

Modelling

6 Jan 14

Capital Metro Light Rail Integration Study – Modelling Outputs

Output Type	Details of Outputs:	Used for:	Modelling Platform		
			CSTM	Micro-Simulation	SIDRA
Mode Share/Shifts	<ul style="list-style-type: none"> Aggregate trips by mode (PT, Car, Cycle, Total) 	<ul style="list-style-type: none"> Nature and distribution of impacts/benefits PT Fare Revenue (and resource correction) Aggregate mode shares/shifts 	<input checked="" type="checkbox"/>		
	<ul style="list-style-type: none"> Zone-to-zone trips by mode (PT, Car, Cycle) 	<ul style="list-style-type: none"> Nature and distribution of impacts/benefits Analysis of mode shifts by type of shift (no change; to/from car/PT/cycle relative to Base Case) "Rule of a half" corrections 	<input checked="" type="checkbox"/>		
	<ul style="list-style-type: none"> Aggregate trips for each category of mode shift (total for no change; to/from car/PT/cycle relative to Base Case) 	<ul style="list-style-type: none"> Nature and distribution of impacts/benefits Monetised travel time benefits "Rule of a half" corrections 	<input checked="" type="checkbox"/>		
PT Boardings	<ul style="list-style-type: none"> PT Boardings/alightings at stops in the LRT corridor 	<ul style="list-style-type: none"> PT passenger experience benefits (comfort, security, etc) 	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
PT Vehicle Loadings	<ul style="list-style-type: none"> LRT/bus passenger loading on links in the LRT corridor 	<ul style="list-style-type: none"> Crowding impacts/benefits 	<input checked="" type="checkbox"/>		
Visualisation of LRT Operations	<ul style="list-style-type: none"> Visualisation of LRT operational and traffic flows as 2D/3D animation. <i>(Note: To be negotiated as a variation if required. The current scope has not allowed for micro-simulation outputs for presentation purposes.)</i> 	<ul style="list-style-type: none"> Helping decision makers to understand how the LRT will operate Community engagement process Visualising/identifying potential problems Refining LRT planning/operations to improve integration and mitigate impacts 			<input checked="" type="checkbox"/>
Generalised Cost (GC) of Travel	<ul style="list-style-type: none"> Zone-to-zone GC by mode (PT, Car, Cycle) 	<ul style="list-style-type: none"> Analysis of changes in GC by category of mode shift (no change; to/from car/PT/cycle relative to Base Case) "Rule of a half" corrections 	<input checked="" type="checkbox"/>		
	<ul style="list-style-type: none"> Aggregate GC for each category of mode shift (total for no change; 	<ul style="list-style-type: none"> Monetised travel time benefits "Rule of a half" corrections 	<input checked="" type="checkbox"/>		

Output Type	Details of Outputs:	Used for:	Modelling Platform		
			GSTM	Micro-Simulation	SIDRA
Travel Times – Network-wide	to/from car/PT/cycle relative to Base Case)	<ul style="list-style-type: none"> Aggregate in-vehicle time (mins) by mode (PT, Car, Cycle) Average in-vehicle time (mins) by mode (PT, Car, Cycle) Aggregate journey time (mins, weighted mins for PT) by mode (PT, Car, Cycle) 	<ul style="list-style-type: none"> Nature and distribution of impacts/benefits Travel time impacts/benefits 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
			<ul style="list-style-type: none"> Nature and distribution of impacts/benefits Travel time impacts/benefits Nature and distribution of impacts/benefits Travel time impacts/benefits 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Travel Times - LRT Corridor	<ul style="list-style-type: none"> Travel time by mode (LRT, bus, car) for links in the LRT corridor 	<ul style="list-style-type: none"> Nature and distribution of impacts/benefits Travel time impacts/benefits Identifying potential bottlenecks 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Vehicle Kms of Travel (VKT)	<ul style="list-style-type: none"> Aggregate VKT by mode (car, bus, LRT, cycle) 	<ul style="list-style-type: none"> Decongestion impacts/benefits Vehicle Operating Cost impacts/benefits Road damage/Investment impacts/benefits Bus fleet investment (reduced number of buses with LRT) Safety benefits Environmental impacts/benefits (local emissions, Greenhouse Gas, noise, etc) Social impacts/benefits (separation, etc) 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	
Passenger Kms of Travel (PKT)	<ul style="list-style-type: none"> Aggregate PKT by mode (car, PT, cycle) Average trip length by mode (car, PT, cycle) Total walk distance in the LRT corridor 	<ul style="list-style-type: none"> Nature and distribution of impacts/benefits Health impacts/benefits 	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	

Output Type	Details of Outputs:	Used for:	Modelling Platform		
			CSTM	Micro-Simulation	SIDRA
Intersection Performance in the LRT Corridor	<ul style="list-style-type: none"> Intersection delays, queue lengths, etc Turning counts 	<ul style="list-style-type: none"> Nature and distribution of traffic impacts/benefits Refining the Micro-simulation model Evaluation of LRT priority at intersections Refining intersection operation (design, signals, etc) Planning tool for traffic management during construction 		<input checked="" type="checkbox"/>	<input type="checkbox"/>
Parking Demand	<ul style="list-style-type: none"> Car trips to travel zones with paid parking (Total trips to each of City, Belconnen Town Centre, Woden Town Centre, Tuggeranong Town Centre and Queanbeyan Town Centre) 	<ul style="list-style-type: none"> Parking revenue (and resource correction) 	<input checked="" type="checkbox"/>		
Population in the LRT corridor	<ul style="list-style-type: none"> Total Persons living in CSTM zones in the LRT walk catchment 	<ul style="list-style-type: none"> Nature and distribution of Impacts/benefits Densification Impact on real estate values 	<input checked="" type="checkbox"/>		
Jobs in the LRT corridor	<ul style="list-style-type: none"> Total Jobs in CSTM zones in the LRT walk catchment 	<ul style="list-style-type: none"> Nature and distribution of Impacts/benefits Agglomeration Wider Economic Benefits (WEBs) Productivity/competition WEBs 	<input checked="" type="checkbox"/>		



Consultation Report – Final

For: Capital Metro Agency

DECEMBER 20, 2013

Project Name:	Capital Metro Light Rail Integration Study
Project Number:	3002353
Report for:	Capital Metro Agency

PREPARATION, REVIEW AND AUTHORISATION

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EXECUTIVE SUMMARY

TRANSPORT FOR CANBERRA

The ACT Government's Transport for Canberra policy is strongly focused on increasing utilisation of sustainable transport options.

Better public transport services will help reduce the costs associated with multiple car ownership and traffic congestion, and will assist in reducing Canberra's greenhouse gas emissions.

CAPITAL METRO STAGE 1

As part of its comprehensive plan to revitalise public transport services and improve residents' transport choices, the Government is progressing development of a light rail network for Canberra. This is the Capital Metro project.

The first stage of Capital Metro will be a light rail system linking the growing region of Gungahlin with the existing commercial centres and amenities of Mitchell, Dickson and the City.

The route will have high quality stops at intervals of between 450 metres and 1.5 kilometres and major stations at Gungahlin Town Centre, Canberra City and Dickson.

CAPITAL METRO LIGHT RAIL INTEGRATION STUDY (CMLRIS)

The Capital Metro Light Rail Integration Study (CMLRIS) is designed to identify and assess options for integrating the City to Gungahlin light rail service into Canberra's overall transport network. This includes the ACTION bus network, the bicycle path network and the pedestrian path network. Options for Bike & Ride, Kiss & Ride, and Park & Ride locations along the light rail route will also be taken into consideration.

Potential light rail stop locations will be assessed in terms of integration with the overall transport system; the accessibility they provide to existing and future population, employment and other attractions in surrounding areas; and whether the number of stops adequately balances access with speed of service.

The design of light rail stops, and particularly features to promote usage and support transfers from bus and car to light rail, will also be investigated.

CMLRIS: OBJECTIVES AND DELIVERABLES

The CMLRIS is designed to provide advice on preferred locations for stops and stations and identify the opportunities, constraints, impacts, improvements and issues of light rail network integration with the bus and path networks.

While the CMLRIS may provide some views on issues outside of this scope, it is not designed to provide recommendations regarding technical solutions such as light rail vehicle type, future extension of Capital Metro, or specific station design. Such issues will be investigated in later stages of the Capital Metro project or through other studies.

CMLRIS COMMUNITY CONSULTATION

An eight-week public consultation process on the CMLRIS was held in October-November 2013. This consultation was designed to gather feedback from the community to help

ensure the City to Gungahlin transit corridor is effectively designed to encourage people to use light rail and that light rail successfully integrates with other means of transport.

In particular, the aim of this consultation was to seek input from the general public on issues relating to the CMLRIS objectives such as: requirements for effective modal integration; preferences for stop and station locations and Park & Ride, Kiss & Ride and Bike Ride locations and infrastructure; and other issues that will drive or diminish patronage.

The community input will be used in addition to other sources of information, including modeling and literature reviews, to make recommendations in line with the scope of the CMLRIS.

CONSULTATION OUTCOMES

The community and identified public stakeholders were invited to provide feedback in a number of ways during the consultation period.

Public stakeholders, those groups who had previously expressed an interest in light rail, were invited to attend a Public Stakeholder Engagement Session in early October 2013.

During the Public Stakeholder Engagement Session, attendees were given an overview of the CMLRIS to date and provided information regarding the light rail route and proposed stop locations. Some stakeholders provided feedback during this session.

Members of the general public were invited to attend one of three Community Information Displays held at town centres along the light rail route. People could provide feedback at one of these displays or via an online survey.

Written submissions were also welcomed.

It is estimated that over 300 people attended a Community Information Session. Five people completed a feedback form at one of these sessions and 441 people filled in an online survey. In addition, 10 written submissions were received.

CMLRIS material was also displayed at ACT Government Community Information Displays on The City Plan held from 21 October to 27 October 2013. It is estimated about 2280 people visited this display.

SURVEY FINDINGS

The CMLRIS survey posed 20 questions regarding the integration of light rail with other transport networks, light rail stop and station locations, and light rail facilities.

Of the 446 respondents, nearly all hold a current driver's licence and the majority are full or part-time employees.

Around 60 per cent of respondents currently do not use public transport or use public transport less than once a week.

The four factors which are most likely to influence an individual's decision to access public transport are:

- Frequency of public transport
- Reliability of public transport
- Speed of public transport

- Walking distance to the public transport stop

Around 60 per cent of respondents preferred a faster light rail system and were willing to have fewer stops to achieve this outcome.

Location of stops and stations

Two possible additional stops at Gungahlin Town Centre and the City Centre were shown in the consultation material and people were asked to indicate their preference. In Gungahlin Town Centre, respondents preferred an additional stop on Hibberson Street while both City Centre options were popular.

The survey asked respondents to consider whether any of the proposed stop locations along the route were unnecessary. Over 60 per cent of respondents felt that the number of stops being proposed were adequate to provide an effective and accessible light rail system between Gungahlin and the City Centre.

Of those who did feel some stops were excess to requirements, there was broad support for removal of Stop 3 and Stop 12. It was felt these were either too close to other stops or did not serve a large population and would cause an unnecessary delay to the light rail service.

The public was also asked if they believed additional stops should be incorporated into the light rail route. Less than 30 per cent of respondents thought additional stops were necessary.

Of those who did want additional stops, there were a number of calls for a stop at Swinden Street in Downer. A number of other stop locations were also proposed.

Requirements for stops and stations

In terms of design and amenity of light rail stops and stations, access to real time information about the light rail timetable is most important to the general public, followed by closed shelters and no smoking.

Integration with other modes

Respondents felt it was most important for light rail to integrate with the bus network, with connection to local pedestrian and bicycle paths and availability of car parking all running a close second.

Feedback suggests people want to be able to travel on light rail with their bicycle and also have secure storage options available at stops and stations.

The survey showed most members of the public would be willing to walk between 600 and 800 metres to or from a light rail stop or station.

Utilisation of light rail between City and Gungahlin

In terms of utilisation of light rail to travel between the City and Gungahlin, more than 50 per cent of survey respondents indicated they would access light rail between one and five days a week. A small proportion of respondents thought they would use light rail every day. Around 22 per cent said they would never catch light rail and just under 25 per cent believe they would utilise it less than once a week. It should be noted that about 40 per cent of respondents did not live in the City to Gungahlin corridor.

Public transport preferences

The survey sought to assess whether the community would be more likely to utilise a light rail public transport system compared to a bus service.

The City Centre to Gungahlin corridor is currently served by a Rapid bus service and respondents were asked whether they would prefer to catch light rail to this existing bus service.

Over three-quarters of respondents indicated they would be more likely to catch light rail.

If they were to catch light rail, most people would access it from one of the corridor end points – either Gungahlin Town Centre or the City Centre.

OTHER ISSUES RAISED DURING CONSULTATION

Generally respondents were supportive of the introduction of light rail and a number would like to see its construction fast-tracked. They pointed to the success similar systems have enjoyed in comparable cities and the many benefits this project can provide to the ACT. In addition to the health and congestion benefits, people discussed the need for Canberra to become a modern, mature and vibrant city and that light rail would contribute to this.

Some respondents expressed support for increased development along the light rail corridor. They felt it was sensible to allow for more retail, residential and office development.

Others indicated that the introduction of light rail would influence their future home purchasing decisions as they are more likely to buy along the corridor following the commencement of light rail services.

However, just under 10 per cent of respondents were strongly opposed to light rail as a transport option for Canberra.

A number of respondents, while supportive of the introduction of light rail, do not believe the first stage of the Capital Metro project should purely focus on the corridor between the City Centre and Gungahlin. They argued for an extended or different route. Particularly popular suggestions were to extend the route to the Parliamentary Triangle and the Airport.

Respondents provided recommendations for ensuring integration with other modes of transport. These included having the bus network operate as a shuttle/feeder service and for buses to be able to pick-up and drop-off directly at light rail stops.

To ensure ease of transfer between modes, a single payment system should be developed that works on all public transport.

It was also recommended that the type of light rail vehicle introduced in Canberra be a train not a tram. It was felt that a train would better support integration with the bike network and access for all users as trains, unlike trams, do not require passengers to step up to board the vehicle.

Safe passage of pedestrians and cyclists to light rail stations should be considered and this could be addressed in a number of ways.

Some respondents commented further on the amenities they would like to see at stops and stations. Well-lit stations and emergency call buttons are required to ensure the service is safe to use at night.

According to feedback received, the design of the light rail route should ensure it is faster than other modes of public transport and having to stop at intersections would be a major

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

PHYSICS 351

LECTURE 1

LECTURE 2

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1 INTRODUCTION

The ACT Government's Transport for Canberra policy is strongly focused on increasing utilisation of sustainable transport options.

Better public transport services will help reduce the costs associated with multiple car ownership and traffic congestion, and will assist in reducing Canberra's greenhouse gas emissions.

As part of its comprehensive plan to revitalise public transport services and improve residents' transport choices, the Government is progressing development of a light rail network for Canberra. This is the Capital Metro project

The first stage of Capital Metro will be a light rail system linking the growing region of Gungahlin with the existing commercial centres and amenities of Mitchell, Dickson and the City.

Capital Metro is not just a transport project; it aims to boost Canberra's sustainable development by changing the way the city grows and matures. Capital Metro will do this by improving transport options, encouraging urban infilling to cater for population growth and creating employment opportunities.

The first stage of Capital Metro will provide a cleaner and more reliable public transport service along the 12 kilometre route between the City and Gungahlin.

