



Parramatta Light Rail Stage 2

Environmental impact statement



Executive summary

Transport for NSW is seeking planning approval to construct and operate the second stage of Parramatta Light Rail (the project). The project would connect the Parramatta CBD and the first stage of Parramatta Light Rail to Camellia, Rydalmere, Ermington, Melrose Park, Wentworth Point, Sydney Olympic Park, and the Carter Street precinct in Lidcombe, adjacent to Sydney Olympic Park.

Parramatta Light Rail will deliver an integrated light rail service that meets the needs of population and employment growth expected throughout Sydney's Central River City, including the Greater Parramatta and the Olympic Peninsula (GPOP), in accordance with the NSW Government's vision for the Greater Sydney Region described in *A Metropolis of Three Cities* (Greater Sydney Commission, 2018a). Parramatta Light Rail will connect with existing and future modes of transport, including buses, trains, ferries and active transport (pedestrian and cycle networks), as well as Sydney Metro West services and the existing road network.

Parramatta Light Rail Stage 1, which connects Westmead to Carlingford via the Parramatta central business district (CBD) and Camellia, was approved by the NSW Minister for Planning in May 2018. Major construction is underway, with the track installation complete and light rail stop construction in progress. Stage 1 is expected to start operating in 2024.

The two stages of Parramatta Light Rail are shown on Figure ES.1

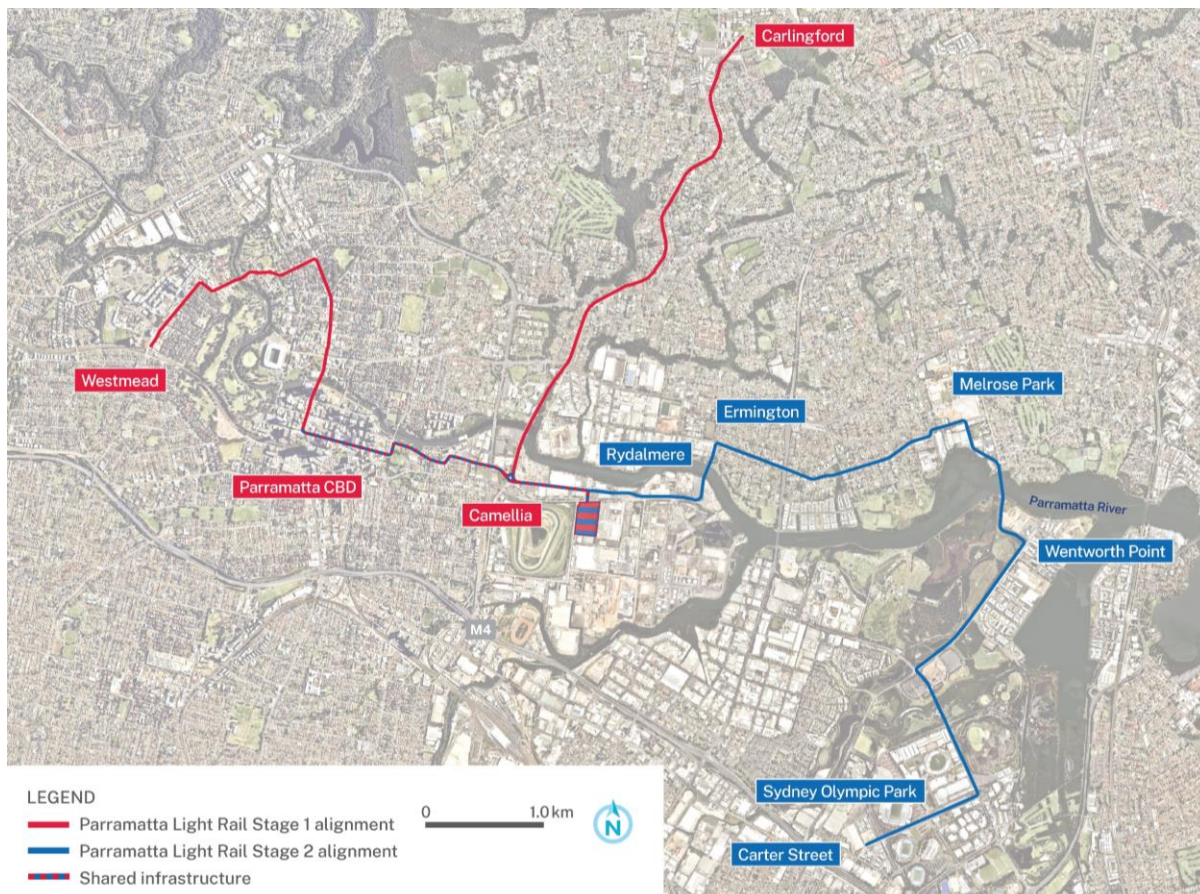
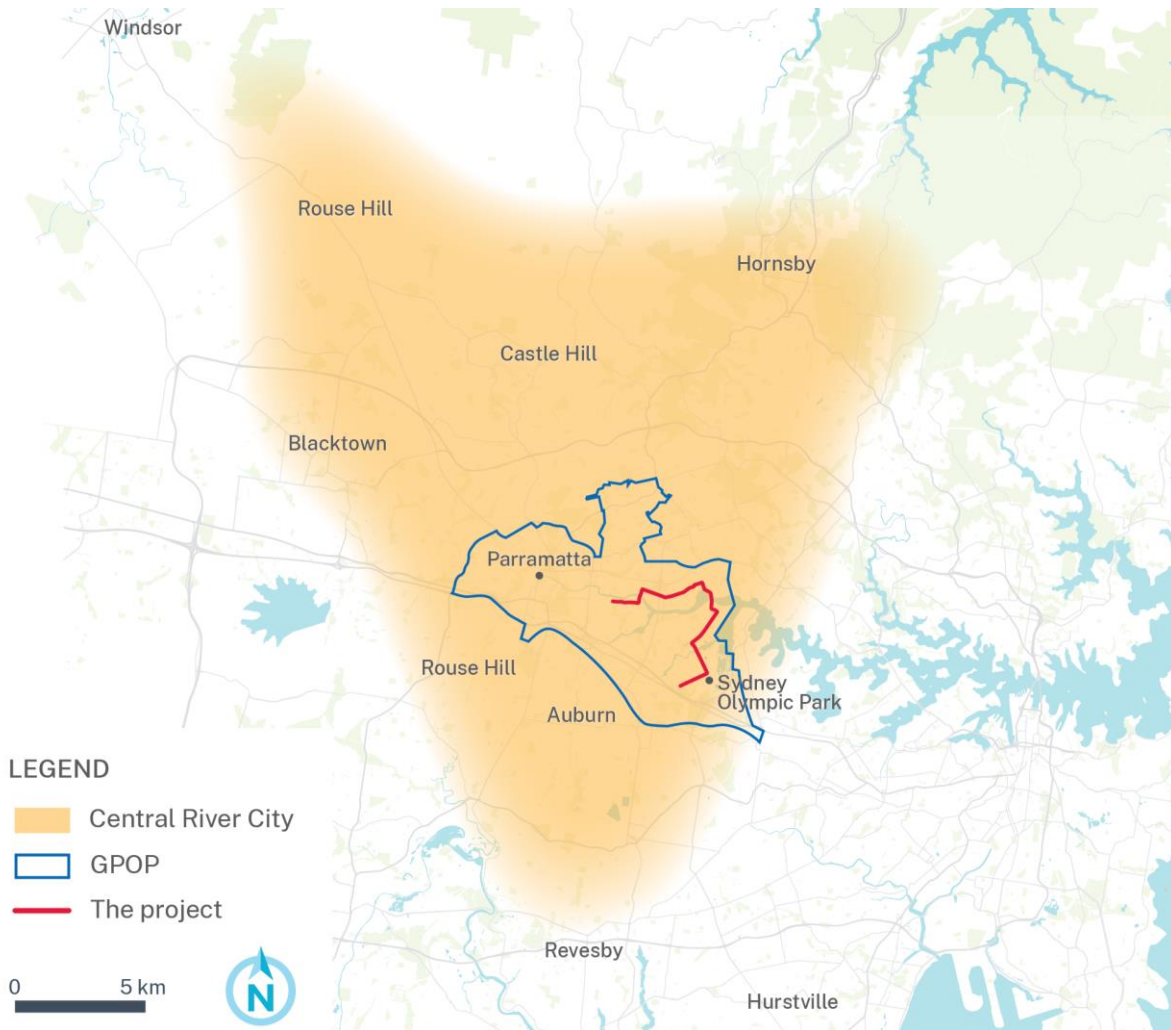


Figure ES.1 Parramatta Light Rail

Strategic context and location

The NSW Government’s Greater Sydney Region Plan *A Metropolis of Three Cities* (Greater Sydney Commission, 2018a) outlines a vision for a three-city metropolis, consisting of the Western Parkland City, Central River City and Eastern Harbour City. *A Metropolis of Three Cities* highlights the metropolitan centre of Greater Parramatta as the core of the Central River City. GOP, at the centre of the Central River City (see Figure ES.2), is one of the fastest growing areas in the city.

