routes, and other low-volume collector streets also are well-suited to providing cycling access to most stops/stations.

In the few cases where Primary or Secondary routes cross the corridor, it is at a signalised intersection or via a grade separated path/trail. The following streets have Primary and Secondary bike routes that bisect the LRT corridor and will require design consideration at the signalised intersection.

- Kate Crace Street
- Well Station Drive
- Sandford Street
- Mouat Street / Antil Street
- Bike route crossing near Morphett Street
- Macarthur Avenue / Wakefield Avenue
- Cooyoung Street
- Rudd Street

In addition to areas where the cycle network intersects with the LRT, access to the central median stations will require careful site specific designs to ensure that both pedestrian and cyclists can safely connect to the LRT.

In order to maximise cycling integration with the proposed LRT, new stops/stations should be considered as destinations for cyclists. Depending on the stop/station locations, logical gaps can be identified with the existing network and stops.

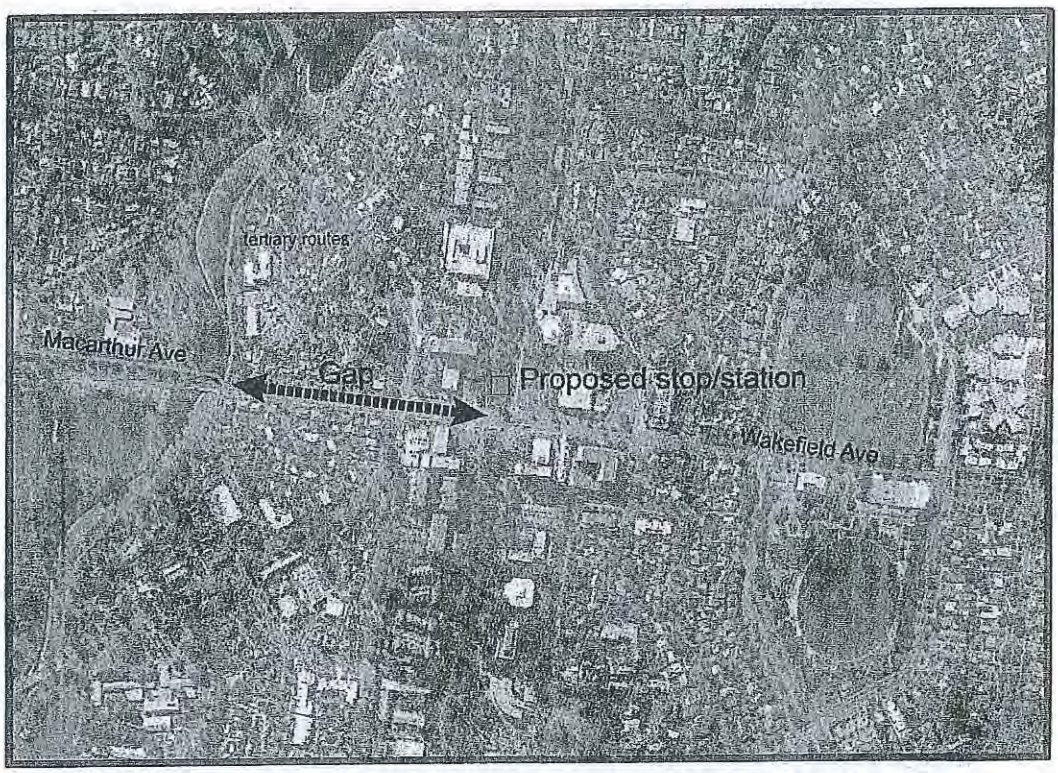

Figure 6: The Strategic Cycle Network should include stops/stations in the LRT corridor.

Due to the location of the LRT route through a relatively confined residential catchment, it is assumed that the most likely users of a Bike & Ride (LRT) trip will be taking a relatively short cycle trip. Longer distance bicycle commuters will not likely transfer to LRT for the last few kilometres of their trip. The provision of secure bicycle parking at every station should be required. The City, Dickson, and Gungahlin stations will likely have higher levels of cycling demand, due to their location along the corridor and the fact they have large residential catchments that logically support a Bike & Ride (LRT) trip.

Security and convenience are the most important issues with bicycle parking as discussed below in the Bike & Ride section.

2.4.3 Bike & Ride

A necessary feature for supporting intermodal transport between bicycles and LRT is the provision of secure bicycle parking. Bike & Ride features can range from bike cages and bike lockers to more standard bike rails. Typically, Bike & Ride facilities refer to a high level of security and weather protection that is designed for day-long storage. Bike & Ride facilities also include racks or other devices that are used to transport bicycles on public transport vehicles.

The Transport for Canberra Action Plan identifies the provision of more Bike & Ride facilities as a tool to support an integrated transportation system. There is a range of bicycle parking facilities located near many of the Red Rapid stops from simple bike rails, to bike lockers and bike cages. Bike cages are located near the intersection of Flemington Road and Nullarbor Avenue in Harrison and at the City Bus Station on Mort Street.

Bicycle parking security is often related to the site specific visibility and activity. In places that are 'busy' with a high level of natural surveillance, cycle facilities such as bike lockers and cages may not be required.

Figure 7: Bike parking facilities in City

The space required for bicycle facilities, in particular cages and lockers, may be problematic in dense urban areas since it may impede pedestrian travel or conflict with other uses. In the City area and in Gungahlin Town Centre, there is already a high provision of public bicycle parking located along the footpath and in front of buildings.

To be most useful, bicycle parking needs to be as close to the stop/station as possible. With a central median alignment, as proposed for the LRT, many of the existing bicycle parking facilities may become redundant. Existing higher quality facilities may have some usefulness if the central median stop is located nearby. It is assumed that people will use higher quality facilities even if they are located a modest distance from the stop, especially if they are located on the way to the ultimate destination.

The LRT's central median alignment may reduce the natural surveillance of Bike & Ride facilities requiring more robust facility designs.

The images shown in Figure 8 through to Figure 11 depict a range of bicycle parking facilities.

Figure 10 depicts casual bicycle parking provided under a shelter structure, which is not commonly seen. The ACT Major Stops Study[3] recommended a bus shelter designs that incorporated casual bicycle racks into an extension of the sheltered area of the stop. Such an approach could be used in the design of light rail shelters, which ideally would extend the length of the vehicle (to be determined, but most likely in the range of 22m to 30m). This long shelter length suggests adequate space for casual bicycle parking may be available.