The route will have high quality stops at intervals of between 450 metres and 1.5 kilometres and major stations at Gungahlin Town Centre, Canberra City and Dickson.

The first stage will be developed on a median alignment along Flemington Road and Northbourne Avenue.

Capital Metro Light Rail Integration Study (CMLRIS)

This study (Capital Metro Light Rail Integration Study) builds on the Gungahlin to City Transit Corridor Study and will investigate matters relating to the integration of this section of the light rail corridor into Canberra's overall transport network.

It will also assess potential stop locations and examine the operational and capacity requirements of intermodal stations and stops.

In particular, the study will examine options for integrating the City to Gungahlin light rail stops and stations with the ACTION bus network and the bicycle and pedestrian path networks, and options for Bike & Ride, Kiss & Ride, and Park & Ride locations.

Potential light rail stop locations will be assessed in terms of integration with the overall transport system; the accessibility they provide to existing and future population, employment and other attractions in surrounding areas; and whether the number of stops adequately balances access with speed of service.

The design of light rail stops, and particularly features to promote usage and support transfers from bus and car to light rail, will also be investigated.

CMLRIS: Objectives and Deliverables

The CMLRIS is designed to identify the opportunities, constraints, impacts, improvements and issues of light rail network integration with the bus and path networks and make recommendations to address any integration issues.

This will include providing advice on preferred locations for stops and potential locations for Park & Ride, Bike & Ride and Kiss & Ride facilities along the corridor to maximise access and patronage.

As part of its work to ensure integration between light rail and other modes, the CMLRIS will provide input on the infrastructure and operational requirements of stations and stops along the City to Gungahlin corridor including recommendations regarding public transport, motor vehicle, cycle and pedestrian ingress and egress.

Integrated ticketing and real time information systems will be investigated.

The CMLRIS outcomes will be based on current and future population assumptions in order to develop a City to Gungahlin light rail network that will meet future demand.

While the CMLRIS may provide some views on issues outside of this scope, it is not designed to provide recommendations regarding technical solutions such as light rail vehicle type, future extension of Capital Metro, or specific station design. Such issues will be investigated in later stages of the Capital Metro or through other studies.

2 PURPOSE OF THIS REPORT

This report describes the activities undertaken and issues raised during the eight-week public consultation process conducted on the proposed route and stop locations for the first stage of Capital Metro.

This consultation was designed to gather feedback from the community to help ensure the City to Gungahlin transit corridor is effectively designed to encourage people to use light rail and that light rail successfully integrates with other means of transport.

In particular, the aim of this consultation was to seek input from the general public on issues relating to the CMLRIS objectives such as: requirements for effective modal integration; preferences for stop and station locations and Park & Ride, Kiss & Ride and Bike & Ride locations and infrastructure; and other issues that will drive or diminish patronage.

The community input will be used in addition to other sources of information, including modelling and literature reviews, to make recommendations in line with the scope of the CMLRIS.

Consultation was undertaken by the ACT Government with the support of SMEC and Talkforce Media and Communications Strategists.

A timeline for the stakeholder consultation conducted is provided in Table 1.

Table 1: CMLRIS stakeholder engagement timeline

Key Milestone	Target Date
CMLRIS Stakeholder Engagement	
Eight week feedback period begins (includes release of consultation materials and survey on website)	25 September 2013
Invitation sent to Public Stakeholders to attend an engagement session	26 September 2013
Public Stakeholder Engagement Session	10 October 2013
Advertisements announcing Community Information Sessions	15 October 2013
Factsheet mailout	14-18 October 2013
Community Information Session 1.1 (Civic Bus Interchange)	24 October 2013
Community Information Session 1.2 (Gungahlin Marketplace)	25 October 2013
Community Information Session 1.4 (Dickson Library)	26 October 2013
Eight week feedback period closes	15 November 2013
Consultation Report submitted	6 December 2013

3 PROVISION OF CMLRIS INFORMATION

A range of CMLRIS information material was developed for the public consultation process. This material was designed to notify the community of the study and provide enough information for people to provide feedback on work to date.

Material circulated publicly included:

1. A press release issued by the Minister for Environment and Sustainable Development, Mr Simon Corbell on 25 September 2013 announcing the start of the consultation process.
2. An advertisement in the Canberra Times and Canberra Chronicle announcing the public consultation process, including times, dates and locations of information displays.
3. Stakeholders, including those identified as requiring an engagement level of 'Inform, Consult or Involve', were also informed of the consultation period and invited to provide input. A full list of stakeholders and their engagement level is provided at Appendix B
4. A letter was sent to public stakeholders in the 'Consult' category inviting them to attend an engagement session to hear about and discuss the CMLRIS. A full list of stakeholders who were invited to this engagement session is attached at Appendix C.
5. A factsheet was mailed out to inform businesses and community members located near the light rail corridor of the consultation period and planned information displays. A list of suburbs that were part of this mailout is attached at Appendix D.
6. Posters were developed for public information displays. These were also uploaded onto the Capital Metro Agency website [<http://www.capitalmetro.act.gov.au/light-rail-integration-study>] as a source of information about the CMLRIS.
7. A feedback form was printed for distribution at public information displays. The questions from the feedback form were the basis of the questions for the survey on the CMLRIS website.

Facsimiles of the press release advertisement, factsheet, posters and feedback form are attached at Appendix E.

4 PUBLIC INFORMATION DISPLAYS

Three public information displays were held at central sites along the light rail corridor to inform the community of the Capital Metro Light Rail Integration Study and encourage people to provide feedback on: the proposed station and stop locations; integration with the transport network; and amenities required to ensure accessibility and patronage of light rail.

Each public information display was held for three hours at times of anticipated high foot traffic. Dates and venues for displays were advertised two weeks prior and local residents received a factsheet about the CMLRIS, which included details of the displays, between one and one and a half weeks before the displays took place.

Each display was manned by representatives from SMEC, Talkforce Media and Communications Strategists and the Capital Metro Agency.

Table 2 shows the schedule for public information displays:

Table 2: Community Information Session schedule

Location	Date	Time
Canberra City (Civic Bus Interchange)	Thursday 24 October 2013	11.30am-2.30pm
Gungahlin Town Centre (Gungahlin Marketplace)	Friday 25 October 2013	4pm-7pm
Dickson Shopping Centre (Dickson Library)	Saturday 26 October 2013	10am-1pm

It is estimated that over 300 people visited the displays. These included passers-by as well as people who had received a factsheet or seen an advertisement in a newspaper and purposely planned a visit to one of the displays.

CMLRIS material was also displayed at ACT Government Community Information Displays on The City Plan held from 21 October to 27 October 2013. It is estimated about 2280 people visited this display.

5 SUMMARY OF FEEDBACK RECEIVED

The community and identified public stakeholders were invited to provide feedback in a number of ways during the consultation period.

Public stakeholders, those groups who had previously expressed an interest in light rail, were invited to attend a Public Stakeholder Engagement Session in early October 2013.

During the Public Stakeholder Engagement Session, attendees were given an overview of the CMLRIS to date and provided information regarding the light rail route and proposed stop locations. They were invited to provide feedback during the meeting and this is summarised below.

Engagement session attendees, and any organisation who could not be represented at the engagement session, were also invited to provide a written submission if they so wished.

Members of the general public were able to complete a feedback form at a public information display, fill in an online survey or email or mail in a written submission.

Table 3 shows a breakdown of the format in which feedback was received:

Table 3: Feedback format

Type of Feedback	Number Received
Completion of feedback form at information session (or emailed in at a later date)	5
Online survey	441
Written submission (via email)	10

6 PUBLIC STAKEHOLDER FEEDBACK

Twenty six people representing sixteen stakeholder organisations attended the Public Stakeholder Engagement Session held on 10 October 2013. A list of attendees and apologies for this meeting can be found at Appendix C.

During this engagement session, attendees were provided with an overview of the Capital Metro project by Capital Metro Agency staff and of the Capital Metro Light Rail Integration Study by study team members.

In addition, the posters developed for the CMLRIS were on display and factsheets were made available.

Attendees were then invited to provide feedback on the information they had been provided. Outlined below are the issues raised during this meeting.

6.1 Location of stops and stations

Concerns were raised by the Downer Community Association that the proposed design of the corridor would limit access by Downer residents. This group called for a stop to be located at Swinden Street.

Another suggestion was to extend the light rail route into the new suburb of Kenny as this would also allow more people who live there and in Downer to access the service.

Stakeholders discussed whether additional stops are required in Gungahlin and Civic. Canberra Loves 40% suggested modelling be undertaken to show where people are travelling to and then stops planned to support this. For example, if people are likely to travel on from the City to Russell or the Airport, there should be an additional stop to the east of the City. A City-east station would also provide improved access to the Convention Centre and retail core of the City. However, the significant development taking place on the west side of the City was also noted.

A question was raised about the proposed placement of a stop near the Canberra Information Centre and whether this was needed when the Centre is likely to move. However, it was noted that if the Centre is moved then alternative development may take place on this site.

6.2 Integration with other transport networks

Integration with the pedestrian network

It was recommended paths to light rail stops be updated, this should include: raising them to create barriers; giving pedestrians priority; and lighting.

Pedestrian access to the corridor should be safe and logical so it is easy for people to work out how to access a station using pedestrian paths and it does not require too much backtracking. Access to stops could require lifts and safe access across major roads.

Integration with the cycle network

The corridor should be designed to ensure safe cycle access to stations. As an example of the types of issues that should be considered, Pedal Power ACT pointed out that the corridor map currently shows a station that can only be accessed by cyclists via Wakefield Avenue. However, this is a very dangerous road for cyclists and very few bike riders would ever use it.

Another idea was to have free publicly available bikes stationed at each stop.

Integration with motor vehicle traffic

It was suggested that purpose built Park & Ride facilities should be developed. If people are going to use this option to access light rail then dirt car parks were considered to be insufficient. Covered access from the car park to the light rail station was also highlighted as a priority.

Other countries have integrated light rail stations with multi-storey Park & Ride facilities that also have amenities such as supermarkets and dry cleaners.

It was suggested the advent of light rail could allow for redistribution of traffic lanes along Northbourne Avenue – resulting in a roadway with two lanes dedicated to motor vehicle traffic and one dedicated to cyclists.

Integration with the bus network

To ensure proper integration with buses, it was recommended buses be able to pull up on one side of the platform so people can step directly off the bus onto the light rail platform.

The bus network may need to be reconfigured to serve more as a shuttle service from surrounding services to light rail stops.

A principle for the Capital Metro project should be that the introduction of light rail does not significantly reduce the public transport services currently available to people.

6.3 Light rail vehicles

The light rail vehicles should be a train not a tram, according to a number of stakeholders.

Pedal Power wants light rail vehicles to be accessible to cyclists and people with a disability and this will require platforms to be the same level as entry to the vehicle (i.e. no step).

Living Streets Canberra said mobility scooters need to be considered and this could include space on some light rail vehicles, but also parking and charging docks at stations.

For cyclists it was recommended that there should be bike parking at all stops with bike cages available at some stops and stations and racks on which to hang bikes on some marked light rail vehicles.

Carriages that were adaptable to future proof the system were preferred. This may mean pursuing a technical solution that will allow carriages to be linked together when demand requires this. The design should mean only one driver is needed even if multiple carriages are connected.

6.4 Design

It was recommended stations be completely protected from the weather, be well-lit, have good security, provide real time information about services, and be well maintained.

Some larger stations should have MyWay recharging stations and possibly other amenities such as coffee shops and drycleaners. Having shops at stations would also improve passive surveillance.

It was suggested that at some points along the corridor it would be worth considering whether stations could be integrated into existing or planned buildings.

Attendees were positive about the opportunities presented by the fact the design of the light rail corridor and service is not limited by the need to integrate with or upgrade an existing system. Therefore, the design could incorporate 'out of the box' thinking such as running buses alongside the light rail tracks in the Northbourne Avenue median strip to get them off the road.

The corridor needs to look good as it will be located in the middle of the entrance to Canberra. Visitors to the National Capital should be impressed by their first sighting of the City.

If construction of light rail will require tree removal along the corridor the Government should be honest and tell people this will occur, explain why and outline any replacements being made. Light rail needs to be integrated into the existing landscape.

Design of the light rail corridor could also help support major events, in particular, Floriade and events at EPIC could be catered for.

6.5 Encouraging use of light rail

A service which was as quick as possible was preferred. Canberra Business Council suggested this may mean closing off some access roads onto Northbourne Avenue to reduce the number of sets of light. Cars could use parallel streets to reach an access point or street that allows them to cross or enter Northbourne Avenue.

Another issue to consider is synchronisation of traffic lights along Northbourne Avenue as this will impact on light rail speeds.

Fares should be less than the cost of car parking to make use of light rail attractive.

The biggest deterrent to light rail use will be if people have to make too many transfers. It was felt the maximum tolerance people will have is two transfers and an hour of travel time.

A mix of express and non-express services was recommended. The objective being to ensure that at any time passengers can access the service at all points along the corridor, but a faster trip is available for end-to-end travellers. This will be especially important to cater for the number of commuters that will be catching light rail in peak hours.

While it was noted that speed along the corridor will be governed by the slowest light rail vehicle on the line, the Canberra Blind Society felt this obstacle could be overcome through strong operational planning.

6.6 Capacity

It was pointed out that in order for light rail to operate successfully along the corridor, additional measures should be taken to ensure it is well patronised in both directions. Currently it is assumed the majority of users will catch light rail from Gungahlin to the City to work in the morning and home again in the evening. The ACT Chapter of the Australian Institute of Architects said the ACT Government should encourage development in Gungahlin that creates offices and jobs so people also travel from the City to Gungahlin for work.

The study team was asked to note that waiting for the light rail project to come on line has delayed infrastructure projects slated for Gungahlin.

Population projections are important to ensure the light rail system supports the Canberra of the future. This should include ensuring the corridor passes near proposed future developments.

6.7 Benefits and costs

The Heart Foundation suggested undertaking a health impact assessment as part of any future cost benefit analysis to quantify the health improvements that could be made through increased utilisation of active transport. Identifying this benefit could strengthen the argument for light rail in the ACT.

6.8 Location of maintenance depot/s

The location of maintenance depots was raised with it noted that a large facility would be needed. It was felt there was enough space in Mitchell to provide this service.

6.9 Consultation

Some stakeholders called for consultation to be held on more specific details of the Capital Metro project, such as the design of stops and stations, and with a broader constituency, to ensure the consultation process is successful. The ACT Chapter of the Australian Institute of Architects suggested the consultation being undertaken should incorporate how future redevelopment along the corridor is to be rolled out and include consultation with those people who currently live along the corridor.

The study team explained that these are outside of the scope of the CMLRIS and that further consultation will occur as part of the development of Capital Metro.

7 Written Submissions

Ten written submissions were received as part of the CMLRIS consultation process. Three were from public stakeholders who had attended or been invited to attend the Public Stakeholder Engagement Session or informed of the consultation process. Six submissions were made by people in their capacity as private individuals and one submission was made by an ACT Government directorate.

Below is a summary of the issues raised in these submissions. A full copy of the submissions can be found at Appendix F.

7.1 Location of stops and stations

One submission provided by a private individual reflected on the need for light rail to provide an express service between Gungahlin and the City Centre. Therefore, it proposed only having stops at Dickson and Braddon. Existing bus routes would continue to provide a service for anyone an express light rail service did not suit.

In terms of the location of the Gungahlin station, one respondent suggested Crinigan Circuit near the Gungahlin Oval grandstands as this would encourage use of light rail by people attending sporting events.

