

Summary Report

Burleigh Heads to Coolangatta Public Transport Project

Preliminary Evaluation

(Also known as Gold Coast Light Rail Stage 4 Preliminary Business Case)



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1. Project summary

The Department of Transport and Main Roads and the City of Gold Coast have completed a Preliminary Evaluation of public transport options for the southern Gold Coast between Burleigh Heads and Coolangatta. The Preliminary Evaluation is also referred to as the Gold Coast Light Rail Stage 4 Preliminary Business Case.

This Preliminary Evaluation has confirmed the need to improve the public transport network in the southern Gold Coast and identified Light Rail Transit as the preferred transport option. This option, along with Bus Service Enhancements with Minor Upgrades, will be investigated in the next stage of planning.

The Burleigh Heads to Coolangatta Public Transport Project is part of a program of transport planning activities being undertaken by the Queensland and New South Wales Governments, the City of Gold Coast and Tweed Shire Council to address current and future transport problems and opportunities in the southern Gold Coast.

The program considers a multi-modal response that includes road upgrades, public transport enhancements and complementary active transport infrastructure projects.

Planning work to date has identified that a major investment in public transport could substantially boost accessibility, change the way people travel, and result in a range of economic, social and environmental benefits for the southern Gold Coast, northern Tweed and the broader region.

A strategic intervention is needed to improve public transport connectivity as part of a multi-modal response to transport problems in the southern Gold Coast.

Planning is underway to improve public transport in the southern Gold Coast and provide alternatives to car-based travel.

This is a summary report of the Preliminary Evaluation Report on the Burleigh Heads to Coolangatta Public Transport Project. It includes detailed analysis of the project options and explains the key outcomes.



Image: View of Currumbin Creek looking west towards the Gold Coast Hinterland Source: TMR

PART 1 – Project Summary

2. Location

The Burleigh Heads to Coolangatta Public Transport Project focuses on the coastal corridor between Burleigh Heads and Coolangatta which is approximately 13km long. The proposed route for the public transport options is based on the route selection undertaken in the Gold Coast Highway Multi-modal Corridor Studies (2020 and 2022) and primarily follows the Gold Coast Highway. The preferred route from the Gold Coast Highway Multi-modal Corridor Studies is shown in the figure below.

The southern Gold Coast has an attractive lifestyle that will continue to support population, jobs and tourism growth into the future. It is also home to the Gold Coast Airport. At the very southern end of the corridor are the regionally important centres of Coolangatta and Tweed Heads, locally known as the Twin Towns, which straddle the Queensland and New South Wales border.

In the interest of establishing an integrated cross-border public transport system, Transport for New South Wales is also progressing planning that considers a corridor south of the border.



*Department of Transport and Main Roads, Multi-modal Corridor Study Reports, Gold Coast Light Rail Stage 4 project website, www.tmr.qld.gov.au/projects/gclr4

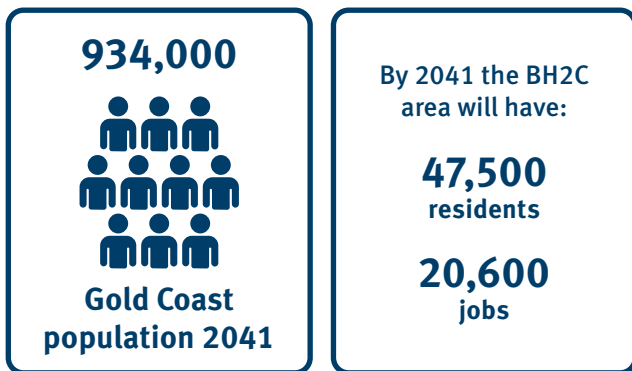
PART 2 – Establishing the need for change

3. Background

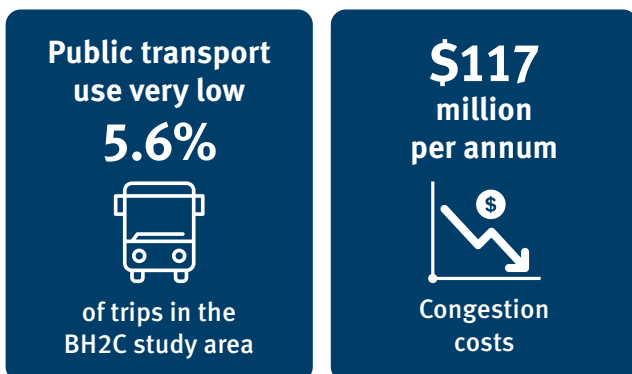
3.1 Project context

The Gold Coast is Australia’s sixth largest city with a 2019 population of 615,000 residents. The population is expected to increase by 52% to reach 934,000 in 2041.

The southern Gold Coast between Burleigh Heads and Coolangatta is also forecast to experience strong population growth from 34,220 residents to reach 47,500 persons (39% increase) by 2041.



This growth will bring significant transport challenges, and without major improvements to the public transport network in the southern Gold Coast, public transport usage would stagnate, and account for only 5.6%² of trips by 2041. The associated congestion in the study area in 2041 is forecast to represent an annual cost of \$117 million³ to the economy.



Tourism

The Gold Coast is one of Australia’s premier tourism destinations and welcomes more than 12 million visitors per year⁴. In the year ending 30 June 2019, the tourism and hospitality industry generated a total economic output greater than \$12 billion and added over \$5.8 billion in value to the local economy. This represented 30% and 29.5% of the Queensland tourism and hospitality industry’s economic output and value-added components respectively.

The southern Gold Coast is the home of the Gold Coast Airport which is the most important economic centre in the southern Gold Coast and is a major driver of the regional economy. In the year ending June 2019 (pre-COVID), it was one of Australia’s fastest growing airports, welcoming over 6.5 million passengers, and directly employing an estimated 2,200 full-time equivalent employees.⁵

Gold Coast Airport passenger numbers are expected to grow to 16.6 million in 2037⁶, which will place significant additional pressure on the transport network, unless there is a greater use of public transport to access the airport. The airport is expected to play a key role in welcoming visitors to Queensland during the 2032 Olympics.

²Source: City of Gold Coast analysis ³Source: City of Gold Coast analysis

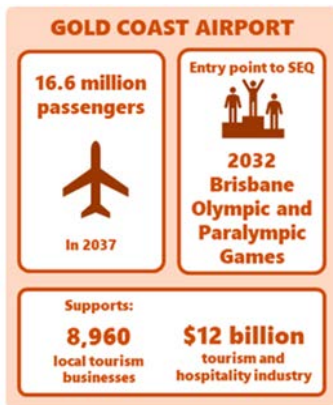
⁴ Tourism Research Australia, Local Government Area Profiles, accessed at: www.tra.gov.au/Regional/local-government-area-profiles

⁵Source: Gold Coast Airport (2017 Master Plan) ⁶Source: Gold Coast Airport (2017 Master Plan)

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An event city

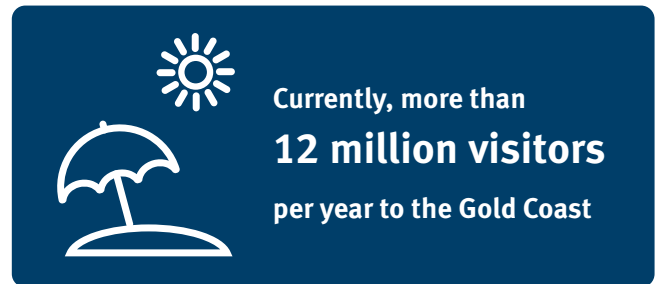
The Gold Coast has a well-earned international reputation as an events city, with the Gold Coast Airport supporting the growing number of major events hosted by the Gold Coast each year. An improved and seamless transport connection to accommodation and competition venues for the Brisbane 2032 Olympic and Paralympic Games, would form an important part of the Games legacy.



Car dependency

The southern Gold Coast is highly car dependent and lacks a competitive public transport option. It is forecast that by 2041 the Burleigh Heads to Coolangatta area will experience increasing congestion and declining travel reliability on all major traffic routes in peak times, including on the M1.

Without intervention, these problems will lead to declining amenity and liveability, restrict residential and employment growth, and fail to realise the opportunity for sustainable urban consolidation and future economic development of the southern Gold Coast.