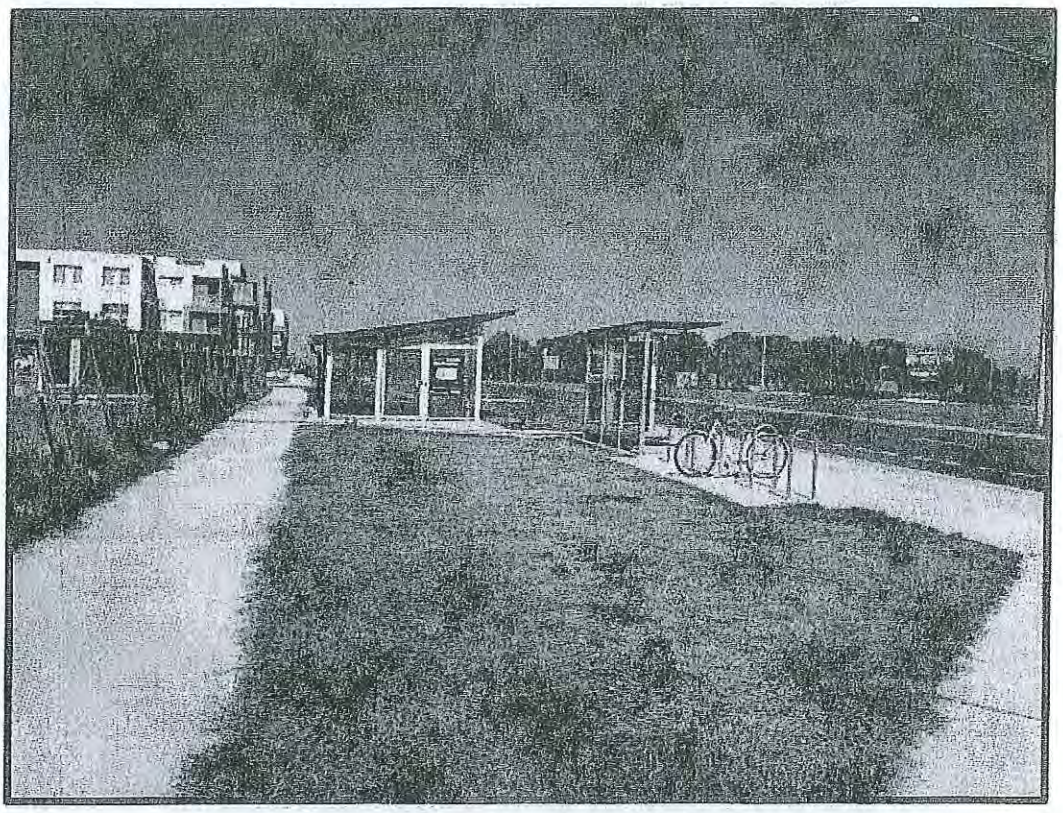

Figure 8: Bike Cage and Bike Rail, Canberra

[3] ACT Major Stops Study, McCormick Rankin Cagney, 2011.

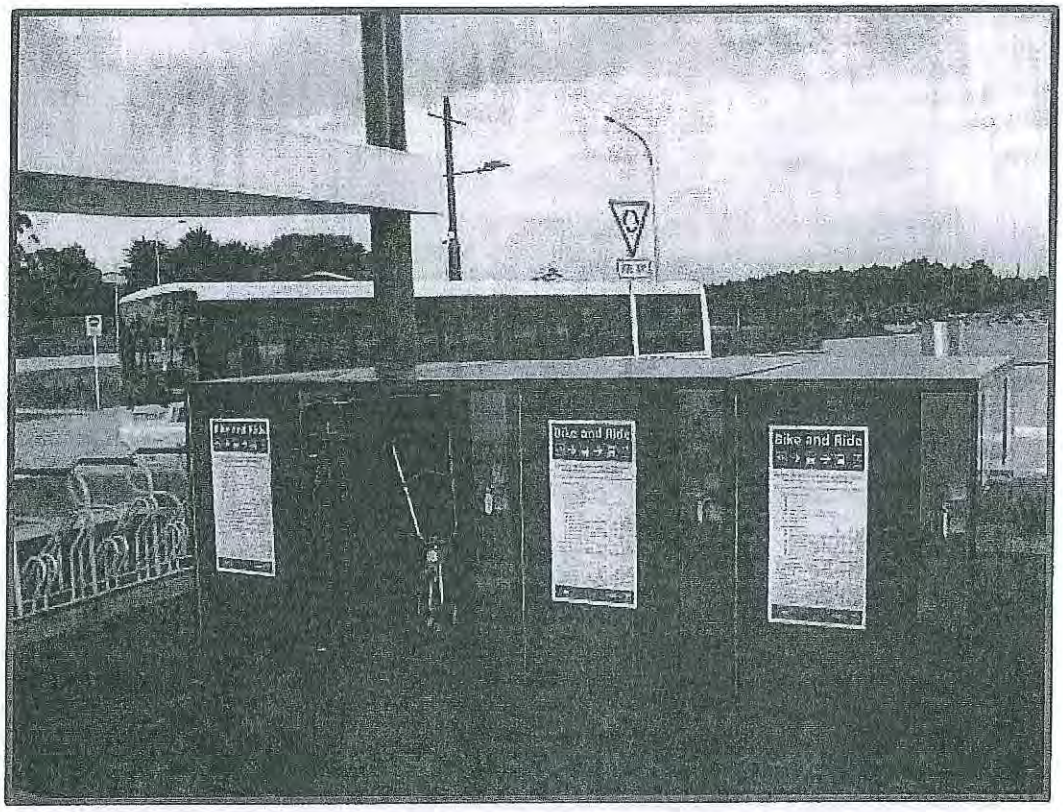

Figure 9: Bike locker at bus station Auckland, NZ (photo: IBIKENZ)

Figure 10: Off-street, high quality, covered parking, 'bike oasis', New York, USA