The 4,000-hectare GOP area within which the project is located (see Figure ES.2) extends from Westmead and Parramatta in the west to Sydney Olympic Park in the east. It encompasses existing and proposed urban renewal and development areas in Camellia, Rydalmere, Silverwater, Auburn and Sydney Olympic Park.



Source: *Greater Parramatta and Olympic Peninsula* (Greater Sydney Commission, 2016)

Figure ES.2 Location of GOP relative to the Central River City

Most of the project would be located in the City of Parramatta local government area (LGA) in Parramatta, Rosehill, Camellia, Rydalmere, Ermington, Melrose Park, Wentworth Point, Sydney Olympic Park and Lidcombe (see Figure ES.4). The project would operate along the infrastructure constructed in these suburbs, and that constructed as part of Parramatta Light Rail Stage 1 in the suburbs of Parramatta, Rosehill and Camellia.

A small section (about 50 metres) of the proposed light rail alignment and associated road intersection changes would be located in the City of Ryde LGA in the suburb of Melrose Park, close to the northern bank of the Parramatta River.

Project need

GPOP was first identified as a priority growth area in the 2014 metropolitan strategy *A Plan for Growing Sydney* (NSW Government, 2014a) to build on existing infrastructure and support the growth of Greater Parramatta. GPOP is undergoing a major transformation, with significant investment in urban renewal, employment, education and cultural infrastructure.

The potential for growth within GPOP is constrained by a range of issues, which in turn affect development opportunities. Growth precincts within GPOP are geographically and functionally separated by natural and human-made barriers such as the Parramatta River, the M4 motorway, rail lines and other major arterial roads. The issues with connectivity and accessibility constrain the ability of communities in eastern areas of the Central River City and GPOP (including Melrose Park, Wentworth Point and Sydney Olympic Park) to readily access the Parramatta CBD and services and employment areas to the north and west.

Planned population and employment growth are currently being delivered without an effective transport network in the eastern areas of GPOP, affecting connectivity between the planned growth precincts, and contributing to worsening congestion on local and regional roads.

There is growing urgency to address the opportunities and challenges in GPOP, improve transport connectivity, and deliver a transport solution that will address the needs of the community. More than 40 per cent of residents and 30 per cent of employees in GPOP will be living and working along the project corridor by 2041. There will be 120,000 people and 75,000 jobs that need to be connected to one another and to Greater Sydney, driving increased demand for public transport services. Frequent and reliable public transport is essential for the success of GPOP's communities and businesses.

How the project meets the need

Two vital strategies for Sydney, *A Metropolis of Three Cities* and *Future Transport 2056*, recognised the importance of public transport to achieving the three cities vision for Greater Sydney. Without significant infrastructure investment, existing transport constraints and challenges will worsen. To fully realise the GPOP vision, a catalyst is needed. The project would make two key contributions to the Central River City – providing convenient public and active transport connections and creating successful places.

The project would ensure people and places in the Central River City are connected by an effective, integrated transport network, which is fundamental to supporting growth, providing access to jobs, housing, education, cultural attractions, recreation activities and business interactions. By aligning with the NSW Government's vision for GPOP, the project also supports *Future Transport 2056*, which emphasises the importance of the 30-minute city for GPOP and the significance of transport investment in the corridor.

The project would provide improved public transport capacity to service existing land uses and proposed urban renewal and development areas, in line with the *Central City District Plan* (Greater Sydney Commission, 2018b), *City Plan 2036* (City of Parramatta, 2020a), *Draft Camellia-Rosehill Place Strategy* (Department of Planning, Industry and Environment, 2021), *Melrose Park Northern Structure Plan* (City of Parramatta, 2016b), *Melrose Park Southern Structure Plan* (City of Parramatta, 2019b), and the *Carter Street Precinct Development Framework* (Department of Planning, Industry and Environment, 2020a).

The project, together with Parramatta Light Rail Stage 1, would deliver new light rail and active transport facilities along and across the Parramatta River, creating new regionally and locally significant connections for GPOP and the Central River City.

The project would also support urban renewal and placemaking, particularly in areas north of the river such as Rydalmere, Ermington and Melrose Park where existing open space would be refurbished and new and improved open spaces provided, including for active and passive recreational activities.

The project would improve connectivity across GPOP by providing:

- two additional public and active transport river crossings to connect north and south of Parramatta River
- frequent and reliable light rail services within the Central River City
- new active transport links and connections to existing routes
- integration with other transport facilities and modes, including Parramatta Light Rail Stage 1, Sydney Metro West, train, ferry and bus routes.

The project would improve transport choice and accessibility, attracting people away from the use of cars and reducing congestion. The provision of about 8.5 kilometres of new active transport would connect stops and provide links to existing cycle routes and key destinations. The project would complement the existing transport network, and other proposed network and active transport improvements, to support growth and respond to the growing travel demands within and beyond GPOP.

Frequent and reliable access to Sydney Metro West stations, particularly from the areas north of Sydney Olympic Park (Wentworth Point and communities on the northern side of the Parramatta River) and the Carter Street precinct, will be critical to unlocking the benefits of Sydney Metro West for GPOP residents.

Parramatta Light Rail objectives

The aim of Parramatta Light Rail as a whole is to deliver an integrated light rail service that supports the NSW Government's vision for GPOP, which is to become the geographic and demographic centre of Greater Sydney: 'Greater Sydney's true centre – the connected unifying heart' (Greater Sydney Commission, 2016).

To achieve this aim, the objectives for Parramatta Light Rail (including the project) are defined according to four categories, as shown on Figure ES.3.

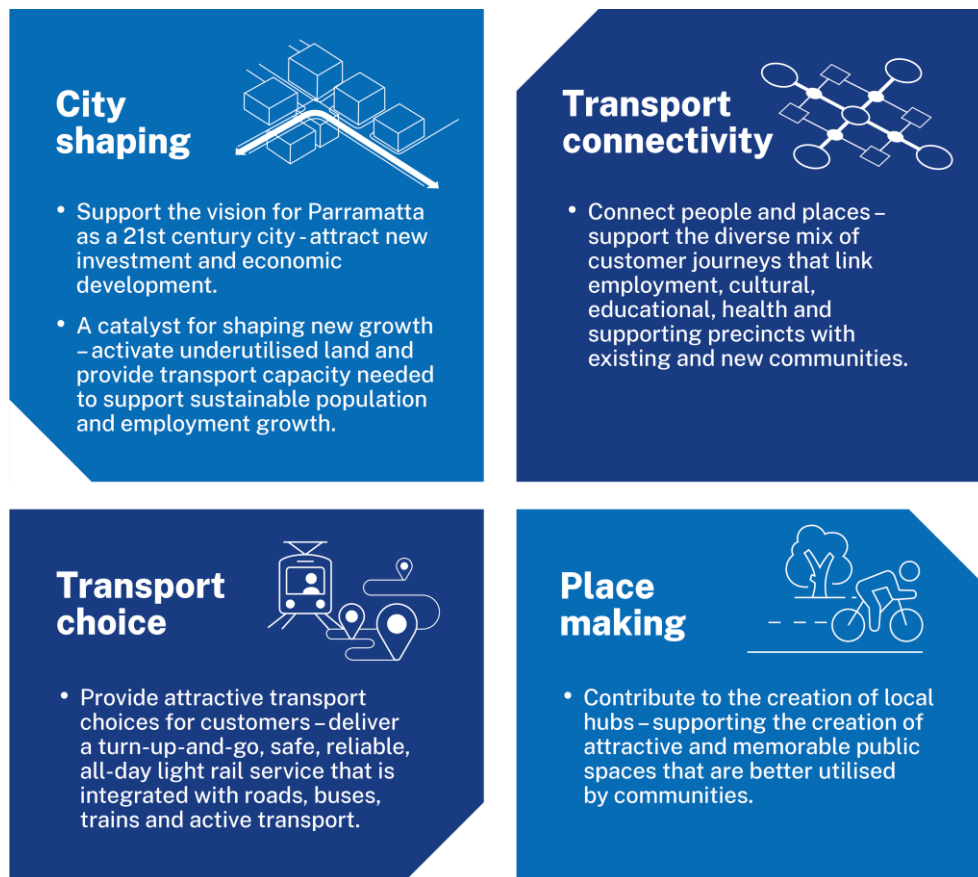


Figure ES.3 Objectives of Parramatta Light Rail

Key features of the project

The project comprises two main elements:

