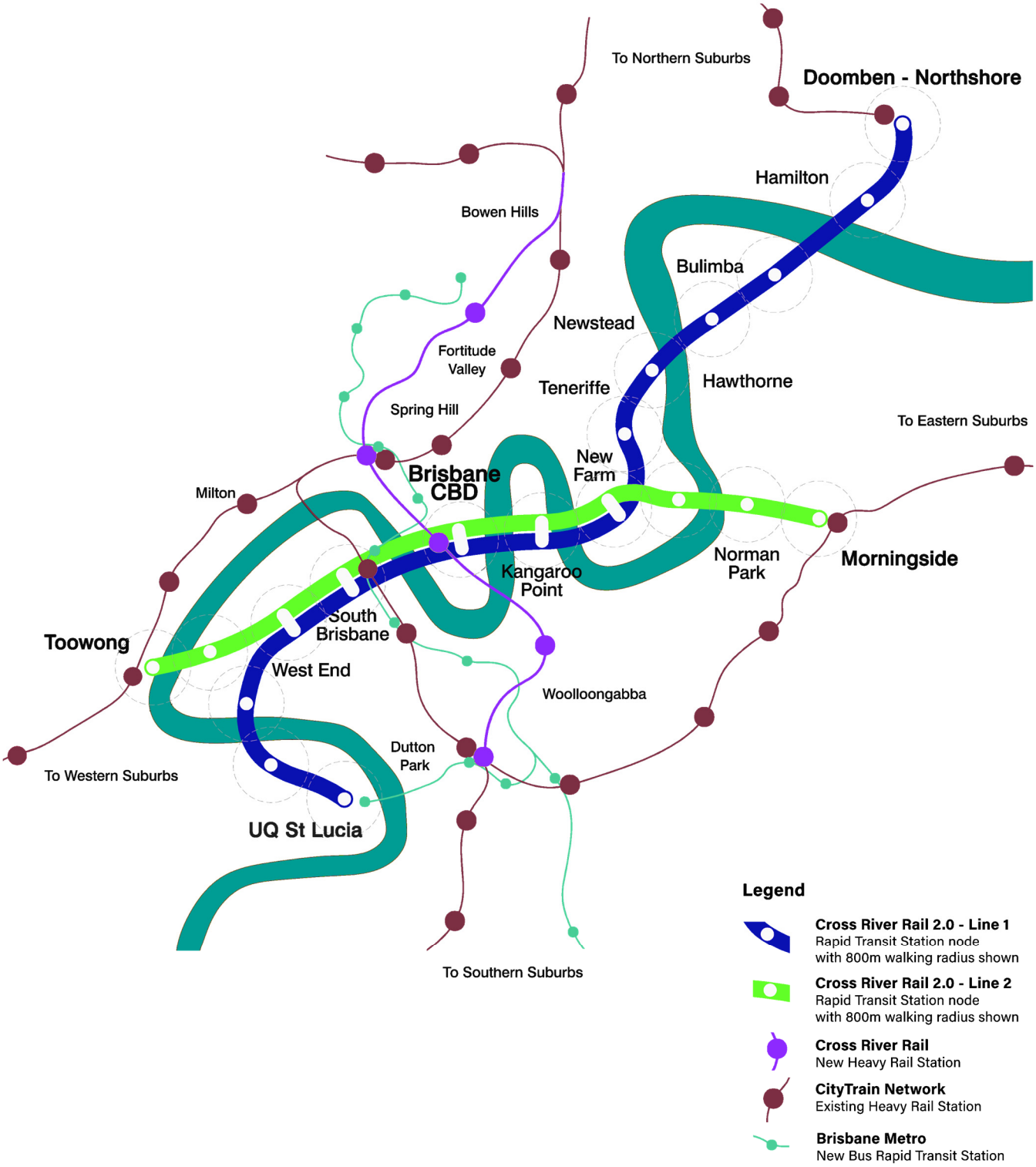


Fig.2 Brisbane Cross River Rail 2.0 - Proposed System Map

System Capacity and Rolling Stock

Intended to service Brisbane's growing inner-city neighbourhoods, Brisbane Cross River Rail 2.0 is a metro-style subterranean rapid mass transport system. High-capacity, Automated Rapid Transit vehicles, coupled with an automated rail management system, would provide world class passenger comfort, safety and reliability. Designed to meet the needs of Brisbane's booming inner-city, Turn-Up-And-Go service frequencies of 2-3min would be achieved through the inner-city core stations, with 5min services throughout the system.

Heavy Rail Vs Automated Rapid Transit (ART)

Traditional Heavy Rail networks, such as the existing Queensland Rail network, allow commuter, long-distance and freight services shared access to their track infrastructure. Often established for bulk haulage and freight services, these railways generally consist of large infrastructure, capable of carrying the substantial axil loads associated with Heavy Rail.

Alternatively, metro-style railways or Automated Rapid Transit (ART) systems can be designed as closed or limited access networks, with access restricted to passenger operation only, usually operating with a single type or style of rolling stock. Specifically used for short journey urban services, ART vehicles are generally much smaller in size, while fewer seats and more standing room, allow for far higher passenger capacity.

Below is a comparative example of Heavy Rail vs Automated Rapid Transit:

Next Generation Rolling Stock: Heavy Rail
Qld Rail. Brisbane, Australia

Manufacturer:	Bombardier
Car Length:	23.9m
Cars per train:	6
Car Capacity:	160 passengers
Operation:	1 Driver + 1 Guide
Service Speed:	120-140 km/h

Innovia Metro: Automated Rapid Transit
SkyTrain**.** Vancouver, Canada.