Major events in Coolangatta: Coolangatta Christmas Carols, Swell, Cools Rocks On, and the Cools Classic Ocean Swim Source: CoGC

Part 2 – Establishing the need for change

3.2 The Project Assessment Framework

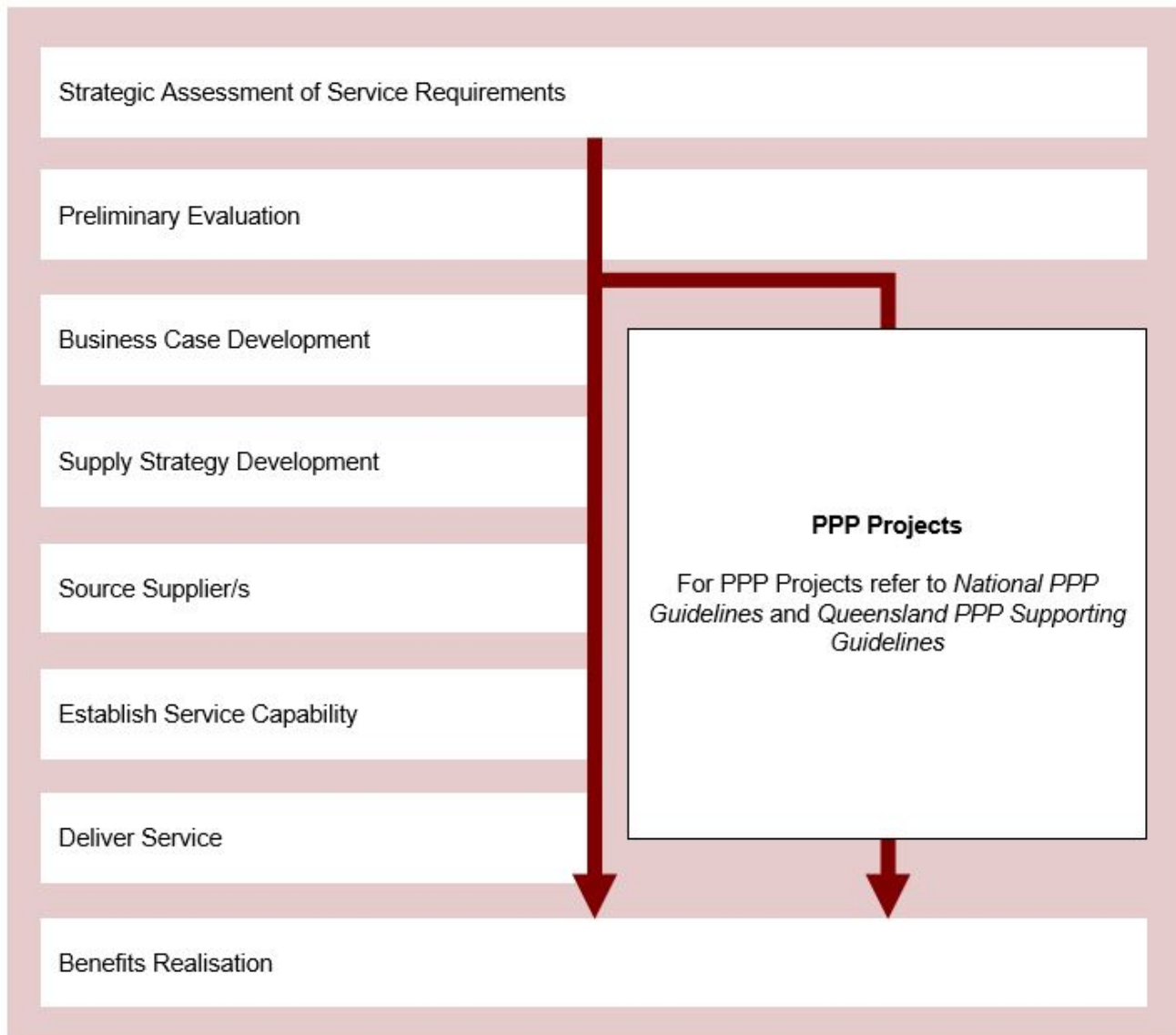
All major infrastructure projects follow Queensland Treasury's Project Assessment Framework⁷. This framework ensures a common and rigorous approach to assessing projects at critical stages in their lifecycle, from the initial assessment of the service required, through to delivery.

The Project has completed the first two stages of the Project Assessment Framework: Strategic Assessment of Service Requirement and Preliminary Evaluation.

This report summarises the outcomes of the Preliminary Evaluation.

While light rail is identified in previous planning documents, the Preliminary Evaluation evidences the need for investment in public transport in the southern Gold Coast, and that light rail is the best option to meet the need.

The next stage in the Project Assessment Framework is to develop a Business Case for the project.



⁷Queensland Treasury, Project Assessment Framework, www.treasury.qld.gov.au/programs-and-policies/project-assessment-framework

PART 2 – Establishing the need for change

3.3 Previous investigations

Extension of light rail to Coolangatta via the Gold Coast Airport is part of a master plan for light rail that was established in the planning for Stage 1 in 2008.

The Burleigh Heads to Coolangatta Public Transport Project Preliminary Evaluation builds on the Strategic Assessment of Service Requirements completed by the City of Gold Coast in 2021.

The Preliminary Evaluation is also aligned to corridor planning studies that the Department of Transport and Main Roads have completed. Transport for New South Wales are also in the process of completing a similar study.

Gold Coast Highway (Burleigh Heads to Tugun) Multi-modal Corridor Study (Department of Transport and Main Roads, 2020)

This study reviewed previous corridor planning to develop an updated transport strategy for a multi-modal transport corridor between Burleigh Heads and Tugun. The study included an assessment of five route options ranging from the M1 corridor to the Gold Coast Highway. It concluded that a public transport route along the Gold Coast Highway had the highest potential for mass transit to serve areas of greater development intensity and consolidation as envisaged in South East Queensland Regional Plan 2017 (also known as ShapingSEQ), since there is more development intensity along the coastal corridor. The study noted the Gold Coast Highway corridor could be transformed into a high amenity, community-focused boulevard with priority given to walking, bike riding and a world class light rail system that will enhance the liveability and character of the southern coastal suburbs.

Consultation on the corridor study outcomes for the Burleigh Heads to Tugun section was undertaken in 2020 and 2021.

Public transport needs in the southern Gold Coast and northern Tweed region Strategic Assessment (City of Gold Coast, 2021)

The Strategic Assessment identified cross-border problems and opportunities and suitable responses associated with travel demand growth in the southern Gold Coast and northern Tweed Shire area. It identified that there is a strong need for a major intervention to improve public transport in the southern Gold Coast and that there would be significant benefits of extending the public transport system into the northern region of Tweed Shire.

Gold Coast Highway (Tugun to Coolangatta) Multi-modal Corridor Study (Department of Transport and Main Roads, 2022) and Tweed Heads to Tweed Heads South Multi-modal Corridor Study (Transport for New South Wales, 2022)

The Department of Transport and Main Roads and Transport for New South Wales both embarked on similar corridor studies. These studies were to build on the Burleigh Heads to Tugun study completed in 2020 looking at the corridor south from Tugun into New South Wales.

The Gold Coast Highway Tugun to Coolangatta Multi-Modal Corridor Study was completed in 2022. It confirmed light rail as the preferred mode of public transport and investigated the potential route options between Tugun and Coolangatta. Consultation on the corridor study outcomes for the Tugun to Coolangatta section was undertaken in 2022.

The outcomes of the Tweed Heads to Tweed Heads South Multi-Modal Corridor Study are not yet known.

Additional information on the Department of Transport and Main Roads projects can be found at:

www.tmr.qld.gov.au/gclr4

Part 2 – Establishing the need for change

4. Strategic rationale

The purpose of the Preliminary Evaluation is to provide sufficient information to enable Government decision makers to make an informed decision on whether to proceed further with the project and invest in a Detailed Business Case. This process includes reconfirming the need for the project, developing and assessing potential options to address the need, and making recommendations to Government on the project options that should proceed to the business case based on the priority and affordability of the project options. This section confirms the need for investment in public transport in the southern Gold Coast by documenting the challenges and opportunities that the southern Gold Coast will face in the future.