- construction of about 10 kilometres of light rail infrastructure between Camellia and the Carter Street precinct adjacent to Sydney Olympic Park
- operation of about 13 kilometres of light rail alignment between the Parramatta CBD and the Carter Street precinct, including a section of infrastructure constructed by Parramatta Light Rail Stage 1 between Camellia and the Parramatta CBD.

Light rail track and bridges

- a new 10 kilometre long dual light rail track, with 14 stops, between Camellia and the Carter Street precinct adjacent to Sydney Olympic Park
- two bridges over the Parramatta River between Camellia and Rydalmere, and between Melrose Park and Wentworth Point
- a bridge over Silverwater Road between Rydalmere and Ermington
- other bridge works in Ken Newman Park and Sydney Olympic Park.

Active and public transport integration

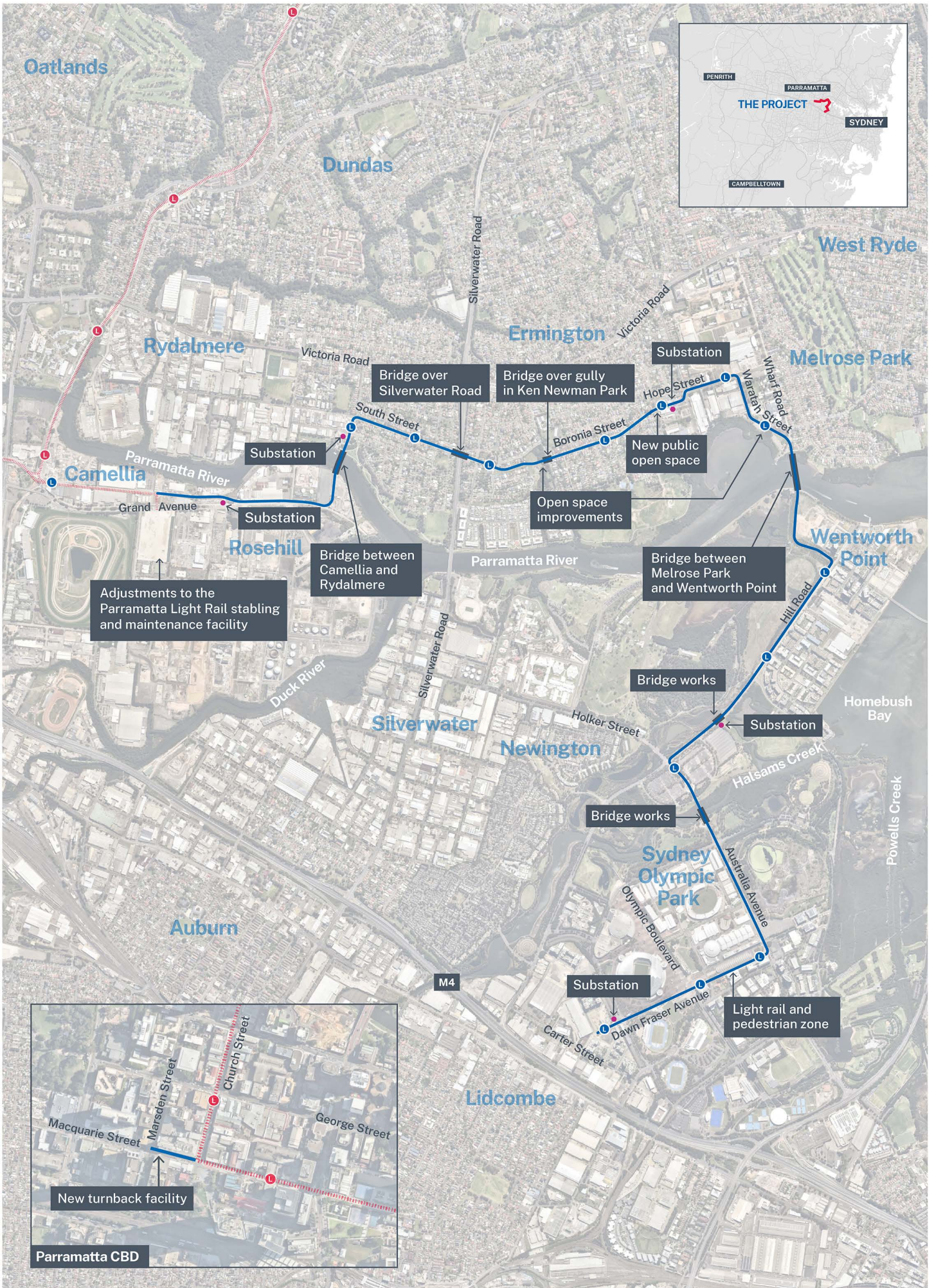
- about 8.5 kilometres of new active transport links between Camellia and the Carter Street precinct, which would connect with the existing cycling and pedestrian network
- interchanges with other forms of public transport, including trains, ferries, buses and Sydney Metro West, with the main interchanges located in the Parramatta CBD, Rydalmere and Sydney Olympic Park
- a shared light rail and pedestrian zone (no through vehicle access) within Sydney Olympic Park along Dawn Fraser Avenue between Australia Avenue and Olympic Boulevard
- bus access over the proposed bridge between Melrose Park and Wentworth Point.

Other works

Works proposed to support the project's operation:

- turnback facilities, including along part of Macquarie Street in the Parramatta CBD
- adjustments to the Parramatta Light Rail Stage 1 stabling and maintenance facility at Camellia
- five new traction power substations to convert electricity to a form suitable for use by light rail vehicles
- new and improved open spaces and recreation facilities at Ken Newman Park, the Atkins Road stop and Archer Park.

The project is shown on Figure ES.4.



LEGEND

- Proposed project alignment
- ⋯ Parramatta Light Rail Stage 1 alignment
- Proposed project stops
- Parramatta Light Rail Stage 1 stops

Figure ES.4 The project

0 1km



Operation

The project would operate between the Parramatta CBD and the Carter Street precinct, using a section of the Parramatta Light Rail Stage 1 alignment and the alignment constructed as part of the project.

Between the Parramatta CBD and Camellia, the project would operate along about three kilometres of the Parramatta Light Rail Stage 1 alignment. Parramatta Light Rail Stage 2 services would terminate at the Stage 1 Parramatta Square stop to allow customers direct and convenient access to Parramatta’s CBD, and interchange with Stage 1 light rail services, trains, buses and Sydney Metro West. Public transport interchange opportunities are shown on Figure ES.5.