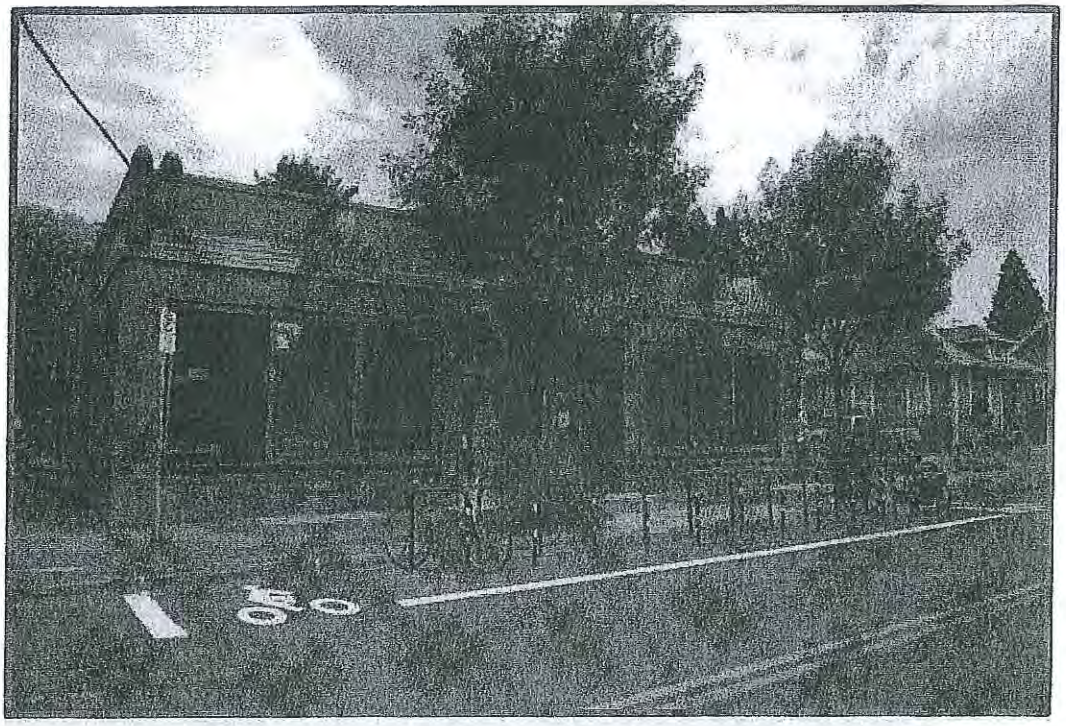

Figure 11: On-street bike parking, 'bike corrals' Portland, USA. (photo: Bike Portland)

The ability of people to take their bike with them on their journey can significantly increase the usefulness of both public transport system as well as the bicycle network. Currently, 80% of the ACTION buses serving the Red Rapid corridor have bike racks (with a two bike capacity.)

Allowing bikes on board LRT vehicles has proven popular in many cities but the use can conflict with overall passenger accessibility and vehicle capacity. The provision of bicycle carry-on can be managed through restriction in use by the time of day, direction of travel, and /or location where bicycles are allowed on board.

Recommendations

- The LRT stop/stations should be considered local, short-trip (less than 1km) destinations in future bicycle network planning.
- Bicycle access to the stop/station should be connected to existing and planned bicycle paths where available.
- Bicycle access should not interfere with pedestrian movements.
- At signalised crossings, people on bike should be able to actuate signals without dismounting.
- Bicycle carry-on should be encouraged and managed to minimise the potential for user conflicts.

2.4.4 Urban Integration

The introduction of LRT in a central median alignment poses minimal impacts neither to the movement of people on bikes nor to the wider cycling network. The conflicts between bikes and LRT are primarily concentrated in two locations: 1) urban streets where road reserves are narrow and include a variety of road users and 2) site-level circulation around stops/stations.

In the urban settings of Gungahlin and City there are situations where the LRT will impose additional on-street movement conflicts depending on the station locations and LRT termini. This is particular relevant along Hibberson Street in Gungahlin.

International research reveals the following key problems associated with bicycle-streetcar street integration (*Bicycle Interactions and Streetcars: Lessons Learned and Recommendation*):

- Turning movements across tracks put cyclists in danger of crashing; the shallower the turn, the higher the crash risk
- Cyclist and motorist education is inadequate
- Routing cyclists to the sidewalk is problematic because it may create conflicts with pedestrians
- Streetcar routes and bicycle routes are frequently sited on the same classification of streets

The following solutions were identified as solutions to dealing with bicycle-streetcar conflicts (*Bicycle Interactions and Streetcars: Lessons Learned and Recommendation*):

- Separated facilities are universally preferred, in the form of a grade-separated (i.e. 'Copenhagen-style') cycle track, but sometimes in the form of a parallel low-traffic bicycle route.
- Bicycles must be integrated into streetcar planning processes at an early stage.
- Facilities should be designed to facilitate right-angle turns across the tracks.
- Streetcar routes should not deteriorate cycling conditions or eliminate cycling routes.
- Leave sufficient space between track and platform kerb so that bicycles can proceed.

At the station-level conflicts may arise between users arriving by bike and walking. Depending on the estimated demand at particular stations, bicycle access can be provided through separate facilities which will minimise the potential conflicts. The location of bike parking can also help to minimise the conflicts. These site-specific issues are addressed in the Urban Core, and Town Centre options analyses where termination patterns are further investigated. (Stage 2)

Figure 12: In places where the LRT route will mix with bicyclists, special designs are required

2.4.5 Discussion of Opportunity of Intermodal Facilities

The *Transport for Canberra Action Plan* places high importance on transport integration. The transport system is designed to take advantage of Canberra's well-planned urban structure that supports a rapid public transport network. Walking and cycling are important transportation modes, both in their own right and in regard to supporting wider mobility via the public transport system. Intermodal integration with vehicle trips and bicycle trips through facilities such as Park & Ride and Bike & Ride helps to make public transportation an easy choice.

2.5 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. The size of the Kiss & Ride is dependent on the passenger demand as well as particular site constraints. Generally, passenger drop off and pick up can be integrated in the normal provision of road space, vehicle circulation and parking. In cases where demand exists, or accessibility can be improved, Kiss & Ride facilities should be considered as long as their provision does not compromise other circulation movements, in particular walking and cycling.

Design Considerations:

- There should be a direct visual connection between the Kiss & Ride area with the connection to the stop/station
- Facilities should be convenient for both PT users as well as motorists
- Kiss & Ride should be located close to the stop/station

- The Kiss & Ride should be designed for one-way traffic flow and allow re-circulation within the facility
- Pick-up/drop-off zones should be located on the left side of the street away from through traffic
- Pick-up/drop-off zones should be located closer than other Park & Ride facilities
- Pick-up/drop-off zones should be accessible for persons with disabilities.

2.5.1 Taxi Rank

Taxi services are an essential component for the mobility of a modern city. Taxis operate in a unique public transport niche providing public transport services which cannot be delivered using mass transit; namely 24 hour per day, non-fixed route, door-to-door, personal public transport on demand.