The Burleigh Heads to Coolangatta Public Transport Project area forms part of a larger ‘urban corridor’ that is planned to accommodate a significant proportion of the Gold Coast’s future population growth through urban consolidation. The urban corridor extends from Helensvale in the north to the Gold Coast central business district at Southport and along the coastline to the Gold Coast Airport and Coolangatta in the south. This corridor is a strategic priority for the Queensland Government and the City of Gold Coast.

The South East Queensland Regional Transport Plans 2021⁹ and the Gold Coast City Transport Strategy 2031¹⁰ both identify the strategic importance of the coastal ‘urban corridor’ by highlighting the need for improved public transport, including between Burleigh Heads and Coolangatta.

4.1 Challenges and opportunities

To accommodate future population growth, the Gold Coast will require 158,900 new dwellings over the period from 2016 to 2041, with 80% of these dwellings to be provided through urban consolidation as outlined in ShapingSEQ⁸. This means that 127,120 new dwellings need to be provided in existing urban areas.

The key challenges and opportunities identified that will be fully or partly addressed or enhanced by improved public transport between Burleigh Heads and Coolangatta.

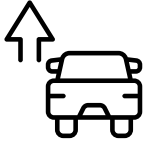
 <p>Increasing transport demand from an increasing population</p>	 <p>Low public transport use and the need to get people out of their cars and on to improved public transport</p>	 <p>Limited cross-border public transport connectivity</p>
 <p>Transport congestion and safety issues</p>	 <p>Lack of jobs in the area and limited connectivity between economic activity centres</p>	 <p>Challenge to manage urban sprawl as the region grows</p>

⁸Queensland Government, South East Queensland Regional Plan (Shaping SEQ), www.planning.statedevelopment.qld.gov.au/planning-framework/plan-making/regional-planning/south-east-queensland-regional-plan

⁹Department of Transport and Main Roads, SEQ Regional Transport Plans, www.tmr.qld.gov.au/regionaltransportplans

¹⁰City of Gold Coast, Gold Coast City Transport Strategy 2031, www.goldcoast.qld.gov.au/Council-region/Future-plans-budget/Plans-policies-strategies/Our-strategies/Gold-Coast-City-Transport-Strategy-2031

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Increased transport demand from an increasing population

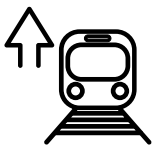
Population, employment and visitor growth will substantially increase travel demand in the southern Gold Coast and place increasing pressure on the road network.

Travel demand in the southern Gold Coast and northern Tweed Shire area is forecast to increase by 32% by 2041, with an increase of 68,752 daily person trips.¹¹

The Gold Coast Airport has forecast growth in passenger numbers of 146% over a similar period¹². The resulting 16.6 million passenger movements each year will further increase travel demand in the study area and the surrounding parts of the Tweed.

Without a significant change in transport infrastructure like light rail, only 5.9% of airport-related trips are forecast to be made by public transport, resulting in an additional 32,207 daily private vehicle trips to or from the Gold Coast Airport in 2041.

Without intervention, forecast travel demand within and through the southern Gold Coast will place increasing pressure on the road network and will likely result in negative economic, social and environmental consequences.



Low public transport use and the need to get people out of their cars and onto improved public transport

If unchanged, existing car dependency and low public transport use will result in congestion issues and further constrain the transport network of the southern Gold Coast.

Public transport trips comprised only 4.9% of all trips in the southern Gold Coast in 2019. This low public transport use is the result of high car-dependency, the lack of competitive public transport options, and an abundance of free and low-cost car parking.

While bus services will be an important part of the future transport network for the area, existing bus services cannot meet the overall public transport task in the southern Gold Coast as the public transport and active transport options are not sufficiently appealing to compete with the convenience of car travel.

Without intervention, public transport mode share is projected to remain very low at only 5.8% in 2041¹³. This would have negative impacts including increased congestion, pressure to continuously expand roads and provide car parking, reduced road safety, worsening noise and air pollution and social inequity whereby people who cannot access car transport remain disadvantaged. There would also be significant negative economic impacts caused by the inefficiency of the broader transport system without an increase in public transport mode share.

¹¹Source: City of Gold Coast Analysis

¹²Gold Coast Airport. 2017 Master Plan. P 46

¹³Source: City of Gold Coast Analysis.

Part 2 – Establishing the need for change



Limited cross border public transport connectivity

Existing public transport services do not adequately connect the population and employment locations either side of the Queensland and New South Wales border, discouraging cross-border public transport use and contributing to car dependency and congestion.

Cross border travel is currently only available using separate bus services on either side of the Queensland and New South Wales border, with separate fare, ticketing, and trip planning systems.

This creates barriers for cross-border public transport movement, contributes to road congestion and inconveniences travellers by the additional need to transfer between services, increasing travel times and cost.

An integrated cross-border public transport solution would remove these barriers.



Limited cross border public transport connectivity

High car dependency and low public transport use, coupled with a limited ability to expand the road network, will result in significant traffic congestion, reduced freight reliability, amenity, liveability and environmental impacts, and constrained economic growth.

The southern Gold Coast is forecast to experience significant traffic congestion, causing increased travel times, declining road safety, and declining reliability for private vehicles, public transport and freight. Congestion is forecast to result in significant economic costs as well as consequential impacts on the environment and residential amenity.

There is little space to build new road corridors or widen existing ones and the ability to further upgrade the sections of the M1 in the study area is limited by a highly constrained corridor. This suggests a clear need for alternative approaches to cater for forecast growth in travel demand.

By increasing the emphasis on transport investments to support public and active transport, the relevant governments can achieve improved quality of life in the local region, as well as supporting national, state and local imperatives to reduce greenhouse gas emissions, and support the achievement of net zero emissions by 2050.



Artist's Impression: Light Rail, Warner Street station, Coolangatta Source: TMR

Part 2 – Establishing the need for change



Lack of jobs in the area and limited connectivity between major economic activity centres

Declining connectivity in the southern Gold Coast will restrict economic growth and will not realise the economic potential of the Gold Coast Airport or the broader Southern Gateway Regional Economic Cluster.

The southern Gold Coast has significantly more residents than jobs, despite the jobs created by the Gold Coast Airport. The area's largest centre, Coolangatta, has historically underperformed as an economic centre. In 2019, the limited employment in the area resulted in 79% of commuter trips being made to destinations outside the southern Gold Coast.

Existing public transport services restrict connectivity to economic activity centres, in particular between the Gold Coast Airport and key tourist destinations such as Surfers Paradise, Burleigh Heads and Coolangatta, resulting in approximately 94% of trips to and from the Gold Coast Airport being made by private vehicle.

These trends are forecast to continue and will contribute to congestion while negatively impacting the area's economic competitiveness, attractiveness to visitors and liveability.

Part of the Southern Gateway Regional Economic Cluster, the Gold Coast Airport and neighbouring Southern Cross University represent a major opportunity to develop an

aviation industry cluster that could support an increase in the quantity of highly skilled jobs in the study area. A major intervention to improve transport accessibility in the study area would boost the economic competitiveness of the southern Gold Coast by providing better and more efficient access to the Gold Coast Airport, supporting the economic performance of Coolangatta, and increasing local employment.

Improved public transport access to the Gold Coast Airport would also support the Brisbane 2032 Olympic and Paralympic Games by providing connectivity to accommodation and competition venues. More broadly than the Games, the Gold Coast is an event city with an events calendar that expands every year as the City's reputation for world class events grows. Major events include the Pacific Air Show Gold Coast, Magic Millions, Gold Coast 500, the Coolangatta Gold and Cooly Rocks On, and Blues on Broadbeach. High quality transit is essential to service and facilitate existing events and continue to promote the growth in visitation to the Gold Coast.

Without intervention, the southern Gold Coast may become a dormitory area for jobs in other parts of the Gold Coast, the South East Queensland region, and northern New South Wales, and the area could fail to realise its economic potential.



Lack of jobs in the area and limited connectivity between major economic activity centres

Increasing congestion and travel times will negatively impact local amenity, liveability and economic activity, and will not support the residential and employment growth needed to meet Government benchmarks for urban consolidation in the southern Gold Coast.