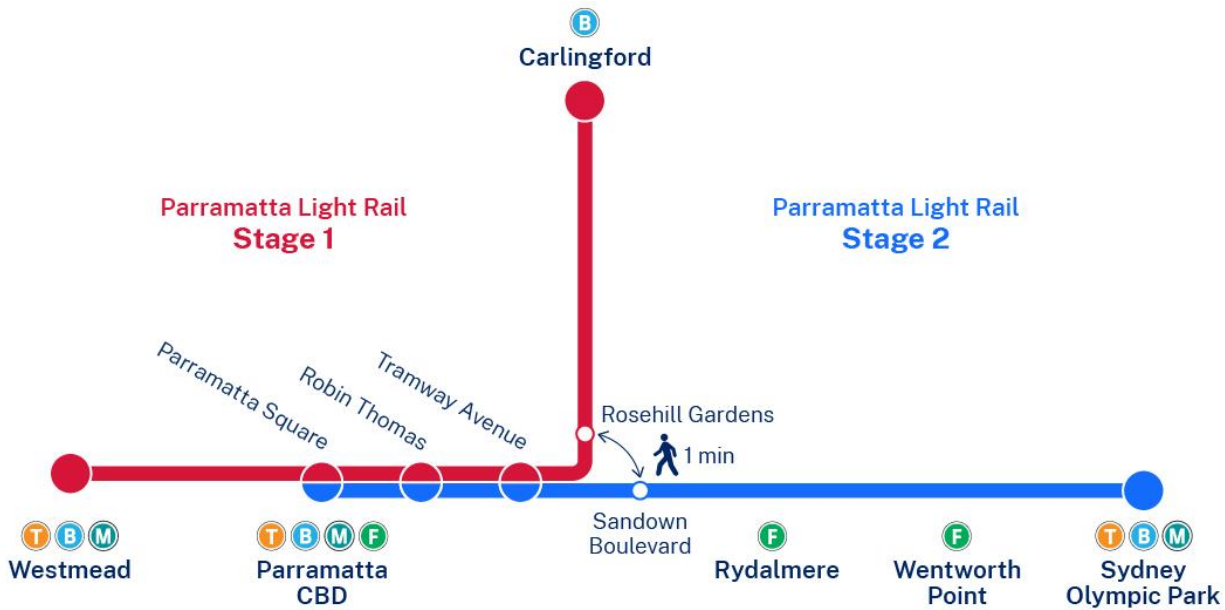


Figure ES.5 Parramatta Light Rail and public transport interchanges

From Camellia, the project would operate along the new light rail infrastructure through Rydalmere, Ermington, Melrose Park, Wentworth Point and Sydney Olympic Park, terminating at the Carter Street precinct. The project would operate as a turn-up-and-go light rail service from 5am to 1am, seven days a week, in line with Parramatta Light Rail Stage 1. The project would have travel times of around 31 minutes from the Carter Street stop in Lidcombe to the Sandown Boulevard stop in Camellia, and a further seven minutes to the Parramatta Square stop in the Parramatta CBD as shown on Figure ES.6.

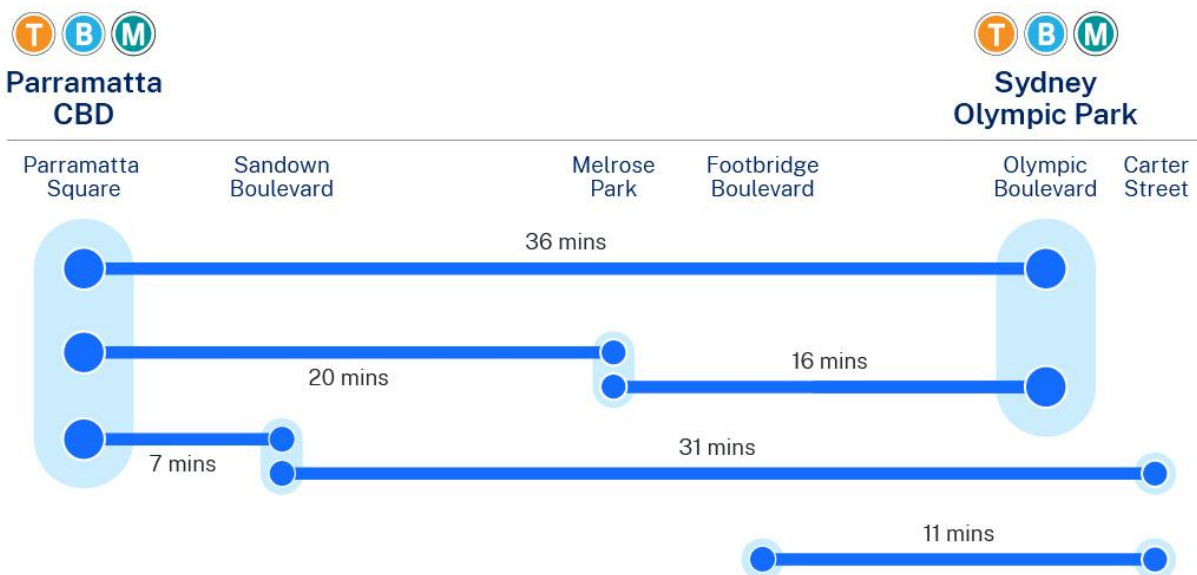


Figure ES.6 Estimated project travel times

Construction

Most of the project would be constructed on or adjacent to roads, with modifications to accommodate light rail track infrastructure and stops. Other works include installing drainage infrastructure, utility protection and relocation works, constructing retaining walls, installing overhead wiring, modifying some intersections and property accesses, public domain works, and constructing the active transport link.

Constructing the proposed bridges over the Parramatta River would require works within the river. The proposed bridge construction method has been refined to minimise potential impacts on environmentally sensitive areas, with the use of temporary working platforms in shallow areas at the edges of the river.

As the project would be constructed along road corridors, and involve adjustments to significant utilities at various locations, working hours are proposed (the 'primary project working hours') that would extend the recommended standard hours outlined in the *Interim Construction Noise Guideline* (DECC, 2009). The proposed working hours would enable works outside of peak traffic periods, reducing the overall duration of the works and potential impacts on the community. The proposed working hours are similar to those used for Parramatta Light Rail Stage 1, which materially reduced the number of nights worked and the associated noise and access impacts on the community.

The construction program presented within the environmental impact statement (EIS) provides the indicative timing of work activities and their sequencing. The final program, and commencement of works in each area, may vary.

Subject to planning approval and procurement, construction is planned to commence in 2025 and the first passenger services are anticipated to commence from 2030/31.

Project benefits

The project would enable the vision for GPOP and offer benefits to the community of the Central River City and GPOP as shown on Figure ES.7.



Figure ES.7 Project benefits

Alternatives and options considered

Project development activities included identifying and refining strategic transport mode and network alternatives, and corridor options. Community and stakeholder feedback, sustainable design principles, and the project objectives were considered in this process.

Nineteen possible corridor options between Camellia and Strathfield via Sydney Olympic Park were developed and evaluated. The performance of corridor options was evaluated using multi-criteria analysis against the objectives and project-specific criteria. Options that did not meet the project objectives or were considered to result in unacceptable community and environmental impacts or significant engineering challenges and costs were eliminated.

During the evaluation of corridor options the NSW Government announced the preferred route for Sydney Metro West, which included stations at Parramatta, Sydney Olympic Park, Burwood and North Strathfield. This was considered during the evaluation as it influenced the potential benefits of each corridor.

In 2019, a design was developed for the preferred light rail alignment between Camellia and the Carter Street precinct via Ermington and Sydney Olympic Park. This included consideration of the following key project elements:

- alignment options, including the location of bridges
- bridge types and construction methods
- stop locations
- turnback locations.

Design development continued in 2021 and throughout 2022 to refine the preferred alignment based on urban design and placemaking investigations, preliminary assessment of environmental impacts and ongoing community and stakeholder engagement.

The project has, and would continue to be, developed to ensure that it best meets the project objectives, reduces impacts as far as practicable, and provides value for money.

The proponent

The proponent for the project is Transport for NSW, the lead agency of the NSW transport portfolio, with primary responsibility for:

- transport coordination
- transport policy and planning
- transport services
- transport infrastructure.

Transport for NSW would manage the planning, procurement and delivery of the project.

Planning approval process

The project is declared State significant infrastructure in accordance with the *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act). As State significant infrastructure, the project needs approval from the NSW Minister for Planning. An EIS (this document) is needed to support the application for approval for State significant infrastructure under the EP&A Act. The approval process is shown on Figure ES.8.

The project has also been determined to be a controlled action under the *Environment Protection and Biodiversity Conservation Act 1999* (Cth) (EPBC Act) and requires approval from the Australian Minister for the Environment and Water.