7.2 Integration with other transport networks

Integration with the pedestrian network

Living Streets Canberra called for light rail vehicles to be given priority at intersections to improve transit times.

To support safe and convenient access, light rail stops should be located adjacent to traffic signals. This will prevent people having to walk very far to access a safe crossing point and reduce the risk of people crossing at points along the corridor that do not have specific pedestrian crossings. It was suggested that the most sensible location for stops would be immediately after a traffic signal.

It is also worth considering development of offset signalised pedestrian crossings as this will improve safety and reduce the time required for people to cross the road to get to or from a stop.

As research shows that people will walk up to one kilometre using good walking facilities to reach efficient public transport, this project should result in the provision of footpaths along all streets within that distance of the route. These paths should be located one metre from the kerb and where possible walking and cycling paths should be separated.

The Conservation Council (ACT Region) pointed out that only two in five Canberra households have direct access to footpath and suggested the light rail project provides an opportunity to improve walking and cycling infrastructure to connect residential areas and schools with stops and stations. Development of this infrastructure should include consultation with communities about placement of paths.

Integration with the cycle network

Stakeholders were generally supportive of strong integration with cycling infrastructure and capacity to ride and park a bike at a station or take it onto a light rail vehicle.

Several submissions argued that the need for bike access should influence the type of light rail vehicle chosen to service this corridor. The light rail vehicle solution should be a train not a tram as trams do not have the space to accommodate bicycles.

Pedal Power ACT said light rail vehicles should have hanging spaces for bikes combined with wide access doors and a flat, open floor space. If the hanging bike racks are full, people need to be able to stand with their bikes in an open lobby space.

To integrate light rail with the cycle network, each stop and station should have gently ramped access from a bike path. This would also allow easy access for prams, wheelchairs and other mobility aids.

Delivery of the light rail network offers an opportunity to examine the existing cycle network and ensure people have a safe and attractive route to the light rail corridor. In particular, it may be important to provide off-road routes from surrounding catchment areas.

To support use of Bike & Ride, there should be secure weatherproof storage facilities provided along the route. At a minimum these should be available at Gungahlin, Mitchell, Dickson and the City Centre. Bicycle parking needs to be available at all stops.

Location of stops and bicycle storage facilities should also take into account the travel patterns and associated needs of users who are accessing light rail for purposes other than commuting to work, according to the Conservation Council (ACT Region). This would include visitors to Canberra.

Scoot & Ride

In addition to the types of integration already being examined by this study, Living Streets Canberra called for consideration to also be given to Scoot & Ride facilities. It was suggested these facilities could be co-located with Park & Ride stations or be stand alone at locations where space is insufficient for car parking.

Park & Ride

In terms of the proposed Park & Ride stations, the Living Streets Canberra submission supported the proposed facility at Gungahlin but not the station at Well Station Drive. It also felt a Park & Ride station alongside the Federal Highway near the Phillip Avenue light rail stop would be better patronised than a station at EPIC. However, this submission noted that there is only enough available land at this site for a Scoot & Ride facility not a Park & Ride station.

Integration with the bus network

According to Living Streets Canberra, patronage will be best served by utilising all existing bus stops along the route.

The Conservation Council (ACT) suggested instituting priority bus lanes for public transport on trunk public transport routes. These would provide buses with priority lanes and they would be suitable for conversion to light rail in the future.

Integration with other ACT policy and planning

Establishment of the light rail network and measures to integrate public and active transport will support the achievement of a number of ACT Government policy and planning targets and it is important to ensure all of these initiatives are well coordinated. The Conservation Council (ACT Region) proposed that all potential rapid transit routes be included in the Territory Plan to ensure they are not used for other purposes and called for

establishment of a cross-sectoral working party to foster collaboration and appropriate input from all agencies.

Encouraging modal shift

The Conservation Council indicated that in addition to developing integrated active transport networks, it is equally important to consider ways to motivate cultural and behavioural change. This could include strategies such as reduced availability of car parking spaces, particularly in the City Centre, and increased parking fees.

7.3 Design

It was proposed that the design of the system be a single track with passing loops at stops. This could reduce costs and use less space than fully duplicated tracks. This would also support provision of an express service as it could overtake slower light rail vehicles. Duplication could occur in the future if needed.

A number of submissions noted that light rail will run down Northbourne Avenue which serves as a formal entry to Canberra. Therefore its urban boulevard character should be retained and enhanced and could even be extended north of Antill Street at least as far as the Barton Highway intersection.

The Conservation Council (ACT Region) said verges should be cleared only to the minimum extent to promote safety. While removal of trees is unavoidable, replacement 'offset' vegetation should be planted and consideration given to the placement of pathways, stops and associated facilities in recognition of the conservation value of verges as wildlife corridors.

It is also important that new and extended walking and cycling infrastructure does not encroach on nature conservation areas

The study should also consider the fact the median strip between Antill Street and the Barton Highway intersection is not wide enough for light rail and that traffic studies have predicted that the capacity of Northbourne Avenue between Dickson and Flemington Road will need to be increased to three lanes in each direction.

To avoid a piecemeal approach to design, an integrated approach to transport planning should be considered as part of the provision of light rail. This should include road alignment and width, cycleways and pedestrian footpaths.

7.4 Median alignment

Living Streets Canberra argued for the light rail system to follow the western sides of Northbourne Avenue, the Federal Highway and Flemington Road instead of being developed on a median alignment on the roads between Gungahlin and the City Centre as is currently proposed.

It maintained that the western route would be faster and safer. In particular, it would avoid the need for light rail vehicles to cross cycle and motor vehicle lanes and for north bound cars to cross tracks when turning right.

The Conservation Council (ACT Region) noted the safety and access benefits a western alignment might offer, but said this needs to be balanced with practical considerations in relation to maintaining current verges and vegetation.

7.5 Further research and consultation

The Conservation Council (ACT Region) argued that in order to ensure a modal shift away from private motor vehicles to active transport, it is vital to understand the transport needs, preferences and barriers of Canberra and ACT region commuters. Therefore it recommended further research and consultation on these issues. In particular, it is important to understand the requirements of children, young people and people with special needs.

The factors that will motivate behavioural change also need to be investigated and there should be more opportunities for the provision of information and feedback to inform policy and program development. A study of work and non-work related transport behaviour and mode use should be funded.

7.6 Provision of travel information

The system needs to provide access to real time travel information at stops and stations and this information should also be available via mobile phones.

7.7 Development along the corridor

A submission suggested that residential blocks in Downer fronting onto Northbourne Avenue between Antill and Patton Streets be re-zoned to allow for high density development along this part of the corridor. This would increase the population living within easy walking distance of a light rail stop or station.

7.8 Health benefits of light rail

The ACT Health Directorate provided a brief written submission outlining its support for light rail due to proven health benefits. It pointed to research showing a correlation between light rail infrastructure and improved public health and an associated reduction of public health costs.

The Conservation Council's submission recommended doing more to educate the community on the health and other benefits of using light rail and other public and active transport modes.

7.9 Alternatives to the proposed light rail corridor

Before progressing with light rail, other public transport options should be considered, according to one submission. In particular, it would be worthwhile to assess an O-Bahn similar to that in Adelaide as this may be cheaper than light rail.

A submitter proposed that instead of the corridor running down Northbourne Avenue, a second north-south transport corridor be opened up that is aligned to where people live and work. It was suggested this should be on a street parallel to Northbourne Avenue. Use of underpasses at major intersections or even having portions of the route underground should be considered.

It has been proposed that at Dickson the route turn east along Antill Street and then left and north along Phillip Avenue until the Federal Highway. It was argued this would improve access for a large proportion of Inner North residents.

Another respondent called for the light rail service to be extended beyond the route proposed in Stage 1 and connect Gungahlin all the way through to Woden.

8 SURVEY RESULTS

8.1 Survey Statistics

Four hundred and forty one people completed the online survey. Five people filled in feedback forms at an information display. This section of the report examines the feedback provided by these members of the public.

8.1.1 Suburb of residence

To gauge whether respondents lived on or near the corridor and were therefore likely to access Capital Metro Stage 1, the opening question of the survey required people to indicate the suburb they live in.

Respondents lived in 121 different suburbs. In descending order, the suburbs with the highest response rates were:

- Lyneham (24)
- Downer (21)
- Watson (21)
- Harrison (19)
- Braddon (17)
- Ngunnawal (16)
- Turner (16)
- O'Connor (12)
- Bonner (12)
- Forde (12)
- Gungahlin (12)
- Ainslie (11)

All of these suburbs are considered to be in the catchment for the City to Gungahlin light rail. In total, more than half of the people who completed a survey live in a suburb that forms part of the City to Gungahlin corridor. (A list of these suburbs is available at Appendix D)

Approximately 40 per cent of respondents either live outside of the City to Gungahlin light rail corridor or did not provide a response to this question.

The figure below illustrates the parts of Canberra in which respondents indicated they reside.

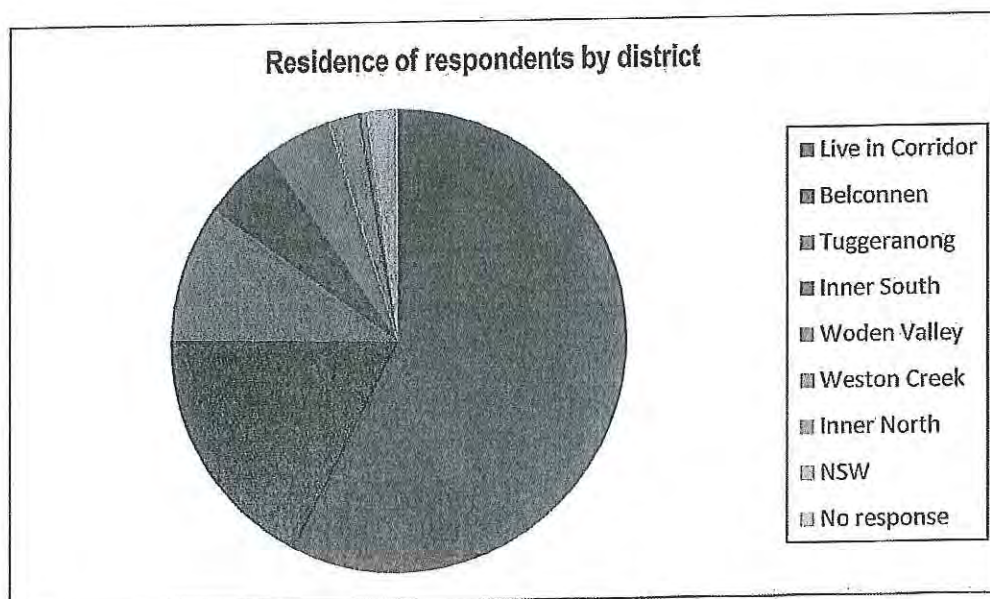


Figure 1: Respondents place of residence by district

A breakdown of the suburb of residence of each respondent is provided at Table 4.

Table 4: Survey respondent suburb of residence

Suburb	Response Count	Suburb	Response Count	Suburb	Response Count
Acton	4	Farrer	2	Macarthur	1
Ainslie	11	Fisher	1	Macgregor	2
Amaroo	9	Florey	2	McKellar	2
Aranda	3	Forde	12	Macquarie	4
Banks	5	Franklin	8	Mawson	2
Barton	2	Fraser	2	Monash	4
Beard	0	Garran	1	Narrabundah	3
Belconnen Town Centre	5	Gilmore	1	Ngunnawal	16
Bonner	12	Giralang	4	Nicholls	10
Bonython	2	Gordon	2	O'Connor	12
Braddon	17	Gowrie	2	Page	1
Bruce	8	Greenway	0	Palmerston	3

Calwell	2	Griffith	5	Pearce	3
Campbell	2	Gungahlin Town Centre	12	Phillip	2
Casey	3	Hackett	3	Queanbeyan	6
Chapman	4	Harman	1	Reid	1
Charnwood	2	Harrison	19	Scullin	3
Chiffley	2	Hawker	4	Spence	1
Chisholm	1	Higgins	4	Theodore	1
City	3	Holder	1	Torrens	1
Conder	1	Holt	5	Turner	16
Cook	4	Isaacs	4	Wanniassa	7
Coombs	0	Isabella Plains	3	Waramanga	3
Crace	7	Jacka	1	Watson	21
Curtin	3	Jerrabomberra	3	Weetangera	2
Deakin	2	Kaleen	9	Weston	1
Dickson	7	Kambah	10	Yarralumla	2
Downer	21	Kingston	8	OTHER	6
Dunlop	3	Latham	2	Answered question	445
Evatt	5	Lyneham	24	Skipped question	1
Fadden	3	Lyons	1		

8.1.2 Driver status

A major objective associated with the introduction of light rail transit in the ACT is to encourage more residents to use public transport instead of private motor vehicles. Therefore, the survey asked respondents to note whether they currently hold a drivers licence.

Nearly all respondents hold a current driver's licence with less than six per cent not having a licence.

8.1.3 Occupation

Survey respondents were asked to indicate their employment type by choosing between the following options:

- Homemaker
- Full-time employee
- Part-time employee
- Self-employed
- Primary/Secondary Student
- Tertiary Student
- Not Employed
- Retired

A majority of respondents were full time employees. Over 70 per cent of respondents indicated they were full-time employees with the next largest group of respondents identifying as part-time employees, followed by tertiary students and retirees. A breakdown of respondent employment 'type' is illustrated in Figure 2.

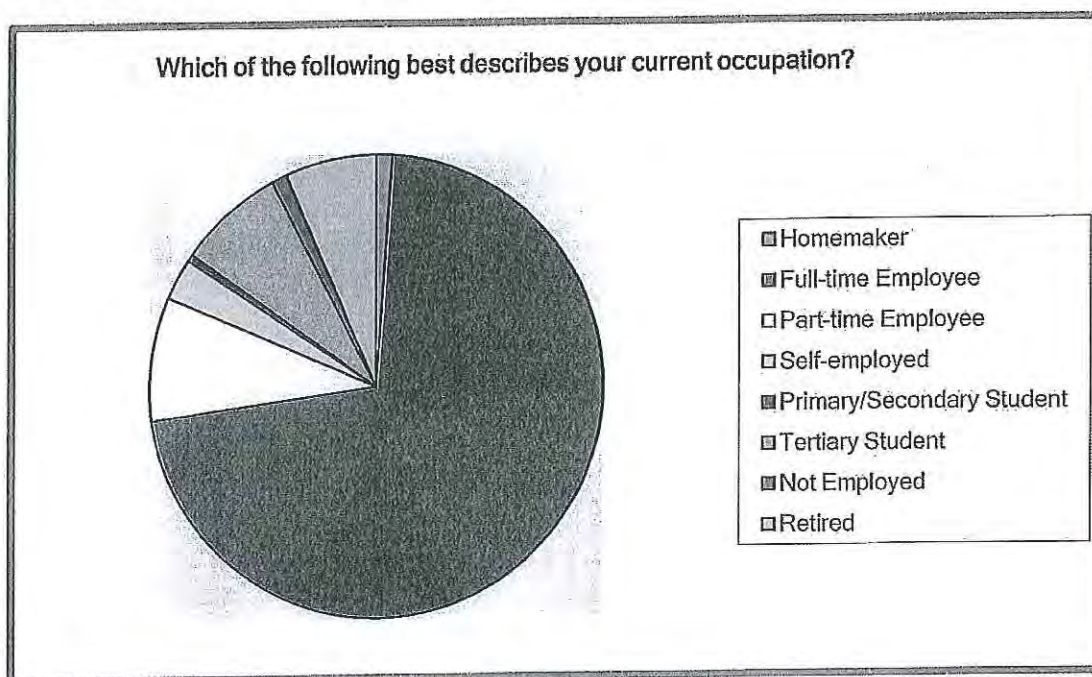


Figure 2: Comparison of respondents by occupation type

8.1.4 Frequency of public transport use

Respondents were asked to provide feedback on how frequently they currently use public transport based on five choices. Around 60 per cent of respondents currently do not use public transport or only use public transport less than once a week. Table 5 provides a summary of responses.