Without intervention, the area is forecast to experience declining amenity and liveability and will not adequately support the achievement of the 80% urban consolidation benchmark needed to meet future growth expectations

for the Gold Coast and reduce urban sprawl as outlined in ShapingSEQ.

However, with intervention to enhance connectivity and accessibility of the southern Gold Coast, the area could play a greater role in achieving the 80% benchmark. Investment in a sustainable and connected transport system would protect and enhance the liveability of communities within the area and enable long-term sustainable development.

Part 2 – Establishing the need for change

4.2 Project objectives

To overcome the identified challenges and leverage the opportunities, a number of objectives (or service requirements) have been developed for the Burleigh Heads to Coolangatta Public Transport Project to frame how the project progresses.

Objective	Description
Efficient, reliable, connected, accessible and safe integrated transport network	A multi-modal transport solution would provide an efficient transport network that meets the needs of various users and supports planned urban consolidation and the economic potential of the southern Gold Coast.
Enhanced public transport connectivity to essential services and key destinations (including across the border)	Improved public transport, as the primary means of moving more people more efficiently, is essential to managing forecast travel demand within and beyond the southern Gold Coast, reducing traffic congestion and associated environmental impacts, and increasing uptake in public transport services.
Supporting the delivery of reliable and efficient transport between key locations (the airport, venues, key event locations and accommodation) during major events	Improved public transport connectivity between the Gold Coast Airport and major destinations across the Gold Coast as part of the city-wide public transport network.
Maximised regional economic growth	Increased employment and economic activity within the southern Gold Coast, in particular at Coolangatta and the Gold Coast Airport precinct, as part of the Southern Gateway Regional Economic Cluster, would increase jobs while reducing demand for travel beyond the area.
Preserved and enhanced liveability and environmental quality	Improved transport connectivity would reduce car-dependency and congestion impacts, enhance community amenity and liveability and support greater demand to live and work in the area. Prioritising public and active transport can improve the quality of life in the region and support the achievement of national and state targets to achieve net zero greenhouse gas emissions by 2050.
Sustainable and attractive urban development	A strategic, city-shaping transport response would accelerate dwelling and employment growth, enabling the area to realise the opportunity for long-term, sustainable urban consolidation.

5. Options shortlisting

A core component of the Preliminary Evaluation is a comprehensive options analysis process. The purpose of the options analysis process is to generate and assess a range of project options to address the strategic need for transport improvements in the southern Gold Coast.

The options analysis process was developed in accordance with the Infrastructure Australia Assessment Framework, which applies a less costly method of analysis to a longlist

of options before using more resource intensive methods to assess a shortlist of options.

A phased options analysis process was undertaken for the Burleigh Heads to Coolangatta Public Transport Project to determine the preferred options. The process involved four phases, as shown below. This section details phase 1, 2, and 3. Phase 4 is discussed in Section 6 of this report.



The primary tool used on the options analysis process is the multi-criteria analysis. This is an assessment methodology used to select a preferred option by evaluating the overall performance of options against a series of criteria. The multi-criteria analysis forms an integral part of the Department of Transport and Main Roads' project decision-making and investment process.

PHASE 1 – LONGLIST

5.1 Phase 1 - Longlist

Phase 1 reviewed and confirmed the options analysis from the Strategic Assessment of Service Requirement. The longlist included an assessment of 13 options such as improvements to existing road networks, augmentation of public transport services and infrastructure assets, road space reallocation, active transport, and improving connectivity to the heavy and light rail networks. This identified 11 infrastructure and non-infrastructure options that met the project objectives and were progressed to the next phase for further assessment.

One of the longlist options not progressed was the heavy rail extension of the Gold Coast Rail Line from Varsity Lakes to the Airport. Heavy rail is considered a complementary project for a mature transport network, not an alternative option.

Part 3 – Options assessment

PHASE 2 – SHORTLIST

5.2 Phase 2 – Shortlist

In Phase 2, a multi-criteria analysis was undertaken on the 11 remaining options.

The criteria considered strategic project objectives, including transport network and car dependency, urban development, lifestyle and amenity, cross-border integration, employment and community, and economic growth.

The longlist of 11 options was evaluated using a qualitative multi-criteria analysis involving subject matter experts from the Department of Transport and Main Roads, the City of Gold Coast, and industry to develop a shortlist of options to progress to further scope refinement. The shortlist of options and a brief description of each option was:

- Bus Service Enhancements – additional services throughout the day and additional service hours
- Bus Service Enhancements with Minor Upgrades – same as above with a few bus jumps, bus stop upgrades and upgraded walking and bike riding connections
- Bus Lanes with Bridge Widening – additional bus only lane in each direction following the same route as the Gold Coast Highway Multi-modal Corridor Studies (refer to Section 3.3 of this report) including widening of the existing bridges at Tallebudgera and Currumbin Creeks
- Bus Lanes without Bridge Widening – same as above but the existing bridges at Tallebudgera and Currumbin Creeks are maintained and not widened
- Road Upgrades to improve Traffic Capacity – additional general purpose traffic lane following the same route as the Gold Coast Highway Multi-modal Corridor Studies (refer to Section 3.3 of this report)
- Light Rail Transit – an extension of the existing Gold Coast Light Rail system following the same route as the Gold Coast Highway Multi-modal Corridor Studies (refer to Section 3.3 of this report)
- Bus Rapid Transit – same as above except the vehicle is a bus similar to the Brisbane Metro vehicle.

The bus-based options were all considered to meet Queensland’s Zero Emission Vehicle Strategy which states “every new TransLink funded bus added to the fleet from 2025 in South East Queensland will be a zero-emission bus”.

PHASE 3 – PREFERRED OPTION/S

5.3 Phase 3 – Preferred Options

In Phase 3, a more detailed options analysis was undertaken to identify a shortlist of options to progress to the detailed analysis in the Preliminary Evaluation. This assessment included a quantitative multi-criteria analysis and a rapid Cost Benefit Analysis.

5.3.1 Quantitative Multi-criteria Analysis

The quantitative multi-criteria analysis included more detailed analysis of the options using strategic transport modelling, cost estimates, concept designs, and land use analysis to inform the assessment.

Part 3 – Options assessment

The criteria for the quantitative multi-criteria analysis included:

- Transport outcomes – improving the performance of the public transport network and to reduce the impacts of congestion
- Land use outcomes – meeting the urban consolidation targets for the Gold Coast and helping to reduce urban sprawl
- Employment and economic activity – improving access to jobs by public transport and increasing the number of jobs in the southern Gold Coast
- Community acceptance – improving public amenity and stakeholder acceptance of the option
- Operational integration – the ease of integrating the project option with the existing Gold Coast transport network.

The list of options from best (1) to worst (7) performing following the multi-criteria analysis was:

1. Light Rail Transit
2. Bus Lanes without Bridge Widening
3. Bus Lanes with Bridge Widening
4. Bus Rapid Transit
5. Bus Service Enhancements with Minor Upgrade
6. Road Upgrades to improve Traffic Capacity
7. Bus Service Enhancements.

5.3.2 Rapid Cost Benefit Analysis

A rapid Cost Benefit Analysis was undertaken following the quantitative multi-criteria analysis to confirm the preferred options for detailed analysis. The rapid Cost Benefit Analysis monetised the key benefits and compared these to the costs of delivering and operating each option.

The rapid Cost Benefit Analysis supported the rankings from the multi-criteria analysis process and provided additional information to confirm the three preferred options for more detailed analysis.

The outcomes of the rapid Cost Benefit Analysis are summarised below:

- Bus Rapid Transit and Light Rail Transit have similar economic costs and benefits. However, Bus Rapid Transit was not progressed as explained in section 5.4.
- Road Upgrades to improve Traffic Capacity scored the lowest in the quantitative multi-criteria analysis and had the least benefit in the rapid Cost Benefit Analysis. This option was not recommended to proceed.
- The Bus Service Enhancements represents a relatively low-cost option. The Bus Service Enhancements with Minor Upgrades gains additional benefits for a low cost and should be considered in the shortlisted options.
- Bus Lanes with and without Bridge Widening achieves very similar economic benefits. However there is little benefit to bus travel times by providing wider bridges across the creeks and the additional cost reduces the viability of this option.