The EIS considers the potential impacts of the project. It has been prepared in accordance with the requirements of the EP&A Act and the environmental assessment requirements of the Secretary of the Department of Planning and Environment.

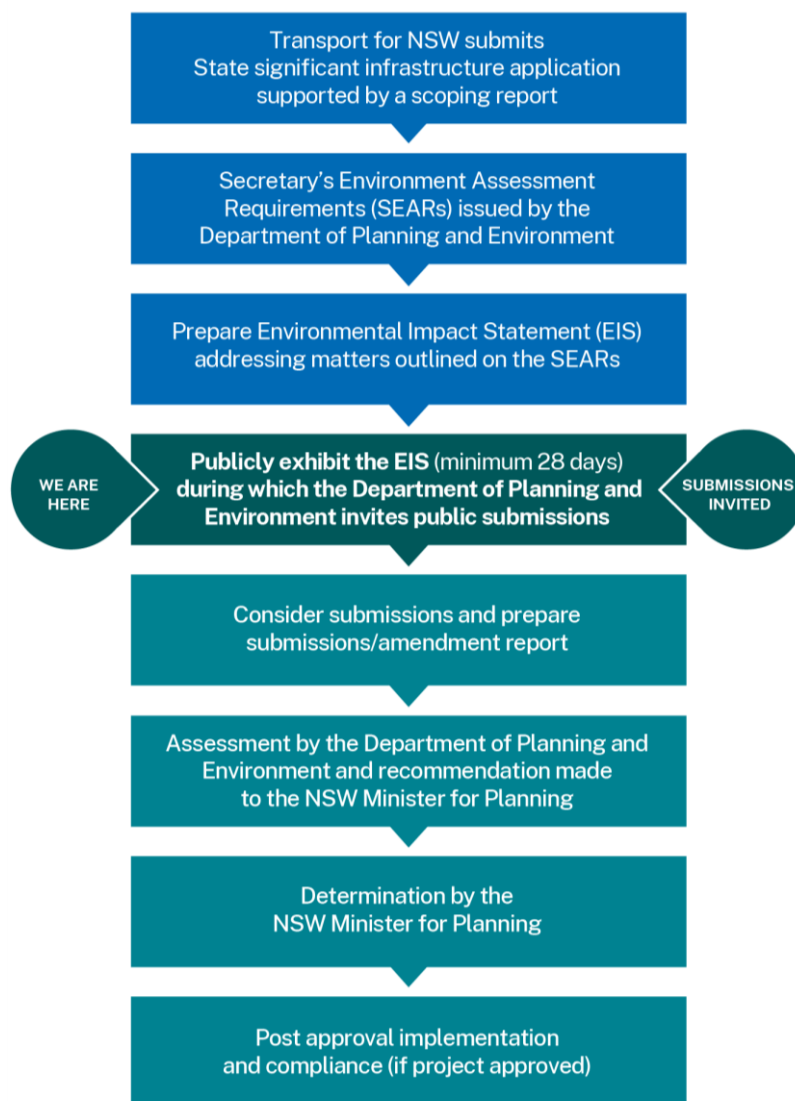


Figure ES.8 Approval process

Environmental assessment

The project has been designed to avoid and/or minimise environmental and community impacts. However, there would be some temporary and permanent impacts during construction and operation. Key potential impacts and measures to manage them are summarised below.

Construction impacts

Transport and traffic

Key potential impacts

Full or partial road closures would be temporarily required at various locations along the alignment during construction, with detours put in place as required. Detours would also be provided for any planned disruptions to active transport links. Existing bus services along Boronia Street (in Ermington) would detour via adjacent local streets. Bus stops would be relocated as close as possible to their existing locations. Property access would be maintained at all times or alternative access arrangements would be provided where required.

Construction of the bridges over the Parramatta River would result in the closure of car parking areas at Rydalmere Wharf and Ermington Boat Ramp, which would be used as construction compounds for about three years. While Rydalmere Wharf would remain operational for most of the bridge construction period, Ermington Boat Ramp would be closed for up to three years. During this period, the Silverwater, Rhodes, or Kissing Point Park boat ramps (or those further east toward Sydney Harbour) would need to be used. There would also be short-term closures of the navigational channel of the river to facilitate bridge construction, which would affect the F3 ferry service and other river users between Wentworth Point and Rydalmere.

Key mitigation and management approaches

A traffic and access management plan would be prepared and implemented as a part of the construction environmental management plan (CEMP). The plan would detail processes, requirements and responsibilities to minimise potential traffic, transport and access impacts during construction, including impacts on the safe and efficient operation of roads, public transport, active transport and special events. Impacts on navigation and access along the Parramatta River would be managed in accordance with a maritime works and navigation management plan.

Noise and vibration

Key potential impacts

An assessment of the predicted noise impacts on potentially affected receivers in each noise catchment area was carried out. The predicted noise levels are representative of the worst-case situation where construction equipment is located at the closest point to the most affected receiver and many items of construction equipment are used at the same time.

The noise assessment concluded that construction has the potential to impact surrounding sensitive receivers; however, most predicted exceedances are of a low magnitude (exceedances of less than 10 dB). Exceedances of the noise criteria were predicted at receivers during and outside recommended standard working hours, including potential sleep disturbance impacts. The largest number of exceedances are predicted in noise catchment areas north of the Parramatta River, where the project site is located close to residences, such as in Ermington and Melrose Park.

Construction vibration was assessed which identified the potential for human comfort and structural vibration impacts at the nearest receivers.

Key mitigation and management approaches

Mitigation measures have been developed with the aim of minimising or mitigating construction noise and vibration impacts where practicable. Where noise is above the construction noise management levels, all feasible and reasonable measures to minimise noise would be implemented, and all potentially affected receivers would be informed in accordance with the CEMP's noise and vibration management plan. If no quieter work methods are feasible and reasonable, occupants of affected residences would be engaged with to explain the duration and noise levels of the works and consult on respite periods.

Further engagement would be undertaken for noise-affected sensitive receivers during exhibition of the EIS to gain an understanding of the community's preferences on the primary project working hours, the overall construction program and the management of potential impacts on amenity.

Aboriginal heritage

Key potential impacts

The main potential for impacts on Aboriginal heritage would occur as a result of ground disturbing works during construction. Construction would have the potential to impact seven areas with sub-surface Aboriginal archaeological potential (known as potential archaeological deposits (PADs)), identified during site walks with representatives of the Metropolitan and Deerubbin Local Aboriginal Land Councils. Three of the PADs (in Melrose Park, Rydalmere and Sydney Olympic Park) are considered to have a high potential to contain subsurface archaeological deposits, and four PADs (in Rydalmere, Ermington and Sydney Olympic Park) are considered to have a moderate potential to contain subsurface archaeological deposits.

Construction also has the potential to impact two registered Aboriginal heritage sites (PADs) located in the Parramatta CBD.

Key mitigation and management approaches

Transport for NSW is undertaking a program of archaeological testing to establish the extent and nature of any archaeological deposits associated with the PADs to inform the next stage of design and minimise the potential for impacts as far as practicable. In parallel, consultation is ongoing with Aboriginal stakeholders, and includes an offer of detailed interviews to understand the potential impacts of the project on cultural values.

Transport for NSW is committed to embedding Country-led collaboration and design into the ongoing development of the project, embracing an Aboriginal co-design approach to deliver positive community and placemaking benefits. This Connecting and Designing with Country process has commenced and would continue through design development in consultation with Aboriginal stakeholders and relevant guidelines.

Where impacts are unavoidable, these would be managed in consultation with Aboriginal stakeholders and in accordance with an Aboriginal cultural heritage management plan.

Non-Aboriginal heritage

Key potential impacts

Construction has the potential to directly impact six heritage-listed items/conservation areas (listed by a local environmental plan or State environmental planning policy):

- Tram Alignment (I6), Camellia
- Wetlands (I1) in Camellia, Rydalmere and Melrose Park
- Bulla Cream Dairy (Willowmere) (I64), Ermington
- Ermington Wharf/Wharf/Former Pennant Hills Wharf (I82, 165 and I40), Melrose Park
- Millennium Parklands Heritage Precinct (Item A/Conservation Area B)
- State Abattoirs heritage conservation area (Area No. 1/Conservation Area A)/State Abattoir locality (Item No. 1 and 2), Sydney Olympic Park.