2.6 Park & Ride

The *Transport for Canberra Action Plan* identifies Park & Ride facilities as important in reducing car only trips and supporting journey flexibility. It suggests that Park & Ride facilities will be built along the Rapid service routes, en route to town centres rather than within them. It also identifies several key considerations for siting Park & Ride including:

- *Location of the site relative to the Frequent Network (priority areas will be on the corridors, but away from pay parking sites to eliminate the need for a permit system)*
- *Costs and value for money for the Territory*
- *Impact on the surrounding environment*
- *Selection of appropriate locations for suburban Park and Ride facilities, including availability of existing under-utilised surface parking areas (Plan page 25)*

Currently there is one existing Park & Ride facility along the LRT corridor, located on Flemington Road across from Exhibition Park in Canberra (EPIC). Another is planned on Efkarpidis Street in the Gungahlin Town Centre. The 2031 Frequent Network plan identifies an additional Park & Ride facility near the intersection of Flemington Road and Well Station Drive in Mitchell.

Discussion

From a network design perspective, the provision of Park & Ride facilities serves as a useful tool in shifting long distance commuter car trips to public transportation, in particular for congested arterial corridors. Park & Ride facilities are especially useful in serving low-density, peri-urban areas that do not have access to a feeder bus system.

In urban areas that are supported by existing bus routes, Park & Ride facilities can compromise bus patronage. Along the LRT corridor, it is likely that Park & Ride demand will be based in part by the cost of parking at the destination, especially near the City terminus. In this case, Park & Ride becomes a subsidy that encourages local cars trips and discourages local connecting bus trips.

Depending on the future fare structure, Park & Ride in urban areas can become used opportunistically to reduce transport fares if they are located near a break in a multi-stage fare system.

Park & Ride facilities can be very capital and land value intensive.

Depending on the strategic network design Park & Ride facilities may conflict with not only land uses, but also the wider public transportation network itself.

2.7 Stop and Stations Typology

A range of station/stops will serve the LRT. Each station will provide a distinct function and be located in a particular context. The station typology reflects location, land use, and density as well as the required transit operation. The typologies are not definitive as some stops will likely have characteristics and requirements that span the following classes:

- Urban Core
- Town Centre
- Neighbourhood
- Collector
- Special Destination

2.7.1 Urban Core

2.7.1.1 Setting

An urban core station is located in the most densely developed area of the system. High-rise and medium rise buildings are common. There is a concentration of activities in the urban core including office, institutional, and retail uses.

2.7.1.2 Transit requirement

An urban core station has metropolitan-level significance as a destination. Urban core stations may have critical intermodal requirements, but these stations are not appropriate or logical locations for Park & Ride. Pedestrian accessibility is the foremost consideration at urban core stations. Bike & Ride facilities, depending upon the type and location may not be appropriate at urban core stations.

2.7.2 Town Centre

2.7.2.1 Setting

A town centre station is located in a setting of dense, active, mixed-uses. The development scale is not as intense as the urban core, although medium rise buildings are common. The town centre has a high level of travel demand based on retail and business activity and a may have a large concentration of residents.

2.7.2.2 Transit requirement

The town centre has a high level of travel demand. Town centres are logical locations for bus interchange facilities due to the concentration of activities. Automobile access to the town centre is an important consideration, but Park & Ride facilities, in particular surface lots, may detract from the walkability and viability of a town centre. Pedestrian accessibility to the station is critical in the town centre.

2.7.3 Neighbourhood

2.7.3.1 Setting

A neighbourhood station is located in a primarily residential neighbourhood. There is a range of housing types and densities in a neighbourhood.

2.7.3.2 Transit requirement

Neighbourhood stations are stops where most people arrive on foot. The stations attract people from a large catchment or are served by a local collector bus service. Park & Ride and long term, on-street parking is not appropriate for neighbourhood stations. Where appropriate, Kiss & Ride facilities can be considered to provide a higher level of journey flexibility. A range of Bike & Ride facilities should be considered based on setting and potential for this mode.

2.7.4 Collector

Collector stops are primarily capture points for inbound passengers traveling by car. They are typically located in strategic positions that serve the wider highway transportation system.

2.7.4.1 Transit requirement

While providing primarily for Park & Ride facilities, collector stations should provide convenience and amenity for walk-up users. Appropriate Bike & Ride facilities should be considered if it would serve a local catchment or bicycle network. The transfer between Park & Ride and Bike & Ride should be as convenient and seamless as possible.

2.7.5 Special Destination

Special destination stops are defined by a single destination or unique cluster of land uses. These may include sport or entertainment venues, or fairgrounds.

2.7.5.1 Transit requirement

Single use destinations typically do not have the interchange requirements of other mixed-use stations. Special destinations may have unique travel demand patterns and site conditions making them suitable for Park & Ride. Because of the singular focus on the special district, there is a reduced walking catchment. Pedestrian accessibility should be focused on distributing passengers to the focal destination. A reduced walking catchment may make the provision of Bike & Ride facilities more useful.

2.8 Summary of Stop/Station Locations and Designs

2.8.1 Discussion on stop spacing, catchment efficiency

In order to analyse the opportunity for multi-modal integration within the corridor, extensive GIS analyses were conducted. The analyses were based on a range of distances, but were focused on walking catchments of 500m and 750m. There is increasing evidence that people will walk considerably further than 750m to access high quality public transport services. The analyses were conducted to identify the potential service reach of individual stations and to compare stop pattern efficiency. In cases where walking catchments overlap, there is reduced service coverage gain while increasing the system's cost and slowing service.

The analyses were also useful in identifying the land use and urban form challenges to providing coverage areas for the corridor.

2.8.2 Summary and discussion of mapping analysis

The GIS analyses were conducted using a network distance rather than a simple circle measurement. This means that distances were calculated following streets, paths, and trails. Where available data provided from ESDD was used in the mapping analyses. Figure 13 shows an image comparing a simple theoretical walking circle with one based

on the ESDD pedestrian network. All the calculations in this report are based on a network basis.

A summary table for each stop is listed included in Appendix C.

Figure 13: Catchment analysis methodology illustrating the pedestrian network catchment, green (500m), yellow (750m) and the simple 750m circle (orange)

2.9 Network Option Development

Three distinct network scenarios were developed. The scenarios cover a range of realistic network designs based on achieving particular network, operational or strategic goals. Three scenarios were selected to test a spectrum of integration with (and impact upon) the existing public transport network in the corridor. Option 1 represents low integration and low impact, Option 3 represents high integration and high impact, while Option 2 is a hybrid between the two as a medium integration, medium impact test case.

Each of these scenarios uses the Network 13 bus network as a base and modifies it according to the level of LRT integration specified by each scenario. This approach assumes that Network 13 is well optimised and efficient with regard to the local bus network and Red Rapid.