The options with the highest benefit on the multi-criteria analysis and rapid Cost Benefit Analysis were progressed to Phase 4. These options were:

- Light Rail Transit
- Bus Service Enhancements with Minor Upgrades
- Bus Lanes without Bridge Widening

Part 3 – Options assessment

5.4 Bus Rapid Transit considerations

Bus Rapid Transit has evolved as a public transport option. It will be used in the City of Brisbane to deliver increased capacity and journey time reliability within busway corridors as per the Brisbane Metro Project.

Bus Rapid Transit was considered for the delivery of public transport services between Burleigh Heads and Coolangatta but was excluded from further consideration for the following key reasons:

- By 2026 there will be three stages of Gold Coast Light Rail operating along the coastal urban corridor. A Bus Rapid Transit option in the Burleigh Heads to Coolangatta corridor would introduce a new public transport technology with a need for separate contracting, operating and maintenance requirements, including:
 - » Associated development costs to establish a standalone Bus Rapid Transit depot, stabling and operating system.
 - » Significant capital cost to construct the Bus Rapid Transit pavement for the length of the corridor and the integration of turnaround infrastructure.
 - » Additional land requirements compared to Light Rail Transit as the Bus Rapid Transit vehicle requires a wider corridor and the station platforms are wider.
 - » The Bus Rapid Transit is single direction in travel having a driver compartment at the front of the vehicle, compared to Light Rail Transit which is bi-directional with a driver compartment at each end. This means to vehicles needs to complete a 180 degree turnaround at the end of the line.

- » Additional forced interchanges at Burleigh Heads and increased complexity of incorporating three forms of public transport (Light Rail Transit, Bus Rapid Transit and standard buses) with over 11,000 transfers per day forecast in 2041.

The interchange at Burleigh Heads would require passengers to walk over 200 metres and cross two signalised intersections.

- Bus Rapid Transit vehicles have a lower capacity and are forecast to be operating near capacity by 2041 based on the transport modelling outcomes. By comparison, Light Rail Transit is forecast to still have sufficient capacity to meet ongoing demand growth.

The Gold Coast Light Rail Stage 1 Business Case included a detailed assessment of Light Rail Transit and Bus Rapid Transit technologies including transport modelling, whole of life cost and financial assessment, risk assessment, and economic assessment. Light Rail Transit was demonstrated to be a superior solution especially from a customer experience perspective and was chosen as the preferred option in 2009. Bus Rapid Transit was also re-considered in the Gold Coast Light Rail Stage 3 Detailed Business Case, with light rail once again being confirmed as the preferred option.

Given these considerations and a similar range of cost to implement, Bus Rapid Transit does not present a viable alternative to the Light Rail Transit within the context of this project and the surrounding public transport network and did not warrant further consideration in the Preliminary Evaluation.



Brisbane Metro Bus Rapid Transit Vehicle - Source: Brisbane City Council

PHASE 4 – DETAILED ANALYSIS

6. Phase 4 – Detailed analysis

Phase 4 of the Preliminary Evaluation was the most complex and intensive. For this, engineering drawings of each option were developed along with an operations strategy. This allowed a comprehensive assessment and comparison of the likely impacts, both positive and negative.

The three shortlisted options mentioned at the end of Section 5.3 were analysed in further detail in the Preliminary Evaluation including:

- Risk analysis and cost estimate
- Transport demand modelling and analysis
- Land use analysis
- Economic analysis
- Legislative, regulatory and environmental analysis
- Community engagement
- Social impact evaluation
- Sustainability.

6.1 Project options – design

The three shortlisted project options were developed through a technical design process that defined how the options would integrate with the existing road network and public transport operations. All three options were designed to:

- Generally be contained within the defined project corridor (as identified in the Gold Coast Highway Multi-modal Corridor Study).
- Integrate with existing bus services and light rail services at the future Gold Coast Light Rail Stage 3 Burleigh Heads Light Rail station.
- Maintain four general traffic lanes (that is, two traffic lanes in each direction) along the Gold Coast Highway.
- Provide facilities for pedestrians and bike riders.
- Provide safe pedestrian crossings.
- Minimise impacts to existing on-street car parking.
- Be compatible with a future zero emission fleet.

The design process sought to minimise potential property impacts as well as potential impacts on the Burleigh Head National Park and the Gold Coast Airport.

Importantly, the Light Rail Transit and Bus Lanes without Bridge Widening options include a new fauna bridge over the Gold Coast Highway linking Burleigh Head National Park and Burleigh Ridge Park.

The three shortlisted project options are described in detail on the next page.

Part 3 – Options assessment

Light Rail Transit



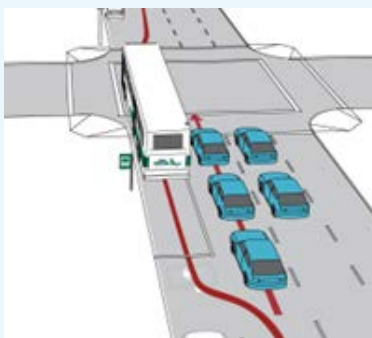
Light Rail Transit proposes an extension of Gold Coast Light Rail from Burleigh Heads to Coolangatta via Gold Coast Airport (this is, Stage 4 of the Gold Coast Light Rail network). The alignment generally follows the Gold Coast Highway, Coolangatta Road, and Chalk Street as shown on the Gold Coast Highway Multi-modal Corridor Studies. This option includes an upgraded bus network to improve connectivity and accessibility to the light rail. Stage 4 of the Gold Coast Light Rail would be no different to the previous stages and includes a right-of-way for the light rail vehicles along the full corridor with new bridges over Tallebudgera Creek and Currumbin Creek. Other key features include a new stabling facility and satellite depot at Bilinga and eight new trams compatible with current operations of the Gold Coast Light Rail.

Bus Lanes without Bridge Widening



Bus Lanes without Bridge Widening proposes new dedicated bus lanes, with the exception of the Tallebudgera Creek and Currumbin Creek bridges where the buses are required to merge into the general traffic lanes. The alignment is the same as the Light Rail Transit option as shown on the Gold Coast Highway Multi-modal Corridor Studies. This option includes improvements to the bus network in terms of frequency and connectivity. The kerbside bus lanes are proposed to operate 24/7 and shared with left turn movements at intersections. This option would meet Queensland's Zero Emission Vehicle Strategy which states "every new TransLink funded bus added to the fleet from 2025 in South East Queensland will be a zero-emission bus".

Bus Service Enhancements with Minor Upgrades



Bus Service Enhancements with Minor Upgrades proposes short sections of dedicated bus lanes on the Gold Coast Highway approaches (both directions) at key intersections to improve bus travel times and reliability of travel times. These are also known as bus jumps as shown in the figure to the left¹⁵. Additionally, some minor improvements to the existing bus stops and pedestrian and bicycle access are included in the option.

This option would meet Queensland's Zero Emission Vehicle Strategy which states "every new TransLink funded bus added to the fleet from 2025 in South East Queensland will be a zero emission bus".

¹⁵ genesis-centre.ca/transit-improvements-52-street/

6.2 Project risk analysis and cost estimate

6.2.1 Whole of life cost estimates

Detailed whole of life cost estimates were developed for each of the three options that included:

- Costs including protection and relocation of public utility and plant, potential property resumption costs and project management through the delivery phase.
- Capital costs including design and construction costs, and the cost to supply new vehicles.
- Operating and maintenance costs over a 30-year time period.
- Cost escalation during the construction phase to allow for expected cost increases over time.
- Risk allowances.

The project cost estimates used current industry knowledge and included a detailed assessment of each project option so that a suitable risk allowance could be included in the estimates.

The risk allowances are used to offset uncertainty at this early stage of project development and will be reviewed as the project proceeds to more detailed design in the Business Case stage.

The project cost estimates are expressed as a confidence level. Two confidence levels are typically reported on are P50 and P90.

The project cost estimates were developed for each option to inform the economic analysis and are shown in the table below.