Construction also has the potential to directly impact a potential heritage item (a house) in John Street, Rydalmere.

Most potential impacts are predicted to be minor. The potential for moderate to major impacts on heritage significance has been predicted for three items – Tram Alignment, a house in John Street (Rydalmere), and Bulla Cream Dairy (Willowmere).

Five areas with a medium to high potential for State significant archaeological resources, or a high potential for locally significant archaeological resources, were identified in the project site. Any archaeological remains present in these areas could be impacted by ground disturbing works.

Key mitigation and management approaches

Transport for NSW is undertaking a program of archaeological testing within the areas of archaeological potential to establish the extent and nature of any non-Aboriginal archaeological material to inform the next stage of design and minimise the potential for impacts as far as practicable.

Design and construction planning would aim to minimise potential impacts on heritage items as far as possible. Where impacts are unavoidable, mitigation measures would be implemented, including preparing and implementing a heritage management plan; an archaeological assessment, research design and excavation methodology; a heritage interpretation strategy; and archival recording.

Land use and property

Key potential impacts

The project would require land (outside existing transport corridors) temporarily (during construction only) and permanently (for the operational infrastructure) with consequent changes to land use and the potential for property impacts.

It is estimated that about 12.9 hectares of land would be temporarily required during construction. This would be additional to the permanent land requirements (described under operation impacts below) and are estimated to include about 3.5 hectares of privately-owned land and about 9.4 hectares of government-owned land. Construction would require the temporary use of land from about 22 properties (including about 35 lots), which would include some properties that are also affected by permanent land requirements. No land currently used for residential purposes would be required for construction only.

Properties affected by the temporary land requirements include parks and reserves (including Eric Primrose Reserve, Broadoaks Park, Ken Newman Park, Archer Park and Ermington Boat Ramp, Koonadan Reserve, and Millennium Parklands) and industrial properties.

Temporary use of properties during construction may require removal of, or adjustments or improvements to, property infrastructure.

Properties affected during construction only would be confirmed during further design development and construction planning.

Key mitigation and management approaches

Property impacts would be further minimised as far as possible during design development and construction planning. Consultation with affected property owners and occupants would be ongoing to identify opportunities to minimise impacts on properties, where practicable.

Following construction, land temporarily affected would be reinstated to its pre-construction use and condition (or as agreed in consultation with the landowner/landholder) in accordance with the rehabilitation strategy. This would include reinstating affected infrastructure (such as fencing and driveways) as agreed with the landowner.

Socio-economic impacts

Key potential impacts

The main potential for impacts on people and communities during construction would occur as a result of:

- project land requirements and the need for residential property acquisition – it is estimated that about 15 residential properties may need to be fully acquired to construct the project
- changes to access arrangements and connectivity for residents, workers and visitors close to the project site
- changes to residential and community amenity, including as a result of noise, vibration, dust, traffic and visual changes

- impacts on community infrastructure, including the recreation and open space facilities noted above (under land use and property), which would commence during construction.

There would also be potential for impacts to businesses as a result of:

- project land requirements and associated acquisition
- changes to access arrangements and connectivity, including the availability of on-street parking
- amenity impacts
- any disruption to utilities.

Of the properties with the potential to be affected by the project's land requirements, about 31 of these are occupied by businesses that could be impacted. These potential impacts would commence prior to or during construction as properties are acquired.

Construction would directly benefit the economy, injecting economic benefits into the local, regional and NSW economies. The economic benefits of construction would include increased employment and training opportunities, and expenditure on goods and services associated with on-site construction activities and workers.

Key mitigation and management approaches

Comprehensive and appropriate communication and engagement with the community and other key stakeholders would play a key role in managing potential social and business impacts. Ongoing engagement would be undertaken with affected community members and business owners in accordance with the Community Communication Strategy and detailed engagement plans.

Place managers would work with the local community and businesses, and a social impact management plan, business management and activation plan, and small business support strategy would be developed and implemented to manage the potential for impacts.

Transport for NSW would continue to consult with the City of Parramatta Council, City of Ryde Council and Sydney Olympic Park Authority to offset the direct impacts of the project's land requirements on open space by providing active transport infrastructure, new and improved open spaces and increases to open space.

Visual amenity

Key potential impacts

Visible construction elements, such as work areas and ground disturbance, hoarding and/or fencing around work areas/compounds, equipment and machinery, stockpiles and partially constructed structures, may result in visual impacts in the vicinity of work areas and from sensitive viewpoints.

A number of trees would need to be removed at various locations across the project site to construct the project. This would have the potential for visual impacts where trees provide screening and contribute to the amenity and character of the local area.

Key mitigation and management approaches

A tree register would be prepared by a qualified arborist to identify all trees with the potential to be impacted by the project, and the design would continue to be refined to avoid or minimise impacts on trees identified in the tree register. A tree offset strategy would be developed to offset the loss of trees that cannot be avoided. The strategy would outline the delivery of a significant number of new street trees that would be planted along the alignment and in surrounding streets, providing a valuable addition to the existing urban tree canopy to achieve a net increase in tree canopy.

Construction sites would be managed to minimise the potential for visual impacts as far as possible.

Biodiversity

Key potential impacts

The majority of the project site is located on land that has been significantly modified by clearing and development. Native vegetation is predominantly associated with riparian zones (along the Parramatta River and Haslams Creek) and Newington Nature Reserve, as well as areas in Sydney Olympic Park (in the Millennium Parklands).

The main potential for adverse impacts on biodiversity would occur during construction. About 2.55 hectares of native vegetation would be removed. This includes about 1.59 hectares of vegetation that is listed as an endangered ecological community under the *Biodiversity Conservation Act 2016* (BC Act), and 0.05 hectares of vegetation listed under the BC Act, EPBC Act and *Fisheries Management Act 1994*. Construction of the proposed bridges has the potential to affect about 0.91 of aquatic habitats (wetlands) classified as protected marine vegetation under the *Fisheries Management Act 1994*.

Removal of vegetation would also affect areas of habitat associated with threatened fauna species, including the Green and Golden Bell Frog.

Construction also has the potential for indirect impacts on biodiversity as a result of activities within the project site, including edge effects and noise impacts on fauna.

Key mitigation and management approaches

Biodiversity offsets would be finalised to mitigate potential residual impacts on biodiversity in accordance with the NSW Biodiversity Offsets Scheme and in consultation with the NSW Department of Planning and Environment (Environment, Energy and Science Directorate).

The potential impacts that are not avoided or offset would be managed in accordance with the biodiversity management plan.

Water

Key potential impacts

The potential impacts on water mainly relate to erosion and the generation of sediment, particularly during construction of the bridges. This could impact downstream water quality if management measures are not implemented, monitored and maintained. Water quality in receiving watercourses, including the Parramatta River and Haslams Creek, could be affected by changes to overland flows, erosion of exposed soils, runoff from contaminated soils, and/or discharge of untreated (contaminated) groundwater.

Construction also has the potential to affect water quality by disturbing acid sulphate or saline soils, mobilising contaminated material (including contaminated Parramatta River bed sediments), and potential migration of existing contaminants in groundwater during dewatering.

Potential hydrology impacts include minor changes to runoff volumes and localised redirection of overland flows due to the presence of construction compounds, works and equipment. Due to the temporary nature of construction, and the relatively small size of construction areas, minimal impacts on surface hydrology, flood hazard, hydraulic function and community emergency management arrangements are expected.

Key mitigation and management approaches

The potential for water quality impacts would be managed by implementing standard erosion and sediment management measures, in accordance with the CEMP's soil and water management plan. Specific measures would be included to manage bridge construction, and the plan would include a program to monitor potential surface water quality impacts.

Mitigation and management measures would be implemented to reduce or eliminate the risks posed to the existing groundwater regime. These would include measures to manage the dewatering of excavations.

A flood and emergency response plan would be prepared setting out measures aimed at mitigating risks in the event of a major flood occurring during construction.

Soils and contamination

Key potential impacts

The main potential for impacts on soils would be during construction, which could expose contaminated soils and groundwater in areas where previously contaminating activities or land uses have been undertaken. This could affect water quality and human health.