Table 5: Frequency of public transport patronage

Answer Options	Response Percent	Response Count
Never	31.4%	140
Less than once a week	29.6%	132
One or two days a week	13.7%	61
Four or five days a week	19.5%	87
Every day	5.4%	24
Answered question		444
Skipped question		2

8.1.5 Factors that impact on decision to utilise public transport

In order to understand what issues influence people's modal choices, respondents were asked to reflect on the factors that are important to them when deciding to use public transport.

Respondents were provided with 10 factors and asked to rank them from 1 to 10 in order of importance, with 1 as the most important factor.

Based on the feedback provided, the four factors which are most likely to influence an individual's decision to access public transport overall are:

- Frequency of public transport
- Reliability of public transport
- Speed of public transport
- Walking distance to the public transport stop

Figure 3 below shows how each of the 10 choices compared when all votes were collated. Based on the ranking system of this question (and similarly with Figures 8 and 9), the factors with the lowest number are those considered most important by respondents.

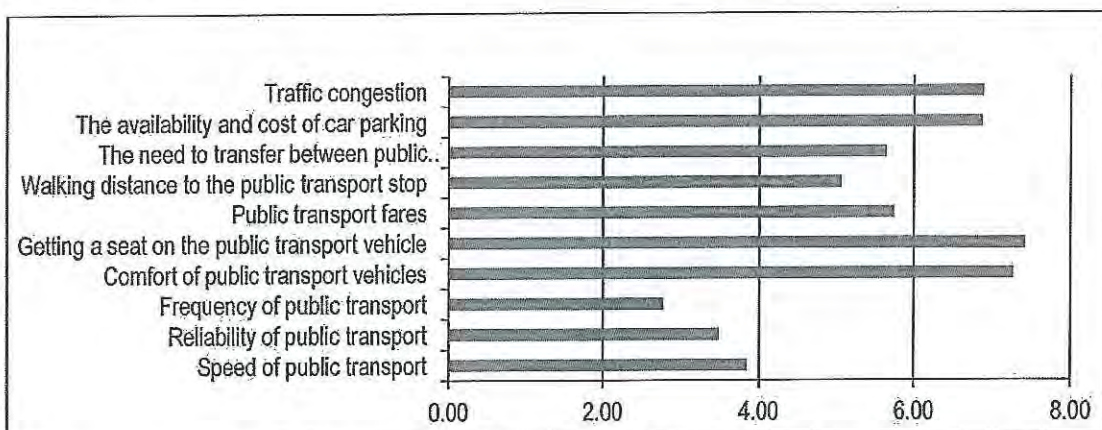


Figure 3: Factors that influence decision to use public transport

8.1.6 Speed versus accessibility

The CMLRIS survey explored whether Canberrans would prefer a light rail system that has fewer stops and is therefore faster; or has more stops so it is slower but more accessible.

Around 60% of respondents preferred a faster light rail system and were willing to have fewer stops to achieve this outcome. The results can be seen in Table 6.

Table 6: Preferences regarding light rail speed or accessibility

Answer Options	Response Per cent	Response Count
Has fewer stops and therefore has faster travel speeds	57.8%	258
Has more stops and is slower but more accessible from surrounding areas	38.6%	172
Answered question		430
Skipped question		16

8.1.7 Gungahlin and City stop locations

In the information provided to the public, two options were provided for possible additional stop locations in the town centres of Gungahlin and the City. The feedback form asked people to indicate any preference they may have.

Gungahlin

In Gungahlin Town Centre, an additional Stop 1a was proposed. This stop was further down Hibberson Street from the proposed Gungahlin station. The other option was Stop 1b which was further north towards Anthony Rolfe Avenue. Figure 4 below shows the location of both these potential stops.



Figure 4: Possible additional Gungahlin Town Centre stop locations

Survey answers indicated a preference for Stop 1a to be pursued as part of the development of light rail infrastructure to service the Gungahlin Town Centre. Figure 5 shows the composition of responses. It must be noted that a significant proportion of respondents preferred neither option.

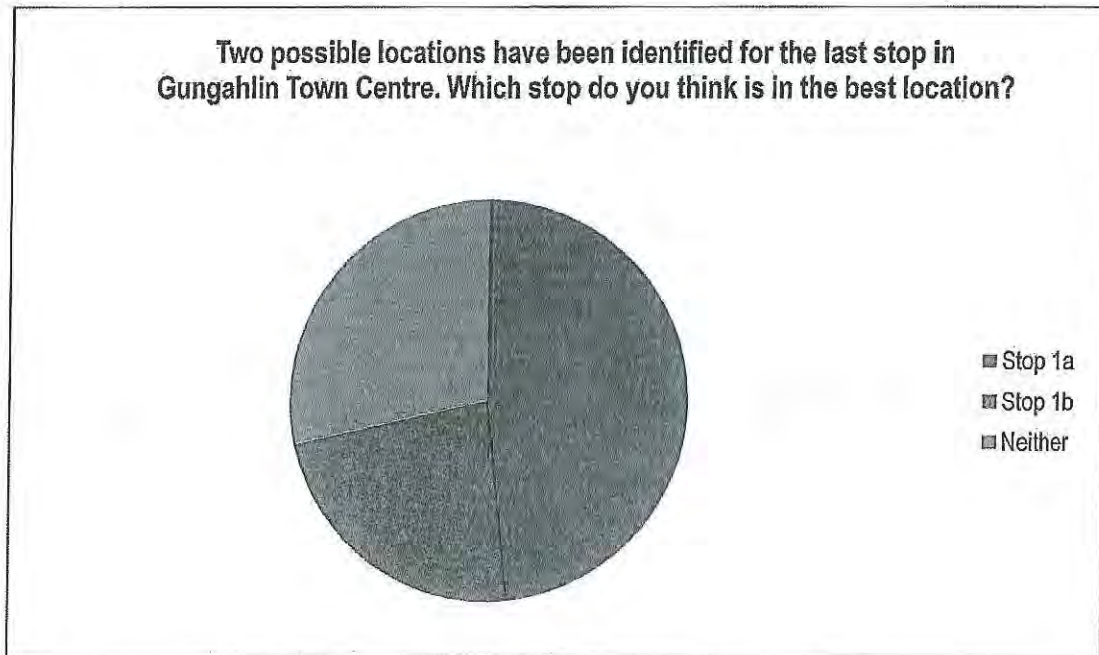


Figure 5: Preferred option for additional Gungahlin Town Centre light rail stop

The main reasons people provided for choosing Stop 1a over Stop 1b were its proximity to business, educational and recreational amenities or their own home, which would increase patronage and reduce the distance people had to travel to access the service. There was also a view that 1a could provide a strong option for a Park & Ride service. It was also felt this option would be more cost effective and allow for a quicker, more efficient service because it would not require the light rail vehicles to turn corners.

A number of respondents thought if 1a was made part of the route, it would increase the need to close Hibberson Street to motor vehicle traffic.

Arguments against 1a included its potential to increase traffic congestion around the Town Centre.

Support for 1b was based on its capacity to provide a better connection to Gundaroo Drive and Mirrabai Drive and the fact there are more residential buildings near this site.

Some respondents suggested both or similar stops be developed and the light rail service run in a circle to each of these before heading back to the City.

A number of respondents rejected both options and called for the service to terminate at the Gungahlin Town Centre station (shown as Stop 2 on public consultation material). Another proposal was to instead have a stop at the Civic end of the current Coles building as it has space for the provision of car parking.

There was general consensus that whichever option is pursued, the impact on traffic movements should be considered and its capacity to support future extension of the service.

City Centre

In the City Centre, additional stops 17a and 17b were proposed in the public consultation material. Stop 17a is located west of the City Centre station at Marcus Clarke Street. Stop 17b would continue the light rail service south to Vernon Circle. Figure 6 below shows the location of both these potential stops.

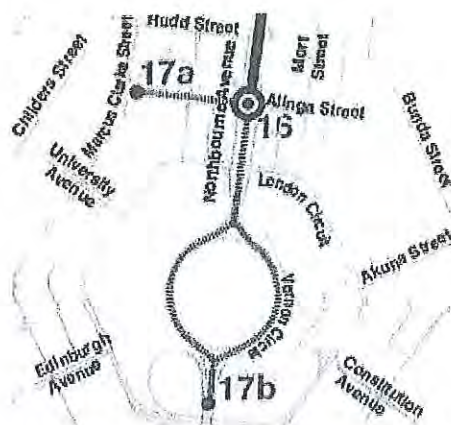


Figure 6: Possible additional City Centre stop locations

Both stop options were popular with respondents with nearly 45 per cent indicating a preference for 17b compared with 39 per cent supporting 17a. Only 17 per cent of respondents to this question preferred neither option. The responses are outlined in Figure 7.

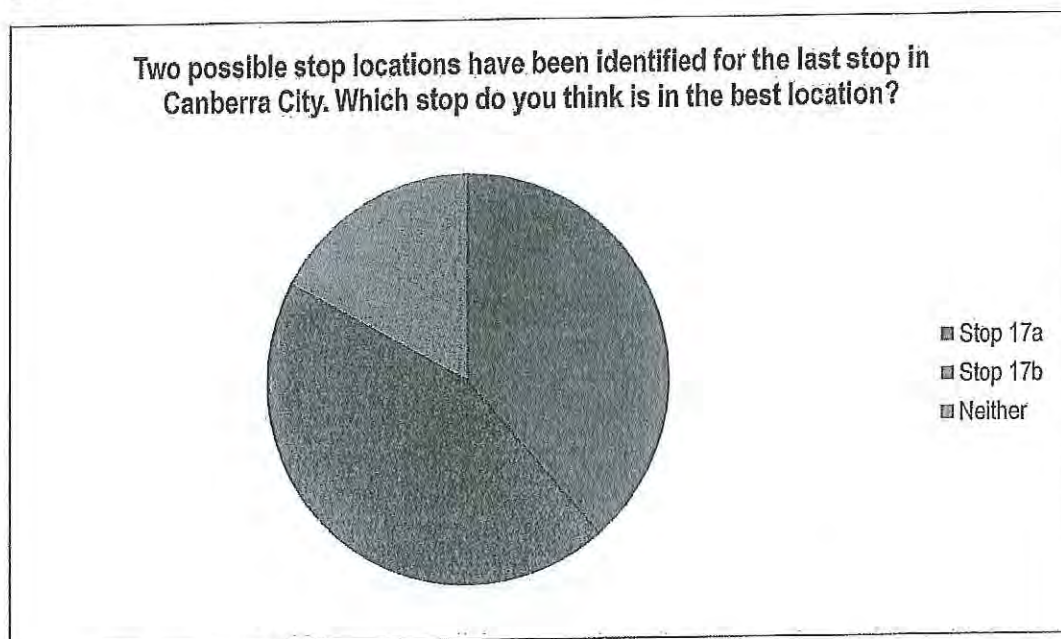


Figure 7: Preferred option for additional City Centre light rail stop

Support for 17b was based on its proximity to employment, hospitality and recreational facilities and the Parliamentary Triangle and a belief it is a better location from which to extend the service south in the future. Respondents also highlighted the fact this stop would better support major events held at the Lake than 17a.

However, a number of respondents suggested that future extension from the City Centre should be via a tunnel under City Hill, which would remove the need for the 17b stop.

People who preferred 17a pointed out the growth that is occurring in the western part of the City; that it is closer to the Australian National University and businesses and retail; and that it may allow for future extension to Belconnen.

Some respondents said their preference for 17b was because 17a was too close to Stop 16 which is the City Centre station and people could walk this distance without difficulty.

Respondents again suggested that both stops should be options, with the light rail servicing them in a circular pattern.

Some of the respondents who voted for neither preference suggested alternatives such as the light rail route going down Constitution Avenue and having a stop near the Canberra Institute of Technology or a loop around London Circuit with a stop on the east and west side of this thoroughfare. Others said they would be happy, for now, if the service were to terminate at Stop 16.

8.1.8 Stop locations

The survey asked respondents to consider whether any of the proposed stop locations along the route were unnecessary. Over 60 per cent of respondents felt that the number of stops being proposed were adequate to provide an effective and accessible light rail system between the City Centre and Gungahlin.

Fewer than 40 per cent, or 155 respondents, thought there were stops that were excess to requirements and should be removed. Generally respondents argued that removal of these stops was necessary to ensure the service was rapid or because the stops were close enough to another stop to allow people to easily utilise that stop location instead.

Review of the responses shows broad support for removal of Stop 3 and Stop 12. It was felt these were either too close to other stops or did not serve a large population and would cause an unnecessary delay to the light rail service. Stops 14 and 15 were also highlighted by a number of respondents as being unnecessary.

Nearly every stop on the proposed light rail line, except Stop 16, was mentioned by at least one respondent as being superfluous.

A number of respondents took the opportunity provided by this question to provide further thoughts on stop locations.

Quite a few people called for the system to allow for express services that can bypass certain stops at specific times of the day. Others suggested removing every second stop to speed up the light rail service. If a reduction in stops were to occur, a number of respondents thought the remaining stops should have Park & Ride and Bike & Ride stations to facilitate access.

There were several references to Stop 9 only being needed when events are being held and that it should be bypassed at other times.

Two respondents called for a stop between Stops 10 and 11, especially if there is further high density development in this area. Another thought Stop 10 should be moved closer to Barton Highway and another that Stop 2 should be moved back between the Coles and Woolworths stores in Gungahlin Town Centre.

It was suggested that instead of having a stop at either end of Mitchell, a single stop should be placed at a halfway point. Also, potentially Stops 9 and 10 could be replaced with a single stop at the intersection of Flemington Road and the Federal Highway.

Similarly, several respondents felt Stops 14 and 15 could be combined into a single stop.

Another respondent recommended having a stop closer to Wizard Street as this would be more convenient for people living in Harrison or along Flemington Road.

One person suggested designing the route so it served as a trunk route connecting with bus services. This would mean stops were placed at regular intervals at points where they

could intersect with bus services. Another thought a bus service should provide a loop shuttle service connecting Stops 11 and 16.

In terms of Stop 11, a respondent thought this could be moved north of Antill Drive to better service the Lyneham Netball Centre and sports ovals.

One respondent asked for stops to be located at major intersections in order to minimise how often the light rail vehicle has to stop. If the vehicle stop is timed with the red light at this intersection it would only need to stop once – instead of once for pick-up and drop-off and then again a few metres further along the route when it reaches an intersection and gets a red light.

Some respondents used this question to demand a light rail service for the southside of Canberra including Woden and Tuggeranong.

Some respondents stated that all stops were redundant as they believe light rail should not be introduced in Canberra.

The public was also asked if they believed additional stops should be incorporated into the light rail route. Less than 30 per cent of respondents thought additional stops were necessary.