	Light Rail (\$ millions)	Bus Lanes without Bridge Widening (\$ millions)	Bus Service Enhancements with Minor Upgrades (\$ millions)
Project Capital Cost (P50 - P90)	4,140 – 4,467	2,980 – 3,250	434 – 482
<i>These costs are presented in nominal terms and include inflation from 2023 to the year that the costs are incurred. The capital cost is the sum of the expenditure in each budget year for the construction period.</i>			

The P90 preliminary cost estimate for Light Rail, is \$4.467B. This is a strategic cost only at the early planning stage, and the cost range for delivery of the project is estimated between -30% and +70% (\$3.13B and \$7.60B). This is to allow for unknown risks which will be further clarified and updated in the detailed business case.

6.2.2 Risk assessment

The risk assessment process was used to identify key risk items that require more detailed investigation and analysis in future stages to confirm that the project can be delivered. The key risks identified include:

- Discovery of contaminated land and or groundwater within the project corridor including per- and polyfluoroalkyl substances (commonly known as PFAS).
- Discovery of adverse geotechnical conditions in the corridor that require extensive treatment before the project can proceed.
- The requirements to protect or relocate public utility and plant assets within the corridor including power, water, sewer and telecommunications assets.
- Constructing and operating a project within the Gold Coast Airport.
- Project outcomes not meeting community expectations including impacts on car parking, provision of active transport infrastructure and changes to the local road network.
- The potential for the project to be impacted by flooding during construction and operations.

These risks will continue to be monitored and updated as the project proceeds through the Business Case and later stages.

6.3 Employment generation

The Burleigh Heads to Coolangatta Public Transport Project will offer significant direct and indirect employment opportunities. The project is expected to generate more than 500 local jobs onsite, and nearly 2000 total direct and indirect full time equivalent jobs during the construction phase.

Detailed consideration of employment generation, training opportunities and business engagement policies will occur in the Business Case stage.

6.4 Transport demand modelling

Transport demand modelling was undertaken for each of the project options and compared to a base case to identify the range of transport benefits that could be achieved by a major investment in public transport in the Burleigh Heads to Coolangatta corridor.

A range of transport benefits for both the southern Gold Coast and the broader Gold Coast transport network have been identified including:

- Increased public transport use.
- Increased patronage on Gold Coast Light Rail stages 1 to 3.
- Increased cross-border public transport trips.
- Increased public transport trips to the Gold Coast Airport.
- Reduced car-based travel.

The table below shows how each option delivers on the potential benefits. Light Rail Transit was the highest performer on transport outcomes.

2041 Forecasts	Base Case (for reference)		Light Rail Transit		Bus Lanes without Bridge Widening		Bus Service Enhancements with Minor Upgrades	
	Gold Coast	Southern Gold Coast	Gold Coast	Southern Gold Coast	Gold Coast	Southern Gold Coast	Gold Coast	Southern Gold Coast
Public transport use	5.3%	5.8%	6.0%	11.5%	5.5%	7.4%	5.4%	6.2%
Public transport person trips (daily trips)	155,586	14,500	176,649	29,060	162,033	18,563	157,915	15,476
Change in daily trips on Gold Coast Light Rail stages 1-3	75,289	-	+11,552	-	+466	-	-67	-
Change in daily cross-border public transport trips	4,093		+4,583		+1,664		+813	
Change in daily public transport trips to Gold Coast Airport	3,145		+1,864		+785		+151	
Change in daily car trips	2,457,190	208,766	-17,354	-11,660	+2,837	-2,131	+6,115	+407

Demand for light rail has never been stronger, with patronage now over 82 million paid passenger journeys since 2014 (as at end of February 2024). Source: TransLink patronage data.

Part 3 – Options assessment

6.5 Land use analysis

A detailed land use analysis was undertaken to forecast the additional population and employment attributable to investment in public transport in the southern Gold Coast from 2026 to 2041. The land use analysis demonstrated that there is a significant land use opportunity associated with Light Rail Transit.

By 2041, the provision of a Light Rail Transit solution in the area is forecast to accelerate the provision of dwellings and commercial floor space to result in:

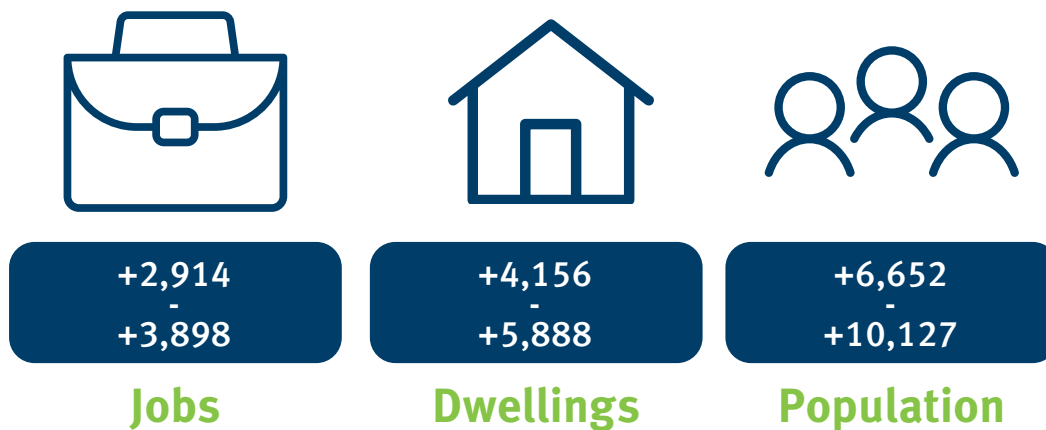
- A population increase of 10,127 residents in the project area compared to the base case.
- 3,898 additional jobs in the project area compared to the base case.

The land use benefits identified were a major driver of the economic benefits of the project, particularly the benefits of increased land values within the walking catchment of stations.

The land use analysis identified that Bus Lanes without Bridge Widening and Bus Service Enhancements with Minor Upgrades are not expected to unlock additional land use change in the same way as Light Rail Transit due to the lower vehicle capacity, reduced reliability, reduced ride smoothness and lack of permanency of the bus options.

Additionally, bus lanes are unable to provide the step change in transport amenity or capacity required to catalyse land use change. As such, the land use implications of the Bus Lanes without Bridge Widening and Bus Service Enhancements with Minor Upgrades, are not expected to be materially different from the base case demographic forecasts.

2041 Forecast additional jobs, dwellings and population resulting from Light Rail Transit



Note: Range reflects Conservative and Probable Scenarios respectively

The land use analysis does not rely on changes to the Gold Coast planning scheme to facilitate land use change.

Sections of the coastal edge and inland areas of the southern Gold Coast have been zoned medium density residential for many decades with the intention to support a low to medium rise, mixed use settlement pattern that reflects the lifestyle and amenity of this highly valued part of the city.

6.6 Economic analysis

An economic analysis identified that each of the project options will generate benefits for public transport users, road network users, the community, and the broader economy. The benefits come from the following categories:

- Transport benefits – travel time savings, additional fare revenue, improved station and vehicle amenity and vehicle operating cost savings.
- Community and broader benefits – reduced environmental externalities, emissions benefits, reduced accident costs, reduced road maintenance, improved access for those with a disability.

- Wider economic benefits that reflect the productivity of the Gold Coast.
- Urban development benefits – higher value land use, infrastructure and service cost savings, environmental and sustainability benefits, transport option value.

The economic analysis considers the economic costs and benefits in present value and benefit-cost ratio terms so each option can be compared on an equitable basis as shown in the table below.

	Light Rail Transit	Bus Lanes without Bridge Widening	Bus Service Enhancements with Minor Upgrades
Economic Cost (present value)	\$2.9 billion	\$2.0 billion	\$0.3 billion
Economic Benefit (present value)	\$2.6 billion	\$0.2 billion	\$0.1 billion
Net present value	-\$300 million	-\$1.8 billion	-\$0.2 billion
Benefit cost ratio	0.9	0.1	0.3

The economic costs and benefits are presented in present value terms (2023) which was determined by applying a discount rate of 7% to the total project cost or benefit over the 30 year assessment period (2041). The reason for this process is that money today is “worth less” in the future as costs increase. For example, the cost of milk today is greater than it was 10 years ago. This process is current industry practice and consistent with guidance from Infrastructure Australia.