The risk of disturbing or encountering contaminated material during construction varies depending on the extent and type of contamination and the work undertaken. Key potential contamination risks relate to disturbance of contaminated soils, excavation and ground disturbance in Camellia and Sydney Olympic Park, and construction of piers in the Parramatta River.

Other potential impacts on soils include erosion and sedimentation impacts and exposure of acid sulfate soils.

Key mitigation and management approaches

A contamination investigation is underway across the project site to provide further information regarding the presence of contamination. This assessment would be used to inform the need for further detailed assessment and/or remediation. Remediation action plans would be developed as required outlining any remediation strategies required to be implemented during construction.

Operational impacts

Transport and traffic

Key potential impacts

The project would deliver a new public transport service, operating between 5am and 1am seven days a week. As the light rail infrastructure would occupy existing roads for most of its length, traffic signals and other signage would be required to provide controlled access across the light rail alignment and facilitate safe access to local streets and properties. This would result in changed traffic circulation patterns along the alignment, particularly along South Street in Rydalmere and Boronia Street in Ermington, where access to a number of local roads would be restricted to left-in and left-out only.

Most on-street parking along the alignment would be removed to provide space for light rail and active transport infrastructure. While there is sufficient parking to accommodate displaced vehicles, there would be increased competition for parking in areas of Wentworth Point, Sydney Olympic Park and Lidcombe due to existing high utilisation rates.

The proposed active transport infrastructure would include high quality, continuous walking and cycling links along the light rail alignment. It would enhance connectivity, encourage increased movement and active lifestyles, as well as expand the catchment area around each stop.

The project would also result in net improvements to special events transport in the Parramatta CBD, Rosehill Gardens Racecourse and Sydney Olympic Park, by improving the transport options available for attendees.

Key mitigation and management approaches

A review of operational network performance would be carried out 12 months and five years after project opening to confirm the operational impacts on surrounding arterial roads and major intersections. Where required, additional feasible and reasonable mitigation measures would be identified in consultation with the Department of Planning and Environment and the relevant council to manage traffic performance impacts identified during the review.

A parking management strategy would be prepared to provide an overarching framework for managing potential parking impacts during construction and operation.

Noise and vibration

Key potential impacts

Operation of light rail services along the section of track constructed as part of the project would not generate airborne noise levels that exceed the airborne noise trigger levels.

Three receiver buildings have been identified as qualifying for airborne noise mitigation as a result of light rail vehicle movements along the section of track shared by Parramatta Light Rail Stage 1 and the project.

The relevant trigger levels for night-time groundborne noise impacts are predicted to be exceeded at about 149 residential receivers. These receivers are mainly located between John Street in Rydalmere and Melrose Park.

The reconfiguration of South and Boronia streets in Rydalmere to allow for the proposed centre-running light rail track is predicted to result in exceedances of the road traffic noise criteria at 32 residences on the south side of these roads.

Key mitigation and management approaches

An operational noise and vibration review would be undertaken during design development to confirm the potential impacts based on the final design and identify mitigation and management measures, which would be implemented to reduce operational noise and vibration levels to within acceptable levels. The review would include a detailed assessment of light rail vehicle movements, public announcement systems at stops, substations, and the modifications proposed at the Parramatta Light Rail stabling and maintenance facility in Camellia.

Non-Aboriginal heritage

Key potential impacts

The main potential for impacts on non-Aboriginal heritage during operation would be visual impacts, which include a permanent change to the setting of heritage items as a result of the removal of elements that contribute to the setting, the presence of new infrastructure (such as bridges and light rail stops), and the movement of light rail vehicles. The potential for major visual impacts has been identified for Bulla Cream Dairy (Willowmere). The potential for moderate visual impacts has been identified for:

- one item listed on the State Heritage Register – Newington Armament Depot and Nature Reserve (01850)
- three items listed by local environmental plans/State environmental planning policies – the Wetlands, Ermington Wharf/Wharf/Former Pennant Hills Wharf, and Millennium Parklands Heritage Precinct
- three unlisted items (houses in John and South streets, Rydalmere).

Key mitigation and management approaches

Design development would be undertaken in accordance with the urban design requirements and recommendations in Technical Paper 5 (Statement of Heritage Impact – Built Heritage) to minimise potential visual impacts on heritage items.

Visual impacts at Bulla Cream Dairy (Willowmere) would be substantially mitigated by the proposed new public open space around the item, indicative of the former nursery and house setting. The feasibility of relocating affected significant plantings would also be investigated during design development.

Land use and property

Key potential impacts

About 20.7 hectares of land outside existing road corridors would be permanently required for the project's operational infrastructure, which is estimated to include about 5.8 hectares of privately-owned land and about 14.9 hectares of government-owned land (the majority of which is owned by the Sydney Olympic Park Authority). The project's permanent land requirements would affect about 104 properties (about 118 individual land parcels), the majority of which would require partial acquisition.

Properties affected by the project's permanent land requirements include parks and reserves (including Eric Primrose Reserve, Ken Newman Park, Archer Park, Koonadan Reserve and Millennium Parklands), residences and industrial properties. Acquisition requirements would be confirmed during design development.

Partial acquisition of properties may require removal of, or adjustments to, property infrastructure (such as driveways and fencing). For properties adjoining the project site, which are not directly affected by the project's land requirements, some changes to property infrastructure (such as driveways and fencing) may also be required.

The project would affect about 3.9 hectares of industrial zoned land, three hectares of land zoned for environmental uses, 2.7 hectares of land zoned for recreation uses, and about 1.1 hectares of residential zoned land, with a permanent change in land use to transport purposes.

Key mitigation and management approaches

The design would continue to be refined to minimise land requirements and potential impacts on land uses and properties as far as reasonably practicable.

The project would provide new and improved open spaces and repurpose some residual land. This would offset the areas of open space directly impacted by the project.

All property acquisitions would be undertaken in accordance with the requirements of the *Land Acquisition (Just Terms Compensation) Act 1991*, the land acquisition reforms announced by the NSW Government in 2016, and the recommendations of the Auditor General's 2021 review of Transport for NSW's acquisition practices.

Socio-economic impacts

Key potential impacts

The project would generate local and regional socio-economic benefits and opportunities for GPOP, offering a range of city shaping, transport connectivity, choice and placemaking benefits described above (under project benefits). The main potential for impacts and benefits to people and communities during operation would occur as a result of:

- improved public transport facilities, with benefits to access and connectivity
- changes to residential and community amenity, with both benefits and impacts on residents and community amenity
- impacts on community infrastructure, including recreation facilities/open space, as a result of the project's permanent land requirements
- benefits to the community from the provision of new active transport infrastructure, new open space (at the Atkins Road stop) and improvements to existing open space (at Ken Newman Park and Archer Park)
- economic and employment benefits.

Some areas within existing parks and reserves would be permanently affected as a result of the location of project infrastructure. However, the project includes provision of active transport infrastructure, new and improved open spaces and recreational facilities, and increases to open space.

The project would improve access to community and recreation facilities for users, particularly facilities close to light rail stops. Communities would benefit from improved access to high quality facilities in Sydney Olympic Park and Parramatta, such as university campuses and other higher education facilities, sporting and event facilities. This is expected to benefit users of these facilities by providing more efficient travel times, whilst supporting opportunities for participation in educational opportunities, community activities, and active and passive recreation.

Potential ongoing effects on businesses include changes to access arrangements for employees, customer and service vehicles due to road and intersection alterations, and the permanent reduction in the availability of on-street parking in some areas. Access for businesses deliveries in Dawn Fraser Avenue (Sydney Olympic Park) would be maintained.

The project is anticipated to stimulate a range of development, jobs and other economic activity, and is central to realising the NSW Government's vision for GPOP as the heart of Greater Sydney. The realisation of the GPOP vision is critical to rebalancing access to jobs and housing to Western Sydney.

Key mitigation and management approaches

Transport for NSW would continue to engage with relevant stakeholders to ensure that impacts on community infrastructure are minimised and offset as far as practicable.

The social impact management plan would define how the social impact mitigation and enhancement measures would be managed including strategies identified as a result of ongoing engagement with the community and key stakeholders.