Of those who did want additional stops, there were a number of calls for a stop at Swinden Street in Downer. Other responses suggested additional stops at the following locations:

- At Barry Drive and Girrahween Street
- At Barton Highway (with a Park & Ride)
- Corner of Antill/Mouat Street and Northbourne Avenue (with a Park & Ride)
- An additional stop at Mitchell
- Additional stop between Stops 4 and 5
- Additional stop between Stops 6 and 7
- Additional stop between Stops 7 and 8
- Additional stop Stops 10 and 11
- Additional stop between Stops 13 and 16

Quite a number of respondents took this opportunity to reiterate their desire for light rail to be extended into suburbs outside of the currently proposed corridor such as: Downer, Dickson and Lyneham; to the Parliamentary Triangle; to Lake Burley Griffin; to the Airport; to Tuggeranong; to Woden; and to Belconnen.

8.1.9 Design of light rail stops

The survey sought input on the factors that are important to the community when waiting at a light rail stop. They were provided with five factors and asked to rank them from one to five in order of importance, with one as the most important.

Taking the rating average of all five factors, access to real time information about the light rail timetable is most important to the general public, followed by closed shelters and no smoking (Figure 8).

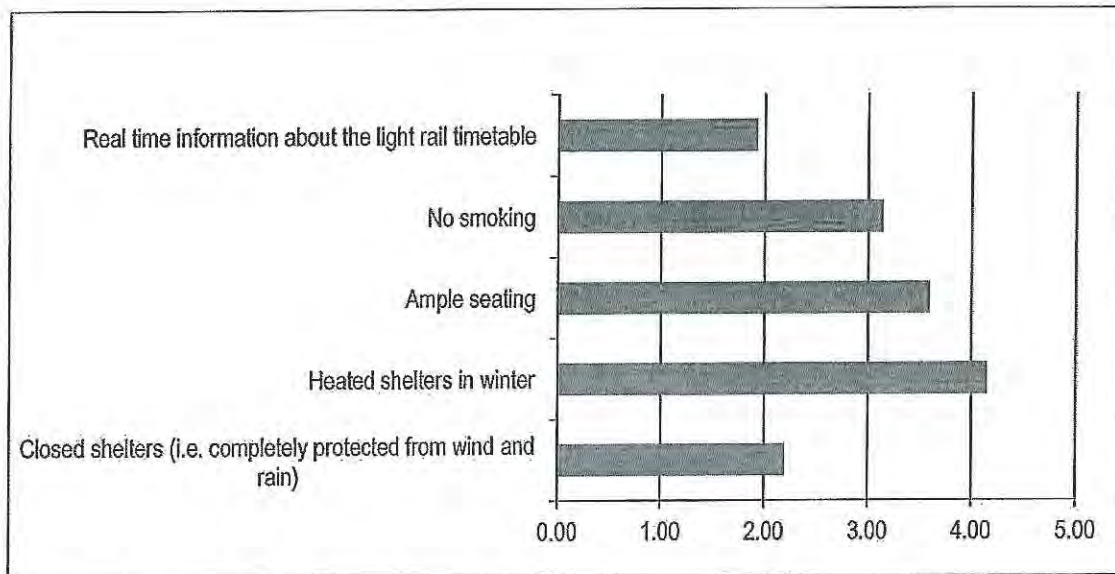


Figure 8: Amenity needed at light rail stops ranked by importance

8.1.10 Integration with other transport networks

The survey asked which other modes of transport light rail should integrate with to ensure the service is accessible to the community. Respondents were asked to rank seven networks from one to seven based on importance, with one being the most important.

The input received has connection with the bus network as the most important form of integration, with connection to local pedestrian and bicycle paths and availability of car parking all running a close second.

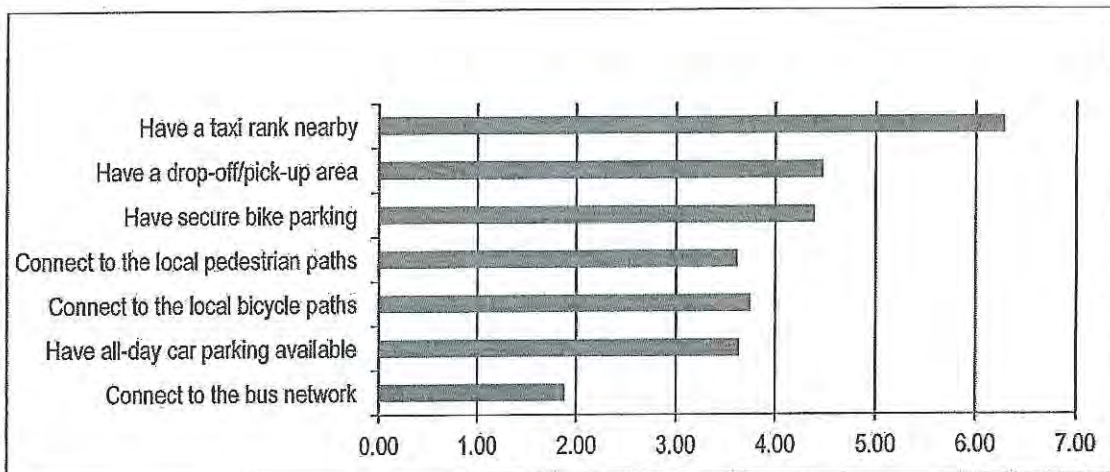


Figure 9: Integration with other transport networks ranked by importance

The community was also asked to indicate the best way for light rail to integrate with the road network if people wished to drive their car to a point and then access light rail.

Seventy per cent of respondents believe it is important for people to be able to drive and park near a light rail station.

However, some members of the public felt this should not be encouraged as the goal of the Capital Metro project should be to promote active transport and therefore people should catch a bus or walk or ride to a light rail stop or station.

Those who did support the concept of Park & Ride proposed establishing this infrastructure at nearly every stop location, with some respondents even suggesting that this occur.

Generally though, respondents thought Stops 2, 7 and 9 were the best locations for Park & Ride Facilities. These were the Park & Ride sites proposed in the public consultation material. There was a view that the Park & Ride facility suggested for Stop 2 could alternatively be located at Stop 1a if it was developed.

Others pointed out the need for Park & Ride facilities to be located in major centres such as Gungahlin and Dickson; where available land makes construction of this infrastructure possible; and to motivate people living outside the corridor to travel in and use light rail.

One respondent suggested the most effective way to determine the site of Park & Ride or Kiss & Ride facilities was by holding an 'Enquiry by Design' session.

In terms of sites where capacity would be built in for people to be dropped off in a motor vehicle, the responses were quite mixed. Over two-thirds of respondents felt there should be Kiss & Ride facilities but they again listed nearly every stop as a potential site.

Some respondents actually stated all stops and stations should have pick-up and drop-off facilities. Others thought only at interchanges and Dickson, while Stops 2 (or 1), 7 and 9 once again proved quite popular. Stops 10 and 11 were also mentioned frequently.

8.1.11 Access for cyclists

The survey investigated how cyclists would access light rail services. In particular, it explored whether people would want to ride to a station and securely store their bike at that location or take their bike on the light rail vehicle to their destination.

Respondents clearly expressed a desire to be able to travel on light rail with their bicycle (Figure 10).

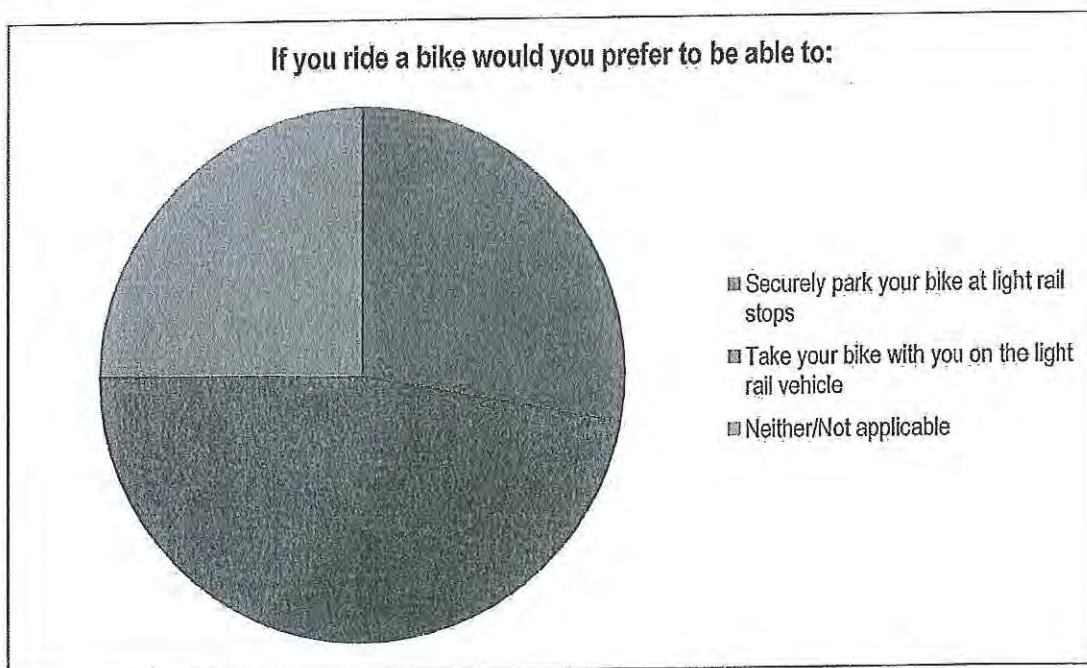


Figure 10: Access to light rail by bike

8.1.12 Distance willing to walk to a light rail stop

The proposed light rail route and stop locations circulated during the public consultation was designed based on catchment areas and research into average distances people will walk to access public transport.

However, it was important to ask members of the community to indicate how far they would be willing to walk to use light rail to gauge whether stop locations are effectively located.

The response to this question showed that the majority of respondents would be willing to walk between 600 and 800 metres to or from a light rail stop or station (Table 7).

Table 7: Walking distance to light rail stop or station

Answer Options	Response Per cent	Response Count
400 metres or less	15.0%	67
600 metres	28.9%	129
800 metres	26.9%	120
One kilometre or more	15.9%	71
Answered question		387
Skipped question		59

8.1.13 Predicted light rail use

Respondents were asked to estimate how often they might use a light rail service on the route illustrated in the public consultation material if it became operational.

More than 50 per cent indicated they would access light rail between one and five days a week. A small proportion of respondents thought they would use light rail every day. Around 22 per cent said they would never catch light rail and just under 25 per cent believe they would utilise it less than once a week. It should be noted that about 40 per cent of respondents did not live in the catchment area for the City to Gungahlin light rail route.

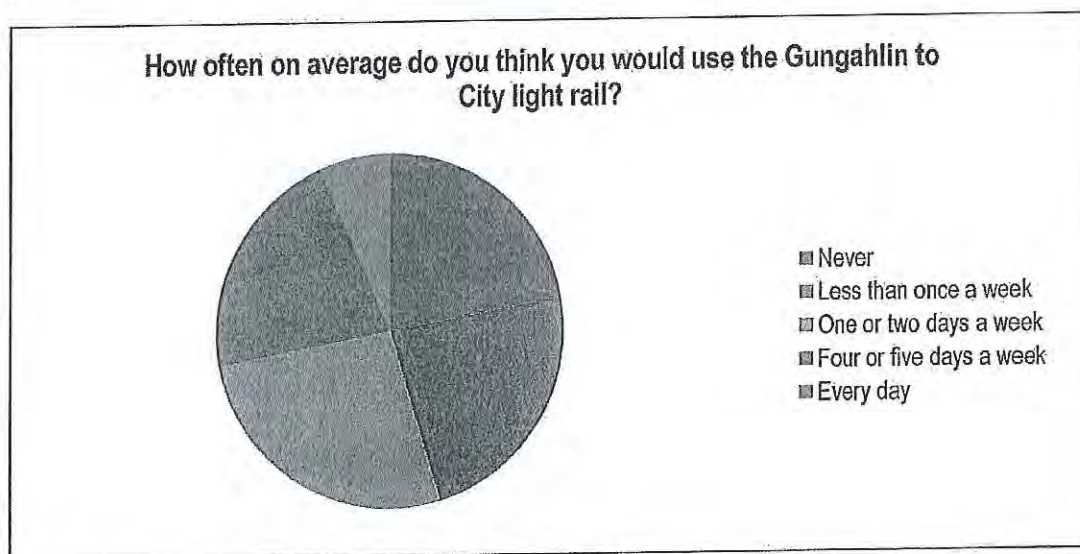


Figure 11: Estimated light rail patronage

8.1.14 Light rail compared to bus patronage

The survey sought to appraise whether the community would be more likely to utilise a light rail public transport system compared to a bus service.

The City Centre to Gungahlin corridor is currently served by a Rapid bus service and respondents were asked whether they would prefer to catch light rail to this existing bus service.

Over three-quarters of respondents indicated they would be more likely to catch light rail (Figure 12).



Figure 12: Comparison of predicted patronage of light rail compared to bus services

8.1.15 Stop or station most likely to access light rail from

Survey respondents were asked to specify which possible stop or station shown in the consultation material they would access a light rail service from.

The two end points of the corridor (Stops 1a, 1b, 2, 16, 17a and 17b), are where most people expect to access the service, with over 70 respondents indicating they would hop on and off light rail at these points.

The other significant points of access that were identified were Stops 10 and 11.

A number of respondents indicated that they may wish to access the service at a Park & Ride stop, but it must be noted that the stops denoted as Park & Ride stops did not receive a large number of responses. In fact Stop 7 had the lowest response rate for this question.

8.2 Other issues raised by respondents

The survey closed with an opportunity for members of the public to provide any other comments they had regarding the Capital Metro Light Rail Integration Study. This feedback and some comments provided to earlier answers have been summarised into themes to reflect the issues raised by respondents.

Two hundred and sixty five people provided additional feedback in response to Question 20 on the survey, which invited them to make further comments. Some respondents highlighted more than one issue in their comments.

The input provided through the survey as comments cannot be quantified as it is not in response to a specific question. However, analysis has been undertaken to determine common themes and estimated levels of support or opposition to the information provided during the consultation process or other proposals raised by respondents.

The issues outlined below have been placed in order of how many people highlighted this issue in their comments – from the topic with the most comments to that with the least.

8.2.1 Proposed route

While supportive of the introduction of light rail, over 60 respondents do not believe the first stage of the Capital Metro project should focus solely on the corridor between the City Centre and Gungahlin. They argued that this route alone would not effectively service large residential populations or employment centres.

Some respondents suggested alternative or extended routes and these included:

- Dickson to the Parliamentary Triangle via the City Centre
- To the Airport (with a Park & Ride facility)
- To the Airport and Queanbeyan
- Extended to Russell
- Extended to Woden and Tuggeranong
- Extended to Belconnen
- Extended across Lake Burley Griffin
- Extended to Parliamentary Triangle
- Extended to the Parliamentary Triangle and Kingston and Manuka
- Extend to newer suburbs such as Bonner
- Run light rail to both proposed Stops 17a and 17b
- Deviating from Well Station Road to Stirling Avenue then along the old Monash Drive to Ainslie Avenue
- Deviating behind EPIC to North Watson
- Deviate down Antill Street and Phillip Avenue
- Loop around the Canberra Business District via London Circuit or Marcus Clarke and Bunda Streets
- Amend route so light rail runs through City Walk and Allara Street and ends at Constitution Avenue/Coranderrk Street.
- Turn off Northbourne Avenue before reaching Flemington Road and utilise the vacant land between the Kamberra Winery and Thoroughbred Park

8.2.2 Integration with other transport networks

Over 50 respondents highlighted integration as an important issue.