The results of the economic analysis indicate that Light Rail Transit generates significant economic benefits that justify progressing this option to the Business Case stage for further investigation. Bus Service Enhancements with Minor Upgrades is a lower cost and low impact option and should also be taken forward to the Business Case.

Qualitative benefits

In addition to economic costs and benefits calculated as part of the economic analysis, a range of benefits have been considered qualitatively for their expected impact on economic outcomes. This includes an assessment of urban amenity improvements from reduced vehicle traffic, increased uptake of active travel, improved tourism experience, reduced need for road upgrades, reliability of road and public transport travel times. Additional transport capacity to support major events such as the Brisbane 2032 Olympic and Paralympic Games, has also been assessed.



On a benefit cost ratio basis Light Rail Transit was considered the preferred option to progress to the Business Case, while Bus Service Enhancements with Minor Upgrades was also recommended to progress as a relatively low cost option.

6.7 Legislative, regulatory and environmental review

Legal, regulatory and environmental assessments were undertaken as part of the Preliminary Evaluation. The assessments identified several legal issues that will require further consideration in future project stages, including:

- An approval under the Environment Protection and Biodiversity Conservation Act 1999 will be required where the project will have or is likely to have a significant impact on any Matters of National Environmental Significance, such as protected flora or fauna species, and works on Commonwealth land at Gold Coast Airport.
- The extent to which activities will occur in waterways that are tidal waters or non-tidal water will need to be further delineated as detailed design and construction methodologies are developed. For example, while works are anticipated in the tidal waters of Tallebudgera and Currumbin Creeks, works may also occur in non-tidal waters at Flat Rock Creek.
- A comprehensive analysis of historical tenure and public works will need to be undertaken to determine the extent to which native title has not been extinguished. Where native title continues to exist, compliance with the relevant future acts regime will need to be undertaken.

- A Cultural Heritage and Management Plan or Cultural Heritage and Management Agreement will need to be prepared for the project to satisfy the statutory cultural heritage duty of care.
- The Department of Transport and Main Roads will negotiate with the Commonwealth (as registered owner) and Gold Coast Airport Pty Ltd (as the airport lessee under the Airports Act 1996) to acquire any Gold Coast Airport land.

The assessment determined that the legal and regulatory issues will be most significant for Light Rail Transit and Bus Lanes without Bridge Widening which both involve substantial new infrastructure (including multiple water way crossings) and modifications to the existing road network.

Additional considerations arise for Light Rail Transit because it involves works on Commonwealth land at the Gold Coast Airport. This will require further planning, coordination and engagement with the Commonwealth Department of Infrastructure, Transport, Regional Development, Communications and the Arts, the airport operator and lessee. More localised issues arise for Bus Service Enhancements with Minor Upgrades.

The assessment found that all identified issues could be managed through appropriate planning, coordination and mitigation strategies.



Image: View of Tallebudgera Creek looking towards the coast Source: TMR

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6.8 Community consultation

The Department of Transport and Main Roads undertook extensive community engagement coinciding with the completion of the corridor studies:

- Burleigh Heads to Tugun conducted in 2020
- Burleigh Heads to Tugun conducted from July to September 2021
- Tugun to Coolangatta conducted from October to November 2022.

The tools used for the consultation included project newsletters, webpage, email, phone, media statements and in-person sessions. The webpage allowed the community to access all consultation materials including a flythrough video, 360 degree panoramas, artist impressions, and the concept design. Reports about the multi-modal corridor studies were released and available on the GCLR4 website.

6.8.1 Burleigh Heads to Tugun community engagement

The community consultation outcomes from the Gold Coast Highway (Burleigh Heads to Tugun) Multi-modal corridor study showed overall support for the recommendation of a public transport route along the Gold Coast Highway as a potential solution to help improve the liveability and connectivity in and around the local communities.

The community consultation included telephone surveys during both the 2020 and 2021 consultation activities. The results of the 2020 independent community market research, where 500 residents and business decision makers were interviewed, showed overall strong support for the Gold Coast Highway Multi-modal Corridor Study recommendations, with 68% of residents and business operators indicating a level of positive support. Similarly, the 2021 independent community market research where 1005 residents and business decision makers were interviewed showed 63% of residents and business operators indicated a level of positive support.

The consultation included a range of activities including 43 in-person sessions.

Other results included:

1. The light rail extension along the Gold Coast Highway between Burleigh Heads and Tugun is a clear preference (58%) over bus lanes (25%), while a heavy rail extension to the airport from Varsity Lakes is highly regarded (87%)
2. Wildlife protection between Burleigh Head National Park and Burleigh Ridge Park was rated as of key importance (84% of the community), while M1 connectivity was noted as important by 82% of the community and is the biggest overall concern for business respondents (78%)
3. Development of an Oceanway path is considered important by 81% of the community
4. The primary benefits of the multi-modal corridor noted by residents include improved walking and bike riding paths, reduced traffic congestion and a faster and easier journey for commuters.

6.8.2 Tugun to Coolangatta community engagement

The most common themes raised at the community drop-in sessions and via feedback forms (both online and hardcopy) were:

- Parking and connecting services
- Retaining the village feel and providing a green corridor
- Light rail versus buses
- Route of the light rail
- The old Coolangatta Railway cutting
- Access
- Trams and congestion.

The consultation included a range of activities including eight in-person sessions.

6.9 Social impact evaluation

The purpose of the social impact evaluation was to capture the positive contribution that the project options make to society. It also enables any negative impacts to be identified and appropriately mitigated.

In the social impact evaluation, the existing social environment was used to establish a baseline to measure the likely degree of change (positive or negative impact) in the study area during the construction and operation phases of the project.

The evaluation considered all three shortlisted options and the relative positive and negative impacts each option could have. This would then identify which option has the greatest potential to realise significant positive social benefits.

Key elements of the evaluation include identifying the social and other benefits of the proposed project, the negative social impacts to be mitigated, and opportunities to create additional social value for the proposed project.

The approach to the social impact evaluation was based on the Queensland Government best practice Business Case Development Framework Social Impact Evaluation guide (2021). The social impact evaluation uses a three-step process.



Identify impacts

Potential social impacts were identified by considering a wide range of stakeholders including road and public transport users, residents and landowners, businesses, schools, community groups, cultural heritage groups, visitors and tourists, and special interest groups.

The social impacts were identified in categories including community impacts, health impacts, intergenerational impacts, personal and property rights, quality of life and cultural impacts, economic impacts, and lifestyle impacts.

Evaluate impacts

The social impacts were evaluated by assessing the change between the experience of stakeholders of the current state and the expected outcomes if each project option was delivered. Enhancements for positive impacts and mitigations for negative impacts were identified and also evaluated.

Integrate impacts

The social impact evaluation was integrated with other analyses in the Preliminary Evaluation.

Outcomes

The social impact evaluation concluded that:

- For all options, most of the positive impacts are expected to occur during operations of the project while many of the negative impacts are expected to be temporary during construction
- Light Rail Transit had the greatest positive social impact of the project options, and is significantly higher than Bus Lanes without Bridge Widening and Bus Service Enhancements with Minor Upgrades.

The key positive social impacts of the Light Rail Transit option include:

- Decreased network congestion – Light Rail Transit will reduce congestion on the road network as more people choose light rail over cars. It also provides improved accessibility for all users including people with disabilities and the elderly as well as people that do not drive.
- Improved public transport access to shopping, work, education, and entertainment opportunities.
- Improved travel time – Light Rail Transit will improve public transport and road user journey times within the study area.
- Increased economic activity along the corridor including access to businesses throughout the corridor.

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- Job creation – the project will support increased economic activity through easier access to business centres, creating attractive development opportunities along the corridor, and attract businesses and jobs to the area.
- Increased economic activity and development along the corridor.
- Support more effective urban development and reduce urban sprawl.
- Easier tourist access to popular destinations on the Gold Coast, boosting tourism activity and economic activity.
- Improved pedestrian safety and accessibility by providing new active transport infrastructure along the corridor.
- Improved public transport and active transport mode share, safety and security at public transport stations and through dedicated pedestrian and bike riding routes off-corridor.
- Increased property values – Property values within the walk-up catchment areas are likely to increase in the long-term due to improved connectivity and access to modern public transport.
- Enhanced green space – The project will seek to improve greening of the corridor by planting appropriate species for the light rail, road and pathway infrastructure.