Visual amenity

Key potential impacts

The project has been designed with consideration of place outcomes and the identified vision, objectives and principles for design, place and movement.

The project's permanent infrastructure would change landscape character and affect visual amenity in some areas. The potential for impacts is higher where the project is located in open space areas, such as Eric Primrose Reserve (in Rydalmere) and Ken Newman Park (in Ermington), and where it adjoins the Millennium Parklands (in Sydney Olympic Park).

Visual impacts would occur as a result of the presence of project infrastructure (including tracks, stops, bridges and substations), removal of vegetation, and changes to existing roadways. The assessment concluded that the project would result in a more than moderate visual impact at six viewpoints – three located near Ken Newman Park in Ermington, two located near the Parramatta River at Rydalmere Wharf and Ermington Boat Ramp, and one located near Bulla Cream Dairy (Willowmere) in Melrose Park (with both positive and negative impacts at this viewpoint).

Key mitigation and management approaches

The potential visual impacts of the project have been, and would continue to be, reduced as far as practicable by undertaking an integrated, urban design led development process.

The project would be designed in accordance with the urban design requirements, which would be finalised in accordance with the design vision, principles and outcomes identified in the EIS. The urban design requirements would provide detailed guidelines for the project, including individual design elements. The requirements would be finalised in consultation with key stakeholders, the operator, the rail regulator, and the Design Review Panel.

Biodiversity

Key potential impacts

The proposed bridges over the Parramatta River would shade areas of vegetation adjacent to the project site that are not currently subject to shade. It is estimated that the project has the potential to result in shading impacts on about 1.3 hectares of native vegetation, which includes about 1.1 hectares of mangrove forest vegetation, and small amounts of saltmarsh and swamp oak fringing forest.

Key mitigation and management approaches

Biodiversity offsets (described above under construction) would include offsets for vegetation with the potential to be affected by shading.

Water

Key potential impacts

The proposed bridges have the potential to result in minor increases in upstream flood levels of up to 50 millimetres in the one per cent annual exceedance probability event at properties that are already impacted by flooding under existing conditions.

In-stream structures (such as bridge piers) may promote channel scouring resulting in channel migration and localised changes to the bed and instream habitat. Changes in river flow velocities due to the bridges, in particular the bridge piers, would be minor and localised, with no significant changes to flow predicted.

The project has the potential to result in minimal to localised minor changes to existing flood hazard conditions, overland flow routes and overland flow path capacities, and would be consistent with the *Lower Parramatta River Floodplain Risk Management Study* (SKM, 2005). With the proposed mitigation, the project is not expected to alter existing community emergency management arrangements for flooding defined in the *Parramatta Local Emergency Management Plan*.

Following implementation of the proposed water quality treatment measures, the project would contribute to achieving the NSW water quality objectives for waterways within the project site. The proposed upgrades and changes to stormwater drainage systems would generally increase the capacity of the local stormwater system and reduce potential impacts on properties during flood events. Some discrete areas may experience increased flooding greater than the flood management objectives where overland flows are affected.

Key mitigation and management approaches

Ongoing design development would be undertaken with the aim of minimising the impacts of flood afflux and scouring resulting from bridge piers, as well as in areas where drainage capacity may be inadequate, to further reduce the potential for impacts.

Justification summary

The EIS provides a justification for the project considered within the context of the project's objectives, impacts and benefits. In summary, the project is considered to be justified for the following reasons:

- potential environmental and socio-economic impacts have been avoided and minimised as far as is reasonable and feasible, measures to manage the potential for impacts have been developed, and appropriate consideration has been given to the potential for biophysical, economic and social impacts, and the principles of ecologically sustainable development
- the Parramatta Light Rail network, including the project, is central to achieving the GPOP vision – together with Parramatta Light Rail Stage 1, the project would deliver long term transport, economic and social benefits to the Central River City and GPOP

- there is a demonstrated strategic need for the project, which is consistent with relevant strategic plans and policies at the metropolitan, district and local levels
- the project achieves the objectives for Parramatta Light Rail.

Although constructing and operating the project would result in some impacts, with the implementation of proposed management and mitigation measures provided in the EIS, and in the context of the project’s need and benefits, the potential impacts are considered acceptable.

Community and stakeholder engagement

Engagement with the community and other key stakeholders has played an integral part of developing the project. An engagement process commenced following the announcement of the Parramatta Light Rail network in December 2015. Project-specific engagement started in January 2018 to raise awareness of the project, understand community and stakeholder questions and concerns, help shape and assess the project design, and guide future engagement. During 2021 and 2022, project engagement continued and included a range of in-person events, a virtual engagement space, online surveys, an updated website, and engagement with key stakeholders.

Community members were consulted on various aspects of the project including:

- level of concern about potential construction impacts and how these would be managed
- timing of construction
- suitability of proposed stop locations
- reasons for using the project.

Feedback from community and stakeholder engagement activities demonstrated a high level of support for the project. From a survey of 1,194 participants, about 80 per cent indicated their support for the project and specific project elements, such as the proposed alignment and stop locations (see Figure ES.9).

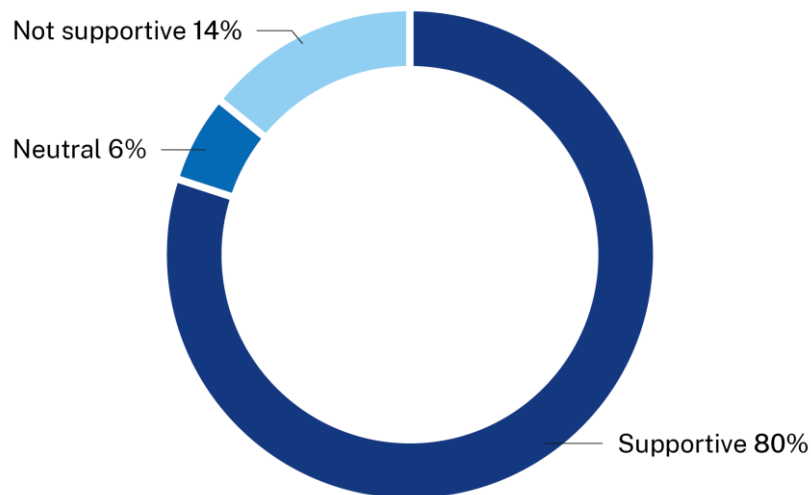


Figure ES.9 Community sentiment towards the project

Feedback on potential issues identified traffic and parking impacts as the impacts of most concern with residents and business owners, followed by impacts on biodiversity, and loss of access to public spaces.

Design and construction planning have, and would continue to, respond to these concerns.

How can I comment on the project and/or the EIS?

Public exhibition

The EP&A Act requires exhibition of an EIS for public comment for a minimum period of 28 days.

During the exhibition period, the EIS can be viewed on the NSW Department of Planning and Environment's Major Projects website (available at: [Major Projects](#)) and the Parramatta Light Rail website (available at: [Parramatta Light Rail](#)).

Advertisements will be placed in newspapers to advise of the public exhibition periods, where the EIS can be viewed, and to provide details of community consultation activities and information sessions.

Further information about exhibition periods and associated consultation activities is provided on the project website: [Parramatta Light Rail](#).

Making a submission

Submissions about the project are invited during the exhibition period from any interested person or organisation. Submissions can be made to the NSW Department of Planning and Environment via the Major Project's website (available at: [Major Projects](#)) or in writing at:

Director Transport Assessments
Planning and Assessment
Department of Planning and Environment
Locked Bag 5022
Parramatta NSW 2124.

Details on how to make a submission are provided on the project website and in other communication material. All submissions must be received before the close of the exhibition period (as detailed on the project website and the NSW Department of Planning and Environment's Major Projects website).

Engagement activities

Transport for NSW will provide opportunities for the community and other stakeholders to find out more about the project prior to making a submission through a number of consultation tools as well as in-person and virtual engagement events. A virtual engagement room with project information is available at: [Parramatta Light Rail Stage 2 Virtual Room](#).

Community members and stakeholders can contact the project team via the Parramatta Light Rail community information line, which is available 24 hours at 1800 139 389 or via parramattalightrail@transport.nsw.gov.au.