Option 1 Base Case represents a direct replacement of the Red Rapid bus line along the LRT corridor. Under this scenario the LRT functions as an express overlay route largely independent of the bus network. Apart from the Red Rapid, no other components of the bus network are modified or removed. Many continue to operate along the same corridor from Gungahlin to City and provide duplicate service to the same radial commuter trips as the LRT line. In other words this option represents the case of adding LRT to the public

transport network with minimal change to existing conditions. This option provides the most public transport service overall but as a result would have the highest operating costs. It does not rely upon transfers or network effects for any passengers to make any trips in the Gungahlin to City corridor, all direct bus service is maintained, although passengers could make transfers if they desired.

Option 2 introduces more light rail stops, and retains some of the local route structure of the existing network. Under this scenario the LRT is a hybrid between an express and trunk route. Various bus routes continue to operate along the same corridor as the LRT line, however the outer routes from Gungahlin terminate midway along the corridor and some passengers would be required to transfer to LRT to complete a radial commuter trip to City. In other words, this option represents the partial integration of LRT to the public transport network with moderate change to existing conditions. This option provides slightly reduced public transport service overall, with less service duplication than Option 1 and somewhat reduced operating costs. It does rely upon transfers for some bus passengers in the Gungahlin to Dickson area to reach any point between City and Dickson, as direct bus service from the northern part of the corridor is removed.

Option 3 introduces the most light rail stops and connects collector buses directly to the LRT at local stops. Under this scenario the LRT functions as the trunk backbone of the public transport network in the corridor, therefore it requires more local stops and has a reduced express function. All bus routes in the corridor are terminated at a LRT station at the first opportunity, in other words all passengers in the wider corridor would be required to either board at an LRT station directly, or transfer from bus to LRT to reach City. This option provides reduced public transport service overall, with no service duplication and lower operating costs by concentrating all trips onto the LRT line. It does rely on transfer for all bus passengers in the Gungahlin to Dickson area to reach City or any other point on the LRT corridor (except Gungahlin and Dickson Town Centres themselves).

2.9.1 Option 1 – Base Case Scenario

The network infrastructure and design changes discussed in the following sub-sections reflect the features of this scenario. Figure 14 shows the Option 1 stops/station locations and type.

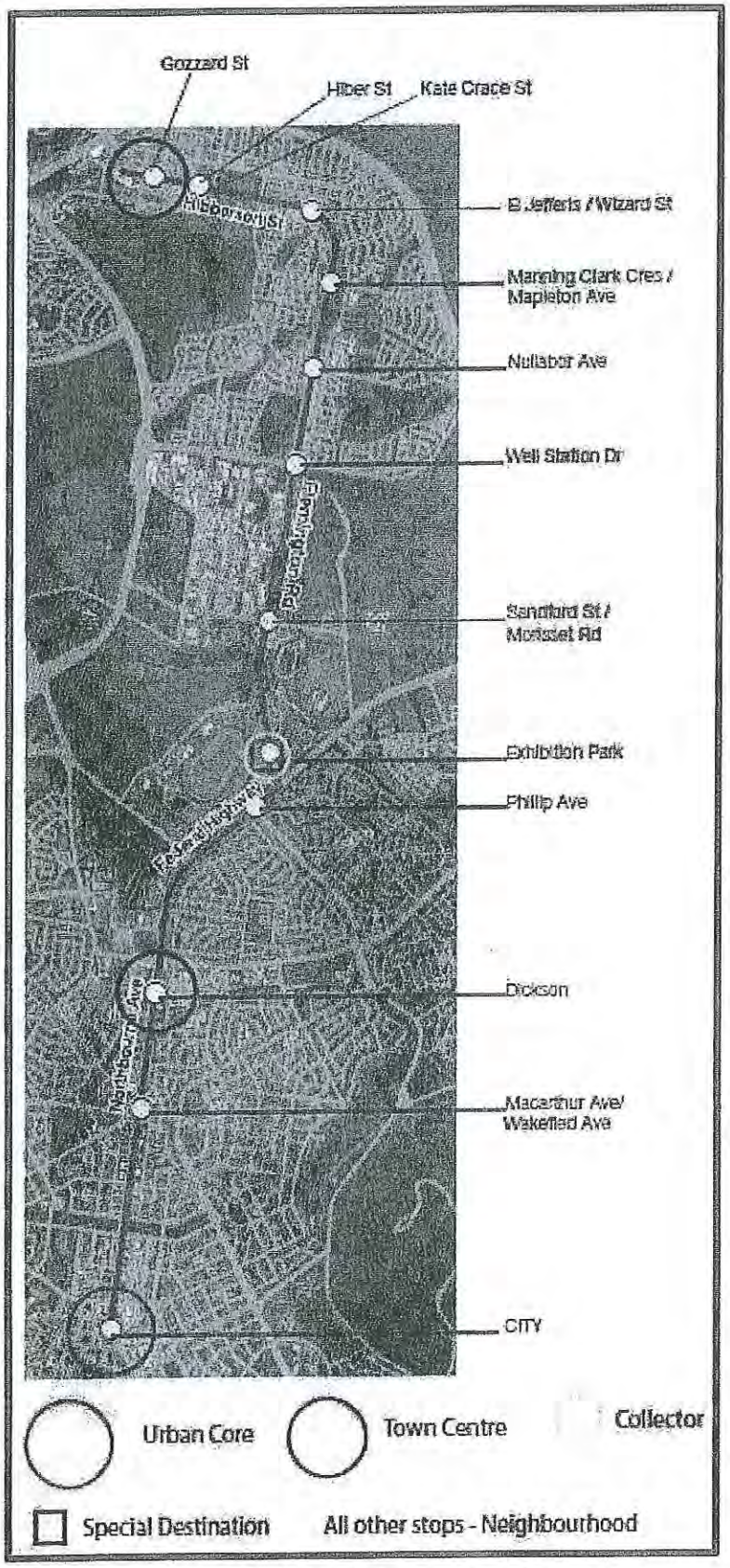

Figure 14: Option 1 Stop/Station location and hierarchy

2.9.1.1 Network concept

In the base case scenario, the LRT design will simply replace the current limited stops pattern of the Red Rapid north of the City. All other buses will continue to operate on their present alignments, including those parallel to the LRT on Flemington Road and Northbourne Avenue. The southern portion of the Red Rapid will continue to operate from the City to Fyshwick on an all-stops pattern.

Under this scenario, LRT provides an express limited-stops service in the main corridor while regular buses provide all-stops service in parallel. Both LRT and parallel buses run through to the City. Buses will continue to operate all the way from Gungahlin to City. No bus passengers south of Gungahlin are required to transfer to access City, however they may choose to transfer to the limited-stops LRT at an intermediate stop.