- Promotes sustainable transport.
- Improved awareness and promotion of cultural heritage by improving access to, and general community knowledge of, cultural heritage sites along the corridor.

The key negative social impacts of the Light Rail Transit option include:

- Changes to local traffic conditions and access on the Gold Coast Highway and some adjacent streets. These will be mitigated through the project design and community awareness programs.
- Reduced local parking on the Gold Coast Highway and some adjacent streets.
- Property impacts throughout the corridor including compulsory acquisition of directly affected properties.
- Traffic impacts during construction.
- Construction disruptions to businesses within the corridor.

Summary

- Overall, Light Rail Transit has the highest net social impact rating (positive social impact) followed by Bus Lanes without Bridge Widening and Bus Service Enhancements with Minor Upgrades.



Artist's Impression: Light Rail, Thrower Drive station Source: TMR

6.10 Sustainability

The Infrastructure Sustainability Council's Infrastructure Sustainability Rating Scheme has been used to assess the potential sustainability of the project options.

The Infrastructure Sustainability Council definition of sustainable development is:

“Development that meets the needs of the present without compromising the ability of future generations to meet their own needs.”

(United Nations, 1987).

At the Preliminary Evaluation stage, this included a preliminary materiality assessment of the project options using the Infrastructure Sustainability Council Infrastructure Sustainability Scorecard.

The sustainability assessment ranked Light Rail Transit the highest of the three options as the long-term advantages of higher patronage use, seamless journey experience and alignment with the City of Gold Coast vision are greater than the other options. Key considerations included:

- For Light Rail Transit, there are greater construction impacts for both materials and community disruption, predominantly because of the new bridges required, which will need to be considered during planning and construction.
- Operationally, Light Rail Transit provides greater capacity and a better user experience as it connects to the existing Light Rail Transit infrastructure on the Gold Coast.

- There is the potential for the Light Rail Transit operations to be more impacted by climate change events, in particular flooding, due to the static nature of the rail infrastructure compared to buses.
- Light Rail Transit is aligned with community expectations and the City of Gold Coast vision, in particular the themes of liveable places and connected communities.

Reducing emissions

Public transport has a critical role to play in the transition a zero emissions economy, with transport emissions accounting for over 13% of Queensland's greenhouse gas emissions¹⁶.

The Queensland Government has a commitment to achieving net zero emissions by 2050, with an interim target to reduce emissions by 30% below 2005 levels by 2030. Investment in public transport, and moving people out of private vehicles, as well as greater urban consolidation, will play an important role in achieving this target.

Light Rail Transit provides the greatest capacity improvement for public transport and is expected to realise the greatest mode shift from private vehicles to public transport.

The Preliminary Evaluation forecast that Light Rail Transit will result in over 18000 trips per day being removed from the road network by 2041. From fuel emissions alone, Light Rail Transit will realise a reduction in carbon emissions of over 18000 tonnes per day, compared to only 2900 tonnes per day for Bus Lanes without Bridge Widening and 1500 for Bus Service Enhancements with Minor Upgrades.

¹⁶Source: Queensland Government, Queensland's 2020 greenhouse gas emissions and targets, www.des.qld.gov.au/climateaction/emissions-targets

6.11 Summary evaluation and ranking project options

A range of assessments were undertaken during the Preliminary Evaluation stage for the project. Each assessment identified a ranking for the project options. A summary of these rankings is outlined in the table below.

Light Rail Transit emerged as the overall highest performing option across the assessments with the highest scores across the transport outcomes, land use, economic analysis, community engagement, social impact, and sustainability assessments.

Bus Service Enhancements with Minor Upgrades was the top performer for cost and risk and financial analysis. Infrastructure Australia recommends that at least two options in addition to a “do-minimum” base case, be investigated in

the Business Case. Bus Service Enhancements has emerged as a low-cost alternative that may also be considered as a staging option.

There was no significant cost saving for Bus Lanes without Bridge Widening compared to Light Rail Transit. Bus Lanes without Bridge Widening underperformed on most other assessments. For this reason, Bus Lanes without Bridge Widening will not be progressed for further assessment.

Assessment area	Light Rail Transit	Bus Lanes without Bridge Widening	Bus Service Enhancements with Minor Upgrades
Risk analysis and cost estimate	3rd	2nd	1st
Transport demand modelling	1st	2nd	3rd
Land use analysis	1st	3rd	3rd
Economic analysis	1st	3rd	2nd
Legislative, regulatory and environment	3rd	2nd	1st
Community engagement	1st	2nd	3rd
Social impact evaluation	1st	2nd	3rd
Sustainability	1st	2nd	3rd
Project Costs (Economic Costs)	\$2.9 billion	\$2.0 billion	\$0.3 billion
Project Benefits (Economic Benefits)	\$2.6 billion	\$0.2 billion	\$0.1 billion
Benefit Cost Ratio	0.9	0.1	0.3

The economic costs and benefits are presented in present value terms (2023) which was determined by applying a discount rate of 7% to the total project cost or benefit over the 30 year assessment period. The reason for this process is that money today is “worth less” in the future as costs increase. For example, the cost of milk today is greater than it was 10 years ago. This process is current industry practice and consistent with guidance from Infrastructure Australia.

7 Conclusion

The Preliminary Evaluation has confirmed the strategic need for intervention in the southern Gold Coast transport network to provide a major boost to public transport connectivity as part of a multi-modal response to the identified problems and opportunities in this part of the city.

The Preliminary Evaluation has identified that a major investment in public transport could substantially boost accessibility, change the way people travel and result in a range of economic, social and environmental benefits for the southern Gold Coast as well as the northern Tweed and the broader region.

Without major investment in public transport, the increasing demand on the southern Gold Coast transport network is forecast to result in road capacity constraints and escalating congestion issues.

The ability to expand the road network, beyond currently committed projects (given geographic constraints), is limited and therefore continued growth in road transport demand in the absence of attractive, high-capacity public transport will result in unsustainable congestion growth. It is forecast that there will be congestion on all major traffic routes in peak times, including the M1. The annual cost of road network congestion is forecast to increase to \$117 million per annum by 2041.

Delivery of the Burleigh Heads to Coolangatta Public Transport Project will support the development of a multi-modal transport network on the Gold Coast and promote urban consolidation and sustainable transport usage. ShapingSEQ – the Queensland Government’s framework for achieving South East Queensland’s vision for growth – identifies catalytic infrastructure as a critical tool to manage population growth and achieve urban consolidation targets, which is currently set at 80% for the Gold Coast.

Delivery of the project is a city-shaping opportunity, with major investment in public transport in this corridor identified in ShapingSEQ, SEQ Regional Transport Plans 2021, Gold Coast City Transport Strategy 2031 and Gold Coast Public Transport Plan 2018-2028.

Improved public transport connectivity to the Gold Coast Airport will support the numerous major events that the Gold Coast hosts each year, as well as the Brisbane 2032 Olympic and Paralympic Games.

The project is intended to support more people living and working on the southern Gold Coast, improve public transport accessibility and efficiency and connect the Gold Coast Airport to major destinations for tourists.

In 2020, transport was the state’s third largest contributor to total greenhouse gas emissions. Delivery of an attractive, high-capacity public transport solution, which realises a shift towards public transport, decreased dependence on private vehicles and a more balanced multi-modal network further supports achieving the Queensland Government’s net zero emissions goals.

The Preliminary Evaluation included a comprehensive multi-phase options analysis process to generate and assess a range of project options and determine the most suitable options for further investigation in the Business Case stage.

Based on the analysis undertaken in the Preliminary Evaluation, it was recommended that Light Rail Transit and Bus Service Enhancements with Minor Upgrades (subsequently called Bus Enhancement Provisions) proceed to the Business Case stage.

Contact us

If you would like further information about Gold Coast Light Rail Stage 4 or to register for updates, please contact the project team:

Phone: 1800 316 365*

Email: gclr4@tmr.qld.gov.au

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