Effective integration with other transport networks was seen by many respondents as vital to the success of Capital Metro.

Feedback indicated that integration with bus and cycle networks is particularly important to the community.

It was suggested the light rail corridor be designed to enable buses to also use the easement/median at certain points to facilitate transfers between these modes.

Others noted the need for ease of movement between buses and light rail at major interchanges.

Respondents also called for buses to operate as effective feeder or shuttle services from surrounding suburbs to light rail stops and stations.

It was suggested that to ensure ease of transfer between modes, a single payment system should be developed that works on all public transport. For example, the current ACTION MyWay card could be used to pay for a tram ticket. Other payment options could include a phone app.

However, it was noted that whichever system is introduced it should be simple to use and should perhaps only require passengers to swipe on and they could possibly tag on prior to boarding.

There was strong support for the idea of being able to take bicycles on to light rail vehicles, but it was noted secure parking at stops and stations are still required for those who do not need to take their bike with them. One respondent opposed people being allowed to take bikes onto carriages.

One respondent also thought this was an opportunity to improve cycling infrastructure between Gungahlin and the City Centre and recommended construction of separate, off-road lanes along the route. Another called for a paved path all the way along Antill Street and on the Federal Highway between Cooper Place and Stirling Avenue.

The safety of pedestrians and cyclists when crossing intersections to access light rail was raised. This should be considered during planning and could include grade separated crossings, particularly at busy intersections such as the crossing on Northbourne Avenue between Stops 11 and 12.

Respondents also thought about how light rail would integrate with the road network.

While some were proponents for Park & Ride to enable people to drive to a specific location and use light rail for the rest of their journey, it was suggested by others that these facilities would be under-utilised and should only be provided in Gungahlin.

There was some support expressed for closing off a number of cross streets along the route to reduce the number of intersections light rail needs to cross.

Some suggested making certain parts of the corridor car-free to facilitate pedestrian movements, for example, Hibberson Street between Hinder and Gozzard Streets.

One respondent proposed development of 'Major Integration Hubs' and 'Local Area Integration Hubs'. A Major Integration Hub would be a multi-storey complex blending light rail and bus interchanges with: Park & Ride, Bike & Ride and retail facilities and pedestrian access. A Local Area Integration Hub would be constructed as a light rail and bus interchange with suitable access and facilities for pedestrians and bike riders. Local Area Integration Hubs would have covered waiting shelters and bathrooms.

8.2.3 Support for light rail

Approximately 50 respondents used the survey to indicate their support for the introduction of light rail in Canberra and exhort the Government to fast-track its construction. They pointed to the success similar systems have enjoyed in comparable cities and the many benefits this project can provide to the ACT. In addition to the health and congestion benefits, people discussed the need for Canberra to become a modern, mature and vibrant city and that light rail would contribute to this.

8.2.4 Opposition to light rail

Around 40 people expressed their strong opposition to the introduction of light rail through their survey answers.

Some protested against the idea completely, while others thought not enough effort has been given to finding other solutions, such as improving the local bus service. For example, bus services could be improved through the introduction of dedicated bus lanes along the corridor.

These respondents voiced concern that light rail would be a costly mistake.

Others were against the idea as they could see no direct benefit for themselves, for example, people who live outside the corridor proposed for Capital Metro Stage 1.

8.2.5 Speed and frequency of service

Nearly 30 respondents indicated speed and frequency as an issue that needs to be factored into planning.

According to feedback received, the design of the light rail route needs to ensure it is faster than other modes of public transport and a major barrier to this would be if it had to stop at traffic lights at intersections.

A number of respondents suggested giving light rail priority at intersections or even considering the use of tunnels or bridges to ensure light rail has a speedy passage.

Others recommended reducing the number of light rail stops to make the overall journey faster.

Respondents said that if light rail is not faster than the current bus service it will be poorly patronised.

A number of respondents mentioned the need for the light rail service to run frequently. Essentially the goal should be for commuters to feel confident that no matter when they arrive at a stop or station, a light rail vehicle will arrive shortly. Running times of between five minutes and 30 minutes were submitted as being acceptable.

It was suggested that frequency should be higher in peak hours and could decrease at other times.

Respondents were concerned that in peak hours light rail vehicles could be full and unable to pick-up at all stops, as sometimes occurs with bus services now. A frequent service would ensure there is only a short wait for the next light rail vehicle.

8.2.6 Design issues

Just over 20 respondents mentioned design issues.

One respondent called for the light rail track to be completely grade-separated from other traffic.

Some respondents commented further on the amenities they would like to see at stops and stations. Well-lit stations and emergency call buttons are required to ensure the service is safe to use at night. Each stop should have at least three seats and a wheelchair space.

One respondent will only support light rail if its construction does not result in the removal of any trees along Northbourne Avenue.

8.2.7 Light rail timetable

Eight respondents discussed the need for an effective light rail timetable.

A number of respondents pointed out the need for light rail to run regularly outside of standard business hours. In particular, they would like it to run frequently at night and on weekends.

Another respondent highlighted the fact that people travel to work at different times and all require a frequent and reliable service. They suggested extending peak services to at least 9.30am to cater for people who start their work day later than the norm.

8.2.8 Cost of using light rail

Cost is a motivation for the transport choices people make and respondents thought light rail should be cheaper or competitive with other modes.

Other suggestions included having the cost of a light rail ticket cover parking at a Park & Ride station to encourage people to drive to a station and catch light rail to their final destination. This was reiterated by respondents who said it should be free to park when accessing light rail.

8.2.9 Development along the corridor

Some respondents expressed support for increased development along the light rail corridor. They felt it was sensible to allow for more retail, residential and office development.

Others indicated that the introduction of light rail would influence their future home purchasing decisions as they are more likely to buy along the corridor following the commencement of light rail services.

One respondent expressed concern that sites along the corridor would be at risk of development and called for these, such as EPIC, to be retained in their current form.

8.2.10 Further studies

Three respondents proposed holding 'brainstorming' type sessions to ensure the introduction of an effective light rail service. Suggestions included holding a charrette (design solution session).

APPENDIX A EXPLANATORY NOTES

Light rail vehicle/carriage/tram

The preferred light rail vehicle has not yet been determined. The terms light rail vehicle, carriage and tram are used interchangeably to refer to the future light rail vehicle and are not meant to pre-empt future decisions on this solution.

Park & Ride

Park & Ride offers allocated parking spaces for people to park their car then transfer to public transport to complete their journey.

Kiss & Ride

Kiss & Ride facilities are dedicated kerbside loading areas where passengers can be dropped off and picked up by another person in a vehicle.

Bike & Ride

Bike & Ride features can range from bike cages and bike lockers to more standard bike racks. Typically Bike & Ride facilities refer to a high level of security and weather protection that is designed for daylong storage. Bike & Ride facilities also include the racks or other device that are used to transport bicycles on public transport vehicles.

APPENDIX B STAKEHOLDER LIST

Level of Engagement for CMLRS	Description	Stakeholders
Inform	Stakeholders who require a broad level of awareness of the study. These stakeholders may also be influential/important conduits of information to other stakeholders.	<ul style="list-style-type: none"> ▪ Australasian Railways Association
Consult	Stakeholders who require a comprehensive understanding of the study and will be invited to provide input at critical points.	<p>Agency</p> <ul style="list-style-type: none"> ▪ Health Directorate ▪ Education and Training Directorate ▪ Justice and Community Safety Directorate ▪ Community Services Directorate (including Disability ACT) ▪ Australian Capital Tourism ▪ ACT Policing ▪ ACT Climate Change Council <p>Public</p> <ul style="list-style-type: none"> ▪ Vinta Group ▪ ACT Light Rail ▪ Pedal Power ▪ Living Streets Canberra ▪ Canberra Loves 40% ▪ Heart Foundation ACT ▪ Bicycle Advisory Group members ▪ Community Councils (Gungahlin, North Canberra, Downer, Hackett and Watson Community Associations) ▪ Canberra CBD Limited ▪ Australian National University ▪ NRMA Road Safety Trust ▪ Motor Cyclist Riders Association ACT ▪ ACT Council of Social Services ▪ Council of the Ageing ACT ▪ Northside Community Services ▪ Disability Support Groups (People with Disabilities ACT Inc.; Koomarri; Community Connections; Canberra Blind Society; ACT Disability, Aged and Carer Advocacy Service) ▪ Canberra Business Council ▪ ACT Chamber of Commerce ▪ Housing Industry Association ▪ Property Council of Australia ▪ Australian Institute of Landscape Architects ACT Chapter ▪ General public

Level of Engagement for CMLRIS	Description	Stakeholders
Involve	Stakeholders who have a high-level of engagement with the study and are involved in the decision-making process.	<ul style="list-style-type: none"> ▪ Environment and Sustainable Development Directorate (ESDD) ▪ Economic Development Directorate ▪ Chief Minister and Treasury Directorate ▪ Commerce and Works Directorate ▪ Territory and Municipal Services Directorate (including Roads and Public Transport Division and Parks and City Services Division) ▪ ACTION
Collaborate	Stakeholders who are responsible for driving the CMLRIS.	<ul style="list-style-type: none"> ▪ Capital Metro Agency (Study Sponsor) ▪ SMEC

APPENDIX C STAKEHOLDERS INVITED TO ATTEND ENGAGEMENT SESSION

ATTENDEES	APOLOGIES
<ul style="list-style-type: none"> ▪ [REDACTED] Canberra Business Council CEO ▪ [REDACTED] Chair of Living Streets Canberra and North Canberra Community Council ▪ [REDACTED] CEO Canberra CBD Ltd ▪ [REDACTED] Active Living Coordinator, Heart Foundation ▪ [REDACTED] Chair ACT Light Rail Development ▪ [REDACTED] Manager Vinta Group ▪ [REDACTED] Vinta Group ▪ [REDACTED] Engineers Australia (ACT) ▪ [REDACTED] Engineers Australia (ACT) ▪ [REDACTED] Canberra Loves 40% ▪ [REDACTED] Canberra Loves 40% ▪ [REDACTED] Motorcycle Riders Association ACT, ▪ [REDACTED] Motorcycle Riders Association ACT ▪ [REDACTED] Pedal Power ▪ [REDACTED] Pedal Power ▪ [REDACTED] Chairman of the Planning Committee, ACT Chapter of Institute of Architects ▪ [REDACTED] Manager ACT Chapter of Institute of Architects ▪ [REDACTED] President ACT Chapter of Institute of Architects ▪ [REDACTED] ACT Chapter of Institute of Architects ▪ [REDACTED] President, Canberra Blind Society ▪ [REDACTED] Convenor Downer Community Association ▪ [REDACTED] ACT Chamber of Commerce ▪ [REDACTED], Downer Community Association ▪ [REDACTED] Downer Community Association ▪ [REDACTED] Vice President Gungahlin Community Council ▪ [REDACTED] Northside Community Council 	<ul style="list-style-type: none"> ▪ ACT Bicycle Advisory Group Members ▪ Council of the Ageing (ACT) ▪ Property Council (ACT) ▪ HIA (ACT) ▪ Hackett Community Association ▪ Watson Community Association ▪ Australian National University ▪ ACT Council of Social Service ▪ Northside Community Service ▪ People with Disabilities ▪ Koomarri ▪ Community Connections ▪ ACT Disability, Aged and Carer Advocacy Service

APPENDIX D FACTSHEET MAILOUT

Approximately 31,000 Capital Metro Light Rail Integration Study Factsheets were distributed through Australia Post to businesses and residences in suburbs surrounding the light rail corridor. Below is a list of suburbs the factsheet was mailed to.

- Acton
- Ainslie
- Amaroo
- Bonner
- Braddon
- Canberra
- Canberra BC
- Casey
- Crace
- Dickson
- Downer
- Forde
- Franklin
- Gungahlin
- Hackett
- Harrison
- Jacka
- Lyneham
- Mitchell
- Ngunnawal
- Nicholls
- O'Connor
- Palmerston
- Reid
- Turner
- Watson

APPENDIX E CONSULTATION MATERIAL

Canberrans can have their say on light rail design

Released 25/09/2013

The ACT Government is seeking public input to an important preliminary design study for the Capital Metro light rail project, Minister for the Environment and Sustainable Development, Simon Corbell, announced today.

Mr Corbell said the Light Rail Integration Study would look at issues associated with integrating the light rail corridor from Gungahlin to the City with the broader public transport network, as well as the requirements of intermodal stations and stops along the route.

"The Light Rail Integration Study is an essential piece of work that will inform the detailed design of the Capital Metro Project," he said.

"It is part of the suite of preliminary design studies that are now being undertaken as a priority for the new Capital Metro Agency."

The first stage of the Light Rail Integration Study will identify and evaluate options for:

- Integrating light rail with the ACTION bus network, and the pedestrian and bicycle path networks;
- Bike and ride locations, kiss and ride locations (drop off points) and park and ride locations; and
- Preferred light rail stop locations to optimise accessibility and integration.

"The Capital Metro Agency wants to understand what the community thinks about a range of issues, including potential locations for light rail stops, the amenities people would like to see at the stops, and whether people would prefer to park their bicycle at the stops or take them with them on the light rail vehicle," Mr Corbell said.

Public information sessions will be held at Gungahlin Town Centre, Dickson and in the City. Details of these sessions will be advertised in the Canberra Times, The Chronicle and on the Capital Metro Agency's website.

A fact sheet will also be delivered to residents' letterboxes in all suburbs along the City to Gungahlin route.

People can complete an online survey, and find out more about the consultation, by visiting the Capital Metro Agency's website www.capitalmetro.act.gov.au.

Consultation closes on 15 November 2013.

APPENDIX F WRITTEN SUBMISSIONS

Submission 1

My suggestion is that the Gungahlin terminus be located in Crinigan Circuit near to the Gungahlin Oval grandstands to encourage use of the trams on sporting occasions.

Submission 2

There definately needs to be an efficient public transport system for residents of Gungahlin into the city.

Options are light rail as suggested, but has an 'O'Bahn similar to Adelaide, been considered? This allows feeder buses to collect from dormitory suburbs as usual but to then have an express route (with only a few key stops) into town. It includes significant free public car parking at stops. It does not require expensive infrastructure as a light rail would., nor does it need significant investment in trams. I think the buses would be cheaper?

The current light rail proposal does not need to stop along Northbourne Ave, perhaps just Dickson, Braddon then the city. Other stops along Northbourne can be adequatley met by existing bus services. It seems silly to duplicate this service as buses already have to use Northbourne to get to other suburbs so why make the tram stop here as well? It would very much diminish its effectiveness and speed. It will be much more beneficial and user friendly if it operates as more of an express system. It should also go right through to Woden. Please preserve the wonderful green treed boulevard aspect of Northbourne Ave which is such a welcoming vista coming into Canberra.

It should cater for bikes, either with space on the tram, or lock up facilities at the station (as we have seen in Netherlands and Germany) so people can ride to the tram.

Have you looked at how Montpellier in Southern France has gone about making itself the cycling Queen of France, in conjunction with light rail and improved urban streetscapes with trees and pedestrian access?

Thankyou for the opportunity to comment.

Submission 3

Thanks for the opportunity to see the display at Dickson shops and for the staff person to talk about the proposed Capital Metro.

My suggestions come from two driving factors that I think could contribute to the long term success and financial viability of such a project: 1. the need for speed to be superior to alternatives and 2. the frequency to make the Metro the first choice and not just the alternative backup.