This is a minimal change scenario.

2.9.1.2 General changes to the bus network

The following are the proposed bus network changes for Option 1:

- Red Rapid north of City is replaced with LRT.
- Red Rapid south of City is renamed the 'Red Line' and operates an all-stops pattern at 15 minute headways along the existing alignment between Fyshwick and City. Timetable is coordinated with the Green Line to provide a 7½ minute frequency over shared routes.
- All other buses continue to run through to Gungahlin or City as per existing routes.
- Buses maintain all-stops service on Flemington Road and Northbourne Avenue parallel to LRT.

2.9.1.3 Stop/station, location and hierarchy

The stop/station locations of the Red Rapid are generally retained. Stop infrastructure is re-located to the central median alignment. Station and interchange facilities are not upgraded.

2.9.1.4 Opportunity/suitability for modal interchanges – Park & Ride, Kiss & Ride, Taxi Rank, Bike & Ride

An additional Park & Ride is located near Mitchell as identified in *Transport for Canberra*. No further Park & Ride facilities are considered in this scenario. Bike & ride facilities are relocated to central median locations. Cycling conditions along Northbourne Avenue remain compromised as buses continue to share the cycle lane at local stops. A separated cycle lane facility, as proposed in City to Gungahlin Transit Corridor, remains a suitable but expensive proposition in this scenario.

2.9.2 Option 2 – Whole Network Focus

2.9.2.1 Network concept

In the whole network focus scenario, the LRT design will replace the current limited stops pattern of the Red Rapid north of the City. The southern portion of the Red Rapid will continue to operate from Fyshwick to City on an all-stops pattern. Bus routes from the north and northwest of Dickson will be truncated to terminate at the Dickson LRT interchange. Figure 15 shows the Option 2 stop/station locations and type.

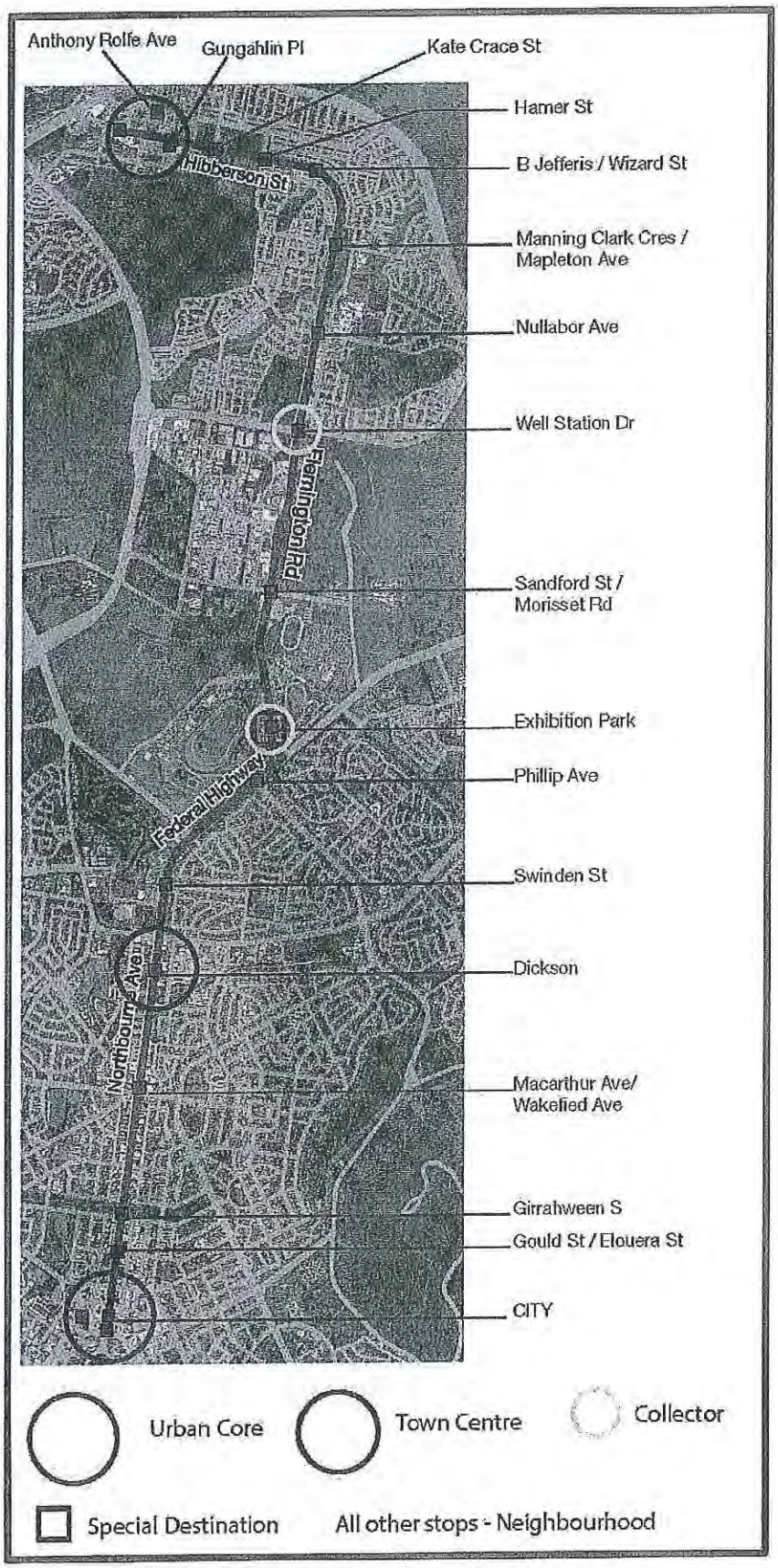

Figure 15: Option 2 Stop/Station location and hierarchy

Some bus routes will continue to operate parallel to the LRT on Flemington Road between Gungahlin and Dickson, while others will operate on Northbourne Avenue between Dickson and City. No route will operate along the full length of the LRT corridor.

Under this scenario, LRT provides an express limited-stops service in the main corridor while regular buses provide local all-stops service in parallel. Only buses operating between Dickson and City will run through to City. All others will connect to the LRT at Dickson or Gungahlin. Bus passengers north of Dickson are required to transfer to access City. Bus to bus connections are available between all bus routes at Dickson.

This scenario aims to maximise patronage across both the bus and LRT network by feeding longer distance bus trips into LRT, but not requiring transfers for short distance bus passengers. It maintains wide LRT stop spacing for fast trip times and retains parallel bus service for local access.