Manufacturer:	Bombardier
Car Length:	16.7m
Cars per train:	4
Car Capacity:	130 passengers
Operation:	Automated Driverless System
Service Speed:	80-100 km/h

Images sourced from Bombardier Transportation

Journey Times and System Capacity

Line 1 – UQ St Lucia to Doomben-North Shore

Target Operating Speed:	40 km/h (Average Speed).
Distance:	12kms
Stations:	Terminus – 12 Intermediate Stops – Terminus
Ave. Stop Duration:	30 seconds (Dwell Time, excluding deceleration / acceleration).
Ave. Terminus Return:	3 minutes

St Lucia to Doomben-North Shore: Journey Time

Departure Terminus	Average Travel Time	Stop Duration	Arrival Terminus	**Total Journey Time**
1min	18min	6min	2min	**27min**

St Lucia to Doomben-North Shore: Route Capacity

ART Vehicle Capacity:	520 Passengers
Target Service Interval:	5min

	Inbound	**Outbound**	**Total**
Services / Hour:	12	12	**24**
ART Vehicles Required:	11	11	**22**
Hourly Capacity:	6,240	6,240	**12,480**
Average Peak Capacity (3hrs):	18,720	18,720	**37,440**

Line 2 – Toowong to Morningside

Target Operating Speed:	40 km/h (Average Speed).
Distance:	8kms
Stations:	Terminus – 8 Intermediate Stops – Terminus
Ave. Stop Duration:	30 seconds (Dwell Time, excluding deceleration / acceleration).
Ave. Terminus Return:	3 minutes

Toowong to Morningside: Journey Time

Departure Terminus	Average Travel Time	Stop Duration	Arrival Terminus	**Total Journey Time**
1min	12min	4min	2min	**19min**

Toowong to Morningside: Route Capacity

ART Vehicle Capacity:	520 Passengers
Target Service Interval:	5min

	Inbound	**Outbound**	**Total**
Services / Hour:	12	12	**24**
ART Vehicles Required:	8	8	**16**
Hourly Capacity:	6,240	6,240	**12,480**
Average Peak Capacity (3hrs):	18,720	18,720	**37,440**

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ABN: 39 236 122 922

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