I imagine there have been studies about how far people are prepared to walk to public transport and the outcome of such work could suggest alterative routes for the proposed mefro. It's location down Northbourne Av potentially means the metro will go not much faster than current modes of transport that travel down Northbourne Av or that rat-run, and when there are traffic problems or accidents, this could impact on the service.

A possible alternative is to open up a second north-south transport corridor but that is aligned to where the people live and work. My suggestion would be for it to run one street either side of Northbourne Ave, with perhaps the Mort St, Henty St, Lowanna St side to

the ABC studios better and then for it to run either up Northbourne or "cut and cover underground" as far as Dickson. For the entire distance, if it is not to be an underground metro (which would be very costly) it might be worth considering underpasses at major intersections - again to minimise journey times compared to the private vehicles and also the "level crossing" issues which can be dangerous. I also suggest that at Dickson, the track goes east along Antill St and then left and north along Philip Av until the Federal Hwy. This then picks up people living in the suburbs of Dickon, edge of Ainslie, Hackett, Watson and Downer whereas the current proposal has the Yowani Country Club on one side and then the horse racing track, with little permanent population. The Antill St and Philip Av also goes past Dickson College and the Aust Catholic University along with other weekday places of study/work.

I think frequency is also important for the project in the long term to entice private vehicle users in addition to current public transport users.

A station is a station and I would put less emphasis on "major stations" esp when there is only one line. Other useful things are real time travel info displayed at stops and via smartphones.

Submission 4

I have a couple of questions regarding the proposed light rail corridor.

Firstly, what kind of adjustments will be made to the existing bus services around the inner north? It seems to me that expecting people walk to Northbourne is not realistic for any except for some residents around the streets nearest to Northbourne. Living in the east side of Downer, it would be very inconvenient to have to walk over to Northbourne instead of just catching the 39 on Melba St. But having to catch a 3 minute bus to Northbourne then transfer onto the light rail doesn't seem like much of an improvement over the current situation.

Secondly, what provisions are planned for bike commuters? I think copying the European style of allowing people to take bikes onto the train with them would be a great improvement over the current bus carriers. It would also double as very effective accessibility for wheelchairs, disabled people and people with prams.

Submission 5

- the light rail vehicles must be trains, not tramcars
- the trains must be able to carry bikes inside
- stations must have raised platforms to allow easy access for bikes
- there must be major improvements to the parts of the cycling network that feed into light rail stations
- there must be secure, weatherproof Bike & Ride facilities along the route.

Submission 6

The proposal to accommodate the Capital Metro Light Rail in the median strip of Northbourne Avenue must recognise its role as a formal entry to the nations capital and seek to retain and enhance an urban boulevard character. Between Civic and Antill Street, Dickson, Northbourne Avenue has a formal geometry including avenue planting of regular evenly spaced trees, symmetrical road carriageways and paths, and consistent kerb lines. This is matched by buildings of an appropriate urban scale with consistent setbacks further reinforcing the formal character.

North of Antill Street Dickson, however, the character of Northbourne Avenue changes to that of a typical suburban highway the likes of which can be seen in the outer suburbs of any of our state capitals. This appears to be the case for no good reason other than historical accident - south of Antill Street was built according to Griffin's design in which the aesthetics and symbolic role of the main avenues into the city were an important design element and the median was intended to eventually accommodate a tramway, while north of Antill Street was built to later designs in which smooth traffic flow and the protection of nearby residential amenity were the priorities.

Now that the development of this part of Canberra is catching up to Griffin's vision for the city and Northbourne Avenue is to be more intensively developed as a light rail transit corridor supported by higher densities, it is time to reconsider whether it is appropriate for the transition from urban boulevard to suburban highway to occur at Antill Street, or whether the formal boulevard treatment should be extended northwards. It is worth noting that north of Antill Street, the kerb line of the Northbourne Avenue service road extending as far as Panton Street, Downer, has its kerb in alignment with that of Northbourne Avenue itself south of Antill Street, while the main carriageways have been offset westwards, presumably to protect Downer residences from traffic noise.

It is apparent also, that the median strip between Antill Street and the Barton Highway intersection is not wide enough to take light rail and at least one of the existing carriageways will need to be reconstructed. Another consideration is that traffic studies predict that the capacity of Northbourne Avenue between Dickson and Flemington Road will need to be increased to 3 lanes in each direction soon to cope with increased traffic from Gungahlin, making it essential to consider this as part of the current redesign.

My proposal is simple - that the formal urban boulevard treatment and carriageway alignment of Northbourne Avenue be extended north of Antill Street at least as far as the Barton Highway intersection to create room for Capital Metro in the median. Residential blocks in Downer fronting onto Northbourne Avenue between Antill and Panton Streets should be re-zoned to allow correspondingly high density development and appropriate scale of buildings. This would put a higher density of development within easy walking-range of the Capital Metro stations, and would help support the Dickson group centre.

Complete realignment and reconstruction of this section of road might appear drastic, but in the long term an add-on approach to the provision of a light rail alignment, two extra traffic lanes, a cycleway, and adequate footpaths to the existing roadway could produce an ugly and embarrassing gateway to our city rather than the stately boulevard it could be if these issues are dealt with now in an integrated design. A piecemeal approach will never produce a satisfactory long term outcome, will end up costing more money, and will create more disruption. The value created by re-zoning the adjacent Downer properties for higher densities could offset the cost of the reconstruction. In fact it would be wasting the potential of properties with such convenient access to Capital Metro if they were not redeveloped.

Given the high density redevelopment potential of adjacent land in Downer, it would seem prudent to locate Station 10 further south to better serve that area and leave less of a gap between stations in this section.

Submission 7

On behalf of Act Health:

This project aims to deliver light rail infrastructure between the Gungahlin centre and the City Centre with the rail progressing through the Dickson centre.

While the impacts of this infrastructure proposal on the Canberra Hospital Campus may not be as apparent, there are a number of papers that point to a correlation between light rail infrastructure and improved public health. There is also a study indicating that light rail will generate significant public health cost savings.

As we currently have health services in Gungahlin, Dickson and the City, a significant body of research seems to indicate that public health in Canberra will benefit from this infrastructure project.

Submission 8

Submission 9

Submission 10

APPENDIX G SURVEY RESULTS

[REDACTED]

From: [REDACTED]
Sent: Wednesday, 4 December 2013 5:00 PM
To: [REDACTED]
Cc: [REDACTED]
Subject: Zones 341, 801
Attachments: Zones 341,801.jpg

[REDACTED]

Sorry I missed your call, I was away from my desk for the afternoon. I just tried to call but I guess you are away from your desk too.

Attached is a jpg of showing where the centroid connectors for zones 341 and 801 are located. You can also see zones 840 and 841 (which you should be able to locate from the shapefile anyway).

The last part of your voice message was a little garbled but hopefully I have given you what you need. Let me know if you need more.

Regards,

[REDACTED]
SMEC Australia Pty Ltd
Suite 2, Level 1, 243 Northbourne Avenue, Lyneham, ACT, 2602, Australia

[REDACTED] | www.smec.com | [LinkedIn](#)

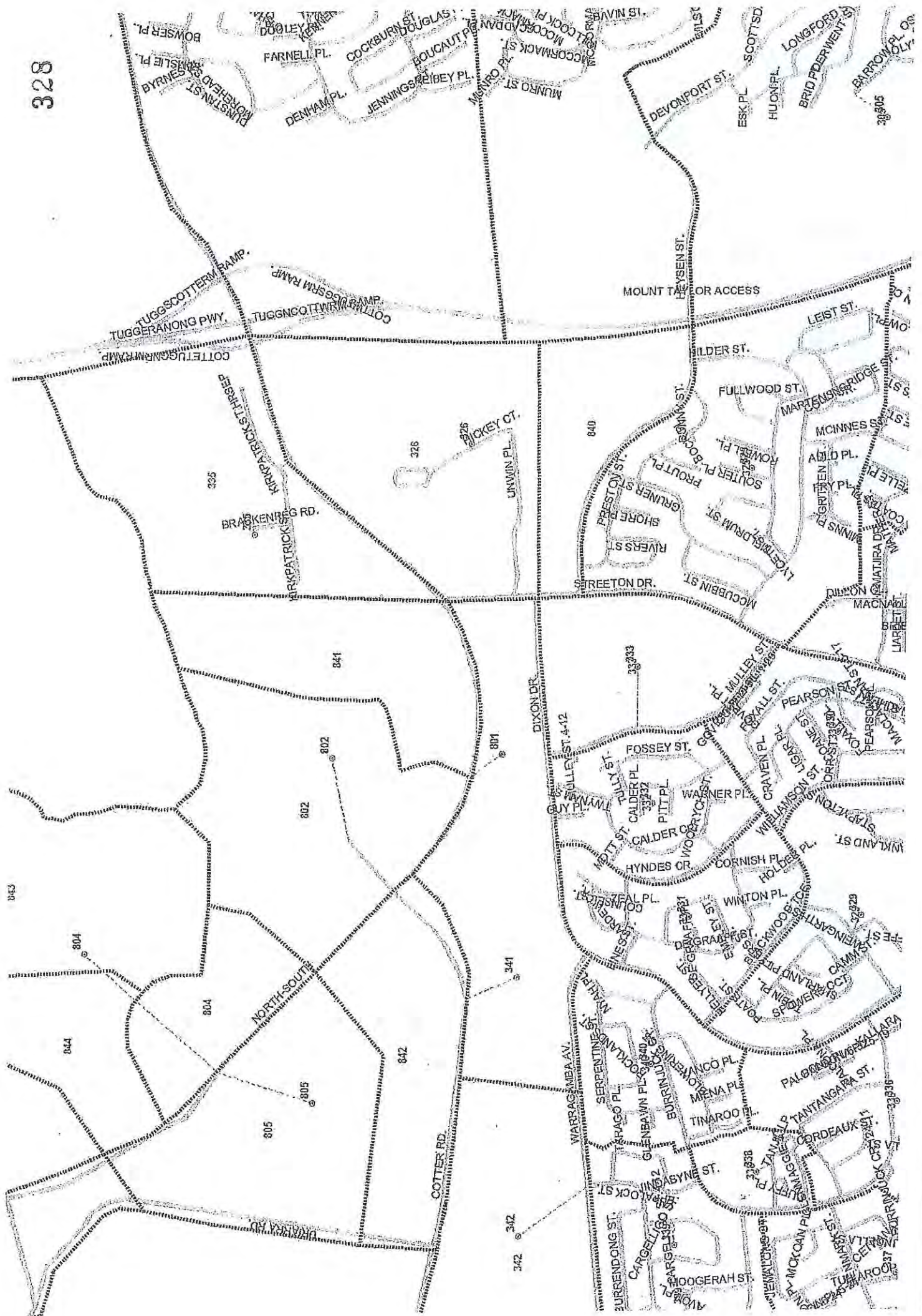
SMEC SNOWY MOUNTAINS ENGINEERING CORPORATION

Local People. Global Experience.

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From: [REDACTED]
Sent: Wednesday, 4 December 2013 2:15 PM
To: [REDACTED]
Subject: RE: Contract for light rail project
Attachments: 20131204130100499.pdf

Sorry [REDACTED]
 Attached. Thanks [REDACTED]

From: [REDACTED]
Sent: Wednesday, 4 December 2013 2:11 PM
To: [REDACTED]
Subject: RE: Contract for light rail project

Hi [REDACTED]
 We need Attachment 1 as below
 Thank you
 [REDACTED]

Item 2.	Term <i>See clause 3</i>	From the date of execution of this Agreement by a Territory delegate until 30 January 2014.
Item 3.	Contract Price <i>See clause 4</i>	(1) Contract Price: \$330,000.00 (GST is included). A breakdown of the Contract Price is incorporated into this Agreement at Attachment 1.

From: [REDACTED]
Sent: Wednesday, 4 December 2013 2:03 PM
To: [REDACTED]
Subject: RE: Contract for light rail project

You asked for Attachment 1, I take it that you are after the project brief that went out. I mistook as the consultant proposal that was sent to you earlier. I have attached project brief and relevant addenda. Thanks [REDACTED]

From: [REDACTED]
Sent: Monday, 2 December 2013 10:56 AM
To: [REDACTED]
Subject: Contract for light rail project

As requested, the contract for light rail project is attached. Thanks [REDACTED]

Attachment 1

Contract Price



SHARED SERVICES PROCUREMENT

**Capital Metro
Light Rail Integration Study**

PROJECT BRIEF

Draft Version No. Dated

Final Dated

PROJECT NO: 21126

Infrastructure Procurement
Level 3 North
Dame Pattie Menzies House
16 Challis Street, Dickson ACT

PO Box 818
Dickson ACT 2602

Cleared by ClientDate.....

Cleared by
ACT PS Manager.....Date.....

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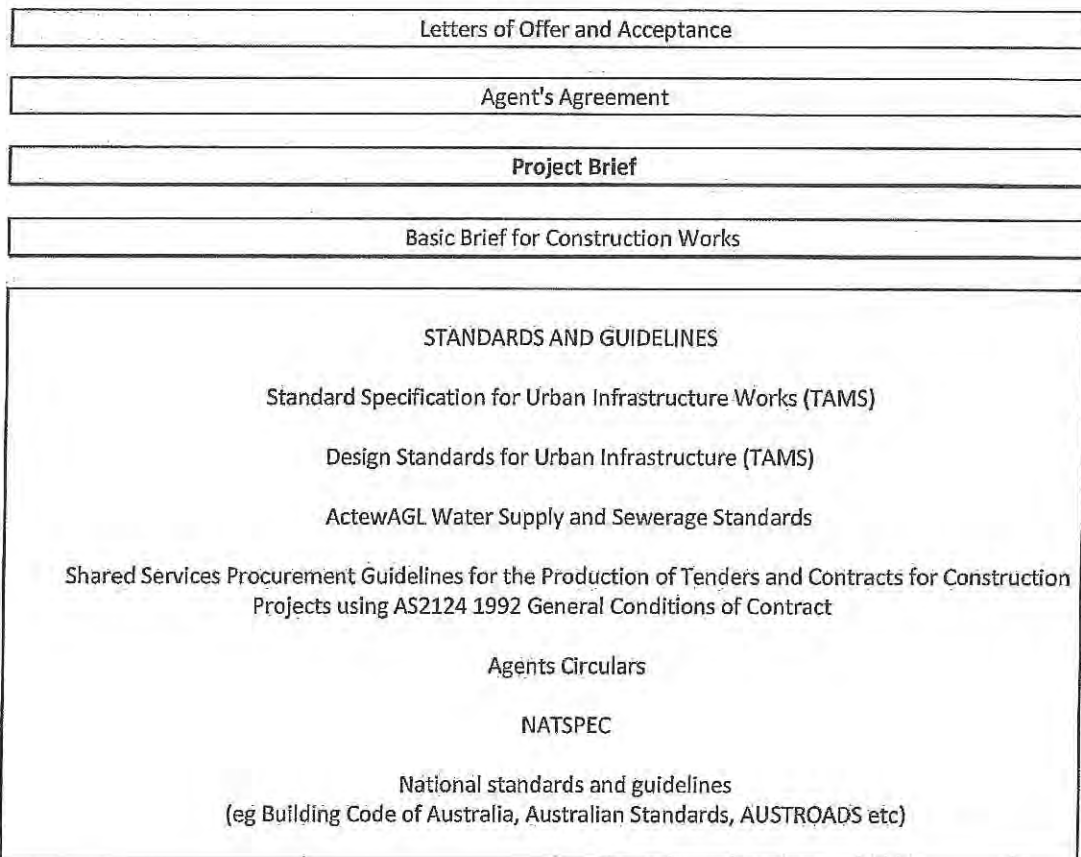
ENGINEERING PROJECT BRIEF

1.0 INTRODUCTION

The brief for this project comprises this **Project Brief** together with the **Basic Brief for Construction Works**.