2.9.2.2 General changes to the bus network

The following are the proposed bus network changes for Option 2:

- Red Rapid north of City is replaced with LRT.
- Red Rapid south of City is renamed the 'Red Line' and operates an all-stops pattern at 15 minute headways along the existing alignment between City and Fyshwick. Timetable is coordinated with the Green Line to provide a 7½ minute frequency over shared routes.
- The 201 is removed from the network, as are the 751, 752 and 759 express patterns, as these would operate in parallel to LRT for the full length of the LRT corridor.
- The 56, 57 and 58 are maintained on Flemington Road parallel to LRT from Gungahlin to Dickson, but terminate at Dickson LRT Interchange. These routes maintain direct access from suburban areas to Dickson Town Centre and maintain the ability to transfer between local buses at that node to make cross suburb journeys. They also provide access to existing local bus stops of Flemington Rd parallel to the more widely spaced LRT stops.
- The 7 and 30 maintain all-stops service on Northbourne Avenue from Dickson through to City as per the proposed Network 13. These routes maintain a strategic connection between City, Northbourne Avenue and Belconnen, and provide access to existing local bus stops of Northbourne Avenue parallel to the more widely spaced LRT stops.
- The 39 to divert via Dickson LRT interchange.
- The 6 is extended to begin at Dickson LRT interchange (not Dickson shops).

2.9.2.3 Stop/station, location and hierarchy

The stop/station locations of the Red Rapid are generally retained along the Flemington Road – Northbourne Avenue corridor, with one additional bus stop at Swinden Street reallocated from local buses to LRT. New stops are also introduced at Gungahlin (Hamer Street and Kate Crace Street) and City (the intersection of Gould Street/Elouera Street) to support urban intensification at those two centres. Stop infrastructure is re-located to the central median alignment.

A higher level of bus interchange will be required at Dickson. Stop/station locations and interchange requirements in City and Gungahlin to be investigated in Stage 2 of this report.

2.9.2.4 Opportunity/suitability for modal interchanges – Park & Ride, Kiss & Ride, Taxi Rank, Bike & Ride

An additional Park & Ride is located near Mitchell as identified in *Transport for Canberra*. No further Park & Ride facilities are considered in this scenario. Bike & Ride facilities are relocated to central median locations. Secure bicycle parking is provided at every stop. In places where demand warrants, larger facilities should be provided. A high level of demand is likely at the City, Gungahlin, and Dickson as well as the Phillip Avenue and new Swinden Street stops.

Cycling conditions along Northbourne Avenue remain compromised as buses continue to share the on-road cycle lane at local stops.

2.9.3 Option 3 – LRT Focus

2.9.3.1 Network concept

In the LRT focus scenario, the LRT design will replace both the current limited-stops pattern of the Red Rapid and all-stops regular buses north of City. The southern portion of the Red Rapid will continue to operate from Fyshwick to City on an all-stops pattern. Figure 16 shows the Option 3 stop/station locations and type.

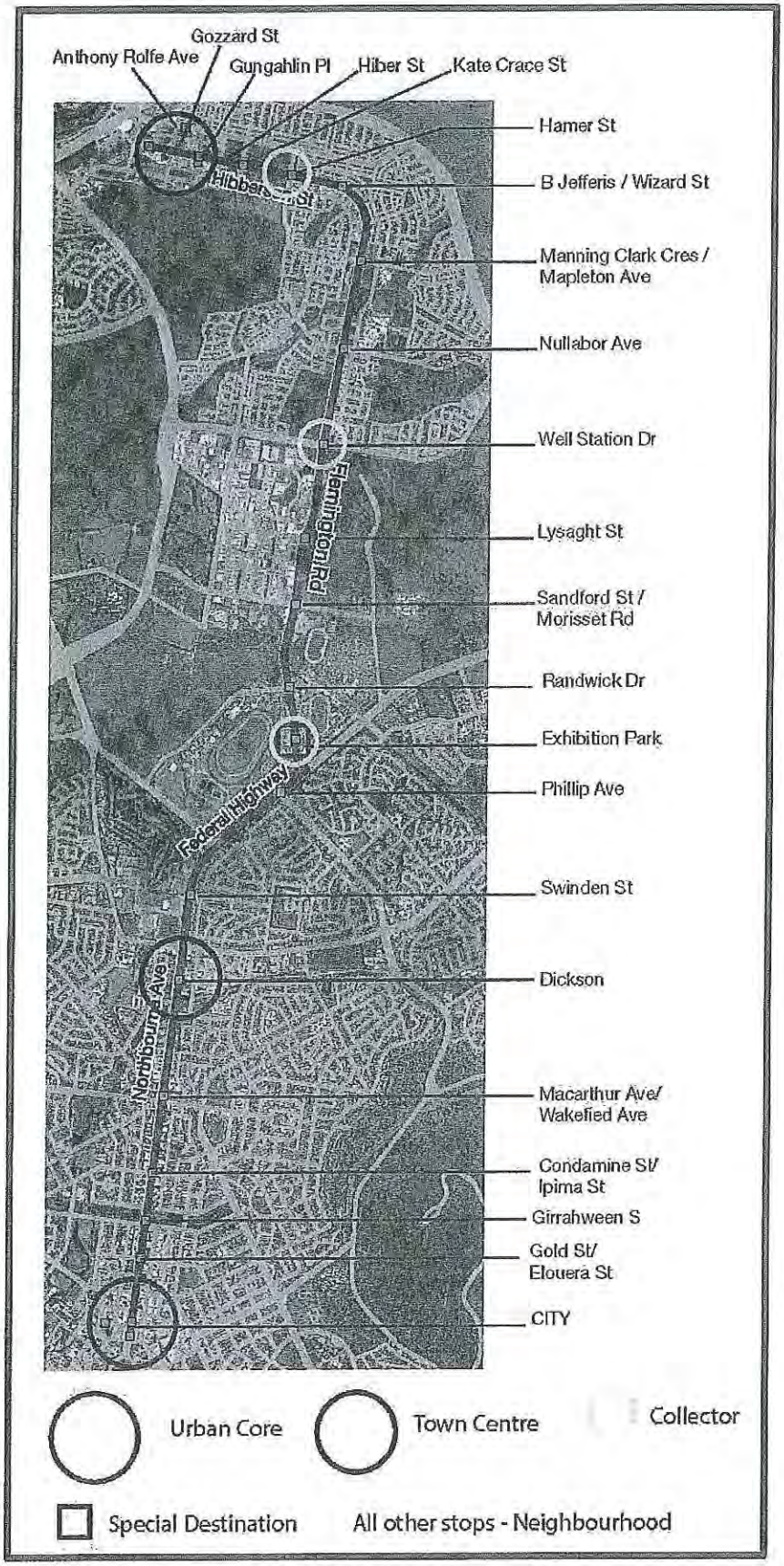

Figure 16: Option 3 Stop/Station location and hierarchy

All bus routes in the wider corridor are truncated or realigned to interchange with LRT at either Dickson LRT interchange or other intermediate stops. No buses will operate on any part of Flemington Road or Northbourne Avenue parallel to LRT.