The Project Brief details project specific requirements, the Basic Brief details the general requirements and administrative procedures (including content of submissions), and the Reference documents provide guidance on technical matters.

The following indicates how this document relates to other key documents used in the engagement of the Consultant.:



2.0 OBJECTIVES

Shared Services Procurement on behalf of the Transport Planning Branch of the Environment and Sustainable Development Directorate, ESDD proposes to undertake this study.

The specific objectives of this study are to:

- Explore options for the integration of the light rail network into Canberra's public transport network and surrounding urban context;
- Establish transport planning parameters for the integration of light rail into Canberra's public transport network on completion of construction (approximately 2018-19) and provide the basis for further detailed work; and
- Identify the pedestrian and cycle path network to support light rail stops and stations.

3.0 BACKGROUND

The ACT Government has recently announced the Capital Metro light rail project which will establish the ACT's first light rail corridor. The Capital Metro light rail project will deliver a frequent and reliable light rail service along Flemington Road and Northbourne Avenue between Gungahlin, Canberra's fastest growing greenfield area and City, Canberra's primary employment, commercial and retail centre.

This study builds on the Gungahlin to City Transit Corridor Study (2012). It will investigate matters relating to the integration of the light rail corridor into the future public transport network, operational and capacity requirements of intermodal stations and stops, walking and cycling path integration with stops and updated strategic transport modelling.

In late 2011, the Gungahlin to City Transit Corridor Study was commissioned to investigate the feasibility of bus rapid transit (BRT) and light rail transit (LRT). The study produced concept designs for BRT and LRT in both median and kerbside alignments, cost estimation to a pre-conceptual level, development of potential metropolitan and corridor residential and employment scenarios to support transit investment, strategic transport modelling and economic appraisal of the concept design options for BRT and LRT to inform Government decision making.

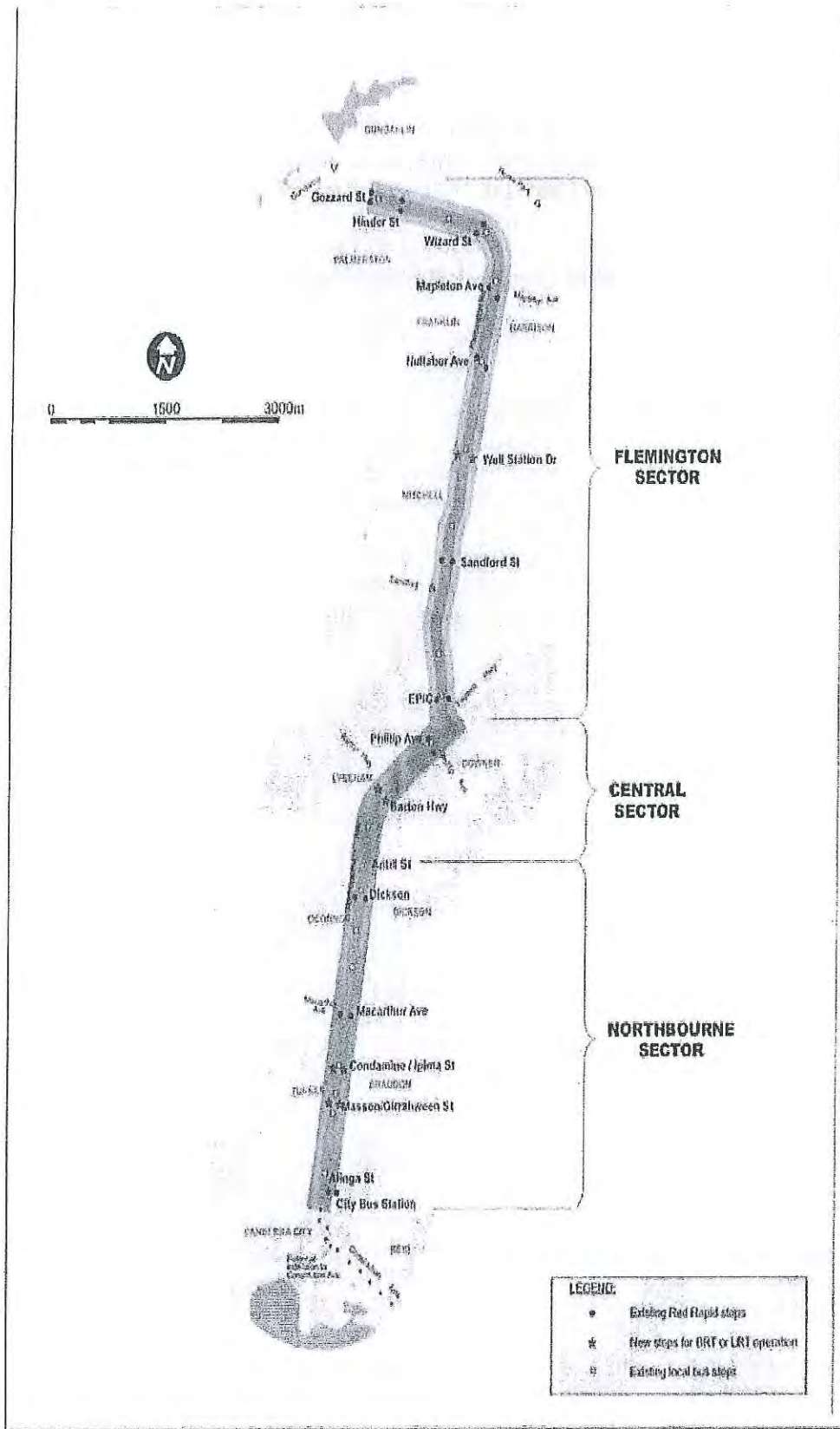
The Capital Metro light rail project has recently been announced by the ACT Government with a target date for the commencement of construction in 2016.

The Capital Metro Project Office (CMPO) has been established to coordinate the delivery of Canberra's first light rail corridor. This project is the first CMPO project and will establish the parameters for the introduction of light rail into the existing public transport network and provide necessary inputs to other key projects to be undertaken, including preliminary and detailed design of a transit system and associated infrastructure like stations and stops.

Transport planning in the ACT is guided by Transport for Canberra 2012 which establishes the Frequent Network, a strategic public transport network which identifies the rapid and frequent local lines where public transport services will be provided. The rapid lines in the Frequent Network are corridors where high frequency segregated light rail and bus rapid transit services will be appropriately located in the future. It is also the intention that future residential and employment development should locate in major nodes connected by rapid lines or along rapid transit corridors, as detailed in the ACT Planning Strategy 2012.

The Frequent Network identifies a rapid corridor between Gungahlin and City, along Flemington Road and Northbourne Avenue. This rapid corridor is currently serviced by the 200 bus service (also known as the Red Rapid), a high frequency limited stop service which links Gungahlin to Fyshwick via City, Russell, the Parliamentary Triangle and Kingston. The Capital Metro light rail project will replace the 200 service between

Map 1: The light rail corridor



Gungahlin Town Centre and City and subject to the recommendations of this study, may replace other bus services that travel along part or all of the corridor.

4.0 PROJECT DESCRIPTION

4.1 STUDY AREA

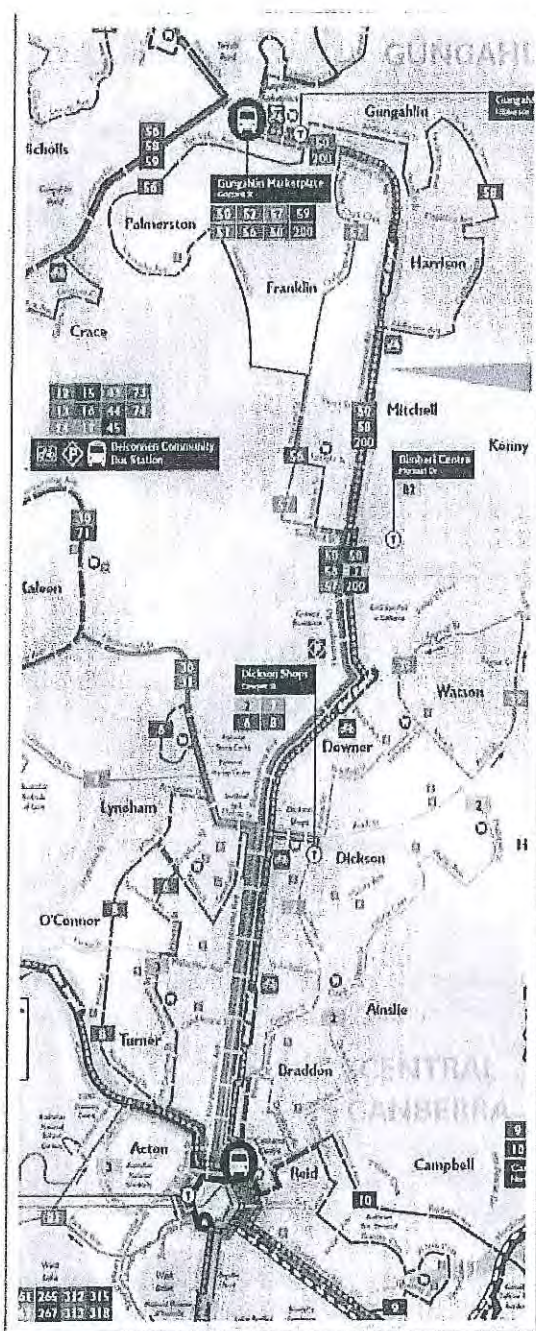
The study will focus on the light rail corridor (refer map 1), which includes:

- **Flemington Sector:** Flemington Road to Gungahlin Town Centre (Hibberson Street and Anthony Rolfe Ave)
- **Central Sector:** Federal Highway from Antill St Dickson to Flemington Road
- **Northbourne Sector:** Northbourne Avenue from Alinga St to Antill Street Dickson

The study area also includes the bus network of Gungahlin and North Canberra that complements this light rail corridor (refer to map 2).

Map 2: Bus routes that operate in and connect to the light rail corridor

The study area includes the full extent of all route numbers that operate in and connect to the corridor, shown indicatively on this extract from the ACTION Network 12 Weekday bus network map.



4.2 GUNGAHLIN TO CITY TRANSIT CORRIDOR STUDY 2012

The Gungahlin to City Transit Corridor Study 2012 (GCTCS) was undertaken to establish the feasibility of either light rail or bus rapid transit and inform Government decision making about the project. The study established a number of parameters/assumptions which will form the basis of future work:

- Three stations (acting as termini and modal interchanges) are to be located in Gungahlin Dickson and City.
- Provision for a maximum of 12 stops, not including the above mentioned stations.
- Transit lanes to be located in the median of Northbourne Avenue and Flemington Road (for LRT and possibly buses – refer to Stage 2 below).
- 3 m wide cycle lanes and 1.5m wide footpaths in road verges without moving the existing traffic lanes.

The *Light Rail Integration Study* will establish the parameters for the transport planning stream of this infrastructure project and identify matters for consideration in concept and preliminary design of a transit system, stations and stops.

4.3 SCOPE OF SERVICES

The scope of this brief is the provision (in accordance with the Standard Agreement between the Territory and the consultant) of the following services relating to the works described in this section.

The consultant shall undertake the following tasks:

STAGE 1- NETWORK ANALYSIS, EVALUATION AND OPTIONS

- Assessment of the issues regarding integration of light rail (along the Gungahlin to City corridor) into the existing public transport network, based on the principles of the *ACT Strategic Transport Public Transport Network Plan, Transport for Canberra* and against the current public transport network (Network 12) and its next iteration, Network 13 (currently under development – details to be provided to the successful consultant).
- Identify the opportunities, constraints, impacts, improvements and issues of light rail network integration with the bus network and path network and resolve/make recommendations to address any integration issues.
- Identify infrastructure and network improvements to meeting future demand generated by forecast light rail patronage (based on corridor population assumptions provided by the ACT Government) along the Gungahlin to City corridor and the potential catchment from within the corridor and via inter-modal links such as local bus services and park/bike/kiss and ride.
- Analysis of the integration of light rail in the Gungahlin to City corridor into the existing cycle and pedestrian network and the future ACT Strategic Cycle Network Plan (currently under development – details to be provided to the successful consultant).
- Investigate and identify additional potential locations for park and ride, bike and ride and kiss and ride facilities along the corridor to maximise access to light rail and patronage. Note the existing park and ride at Exhibition Park in Canberra and that feasibility-level design has been completed for facilities at Gungahlin Town Centre and Well Station Drive.
- Identify the optimal locations of stops based on, but not limited to:
 - preliminary stop locations identified in the *Gungahlin to City Transit Corridor Study*;

- current and future development potential, noting higher residential and employment populations;
- current and future demographic data and trends within the corridor;
- existing and future land uses, activity nodes and the like;
- cycle and pedestrian access;
- catchment analysis utilising a methodology which identifies the walkable/cycleable catchments via the existing walking and cycling infrastructure (footpaths, cycle paths, informal paths etc), rather than the straight line distance to stations and stops ; and
- any other relevant matters.

Walkability GIS mapping and data will be provided to assist with this task.

- Based on the analysis, develop a range of public transport network scenarios/options for evaluation. Network options are to include scenarios for 2018-19 (commencement of light rail operations), 2021 and 2031. The network options are to consider the following factors:
 - maximise the network benefits and efficiencies of light rail introduction;
 - maximise reliability, operational savings and efficiencies to the ACTION bus network;
 - increased patronage to the public transport network;
 - other factors to be determined in consultation between the consultant and project management team; and
 - higher residential and employment populations over time along the corridor in line with a scenario to be provided by the Capital Metro Project Office.
- Develop a methodology for evaluating the public transport network options in accordance with Government objectives to be determined in consultation with the project management team.
- Evaluate the network options using a proposed methodology in consultation with the project management team and Directorate stakeholders.
- Stage 1 analysis is to utilise data, modelling and planning from the following sources:
 - Canberra Strategic Transport Model (CSTM) in EMME;
 - Strategic Public Transport Network Plan and Frequent Network;
 - Strategic Cycle Network Master Plan;
 - Any other relevant data source.
- The CSTM is to be updated with the public network options that emerge in stage 1 and the EMMEbank files are to be provided back to the ACT Government on completion.

STAGE 2 – NETWORK INFRASTRUCTURE

- Investigate and identify the infrastructure and operational requirements of stations, stops and termini at Gungahlin, Dickson and City and along the corridor at locations determined in stage 1 based on the preferred network. This work will include but not be limited to:
 - operational and capacity requirements for 2018-19 (commencement of light rail operations), 2021 and 2031 networks;
 - public transport ingress and egress to stations;
 - modal interchanges, transfers and layovers;
 - bus network routing and stops around major stations/termini at Gungahlin, Dickson and City;
 - impacts and solutions for the road network, including traffic flow, intersections and the like, in the vicinity of stations;
 - pedestrian, cyclist and motor vehicle passenger ingress, egress and access to stations; and
 - consideration of transit oriented development opportunities identified by the Capital Metro Project Office;
 - integrated ticketing and real time information systems; and
 - any other relevant issue.