Under this scenario, LRT provides all service on the Flemington Road – Northbourne Avenue corridor, covering both the trunk long distance and local access roles. The bus network is largely repurposed as an LRT feeder network only, with all bus routes in the corridor terminating at a LRT station at the first available opportunity.

With Option 3 some bus to bus connections will not be possible without an intermediate LRT trip. Any journeys with an origin on routes 56, 57, 58 and a destination on routes 6, 7, 30, 31, 39, or vice versa, would require a double transfer to complete. Analysis of MyWay data indicates that currently there are approximately 20 trips per weekday that connect between the affected bus routes. These would have an additional forced transfer via LRT under Option 3.

This scenario aims to maximise patronage on the LRT network by feeding all bus passengers onto LRT and removing all parallel bus routes. It requires narrower LRT stop spacing to maintain local access on the corridor.

2.9.3.2 General changes on the Bus Network

The following are the proposed bus network changes for Option 3:

- Red Rapid north of City is replaced with LRT.
- Red Rapid south of City is renamed the 'Red Line' and operates an all-stops pattern at 15 minute headways along the existing alignment between City and Fyshwick. Timetable is coordinated with the Green Line to provide a 7½ minute frequency over shared route.
- The 201 is removed from the network, as are the 751, 752 and 759 express patterns.
- 56 and 57 are truncated to terminate at LRT interchange at Flemington Road/Sanford Street (57 to consistently 'bounce' via Bimberi Centre).
- 58 is truncated to terminate at LRT interchange at Flemington Road/Well Station Drive.
- The 7 and 30 are truncated to terminate at Dickson LRT Interchange.
- 39 (north section) is truncated to Dickson LRT Interchange as new route.
- 39 (south section) and 6 are extended to begin at Dickson LRT interchange (not Dickson shops).
- All buses are removed from Flemington Road and Northbourne Avenue (approximately 28 per direction per hour at peak), and replaced with LRT. Bus stops are no longer required.

2.9.3.3 Stop/station, location and hierarchy

The stop/station locations of the Red Rapid are generally retained with some local bus stop locations reallocated to LRT to maintain local access on the corridor. Further stops are introduced at Condamine Street / Ipima Street, Randwick Road, Morisset Road, and Lysaght Street to provide access to local land uses and proposed growth areas. All bus stops are removed from the Flemington Road/Northborne Ave corridor, except where needed for bus to LRT interchange. Stop infrastructure is re-located to the central median alignment. A higher level of bus interchange will be required at Dickson, with lesser bus interchange facilities also required at Well Station Drive and Sandford Street. Stop/station

locations and interchange requirements in City and Gungahlin to be investigated in Stage 2 of this report.

2.9.3.4 Opportunity/suitability for modal interchanges – Park & Ride, Kiss & Ride, Taxi Rank, Bike & Ride

Additional Park & Rides to be located near Mitchell as identified in *Transport for Canberra* and one in East Gungahlin near Hamer Street. This park and ride will serve the suburbs north of Gungahlin including Moncrieff and Bonner. This site was located as an option to support intermodal opportunities without compromising the town centre activities. It is also suggested since it is currently undeveloped and could logically be a transitional facility before urban development occurs. Bike & Ride facilities are relocated to central median locations. Secure bike parking is provided at every stop. In places where demand warrants, larger facilities should be provided. A high level of demand is likely at the City, Gungahlin, and Dickson as well as the Phillip Avenue and new Swinden Street stops.

Cycling conditions along Northbourne Avenue improve since there would be no more bus movement conflicts in the outside lane. The removal of buses may allow for a reconfiguration of travel lanes to provide a wider cycle lane, or perhaps a physically separated cycle lane.

2.9.4 Summary

In summary, Table 1 shows the number of light rail stops and the average stop spacing for each option. It also shows the expected number of Park & Ride facilities for each.

Table 1: Number of Stops and Average Stop Spacing for Each Option

Option	Stops/ Stations	Park & Ride Facilities	Average Distance Between Stops
Option 1: Base Case	12	3	1,120 m
Option 2: Whole Network Focus	18	3	810 m
Option 3: LRT Focus	21	4	670 m

3 OPTION EVALUATION

A methodology for evaluating the network scenarios was developed based upon the project objectives for Capital Metro:

> *To boost Canberra's sustainable development by changing and improving transport options, settlement patterns and employment opportunities.*

The methodology is broken into four main category areas – transport, economic, community, and environmental. From these categories specific project measures have been identified in order to compare the project options.

Each of the main categories was given the following scoring value:

- Transport: 30%
- Economic: 30%
- Community: 20%
- Environmental: 20%

These main categories were broken down to identify project objectives. Finally, specific quantifiable measures were identified and scored in relation to each other and weighted for their relative importance to achieving the project objectives.

Each measure was scored from 1 – 5. Scoring each measurement was based upon the relative difference between the raw scores. The following describes the evaluation areas, scores and scoring rationale for each measure.

3.1.1 Objective: Transport (30%)

Table 2: Project objectives and measures for the objective category Transport

Project Objective	Weighting	Measure	Measure Weight
Increase mode share of public transport	70%	Total LRT boardings (2021 & 2031)	70%
		Number of new forced bus-LRT transfers (2013)	30%
Optimise frequency and service reliability	30%	Peak hour LRT frequency (2021 & 2031)	50%
		Peak hour LRT average speed	50%

3.1.1.1 Overall Scores

Table 3: Quantified measures and scores related to the Transport Objective

Measure	Option 1	Option 2	Option 3	Measure Value
Total LRT boardings (2021 & 2031)	5	5	5	14.7%

Number of new forced bus-LRT transfers (2013)	4	2	2	6.3%
Peak hour LRT frequency (2021 & 2031)	4	4	5	4.5%
Peak hour LRT average speed	5	4	3	4.5%

3.1.1.2 Transport Scores Discussion

The project scenarios were modelled by SMEC using the Canberra Strategic Transport Model (CSTM). The public transport mode share (based on the number of public transport passenger-km) for the corridor between Gungahlin and City showed a significant improvement between all the options and the 'Do Nothing' comparison for 2021. There was minimal difference between the options so they have all been scored 'best'. Note that these are based on current assumptions and will be updated once the re-calibrated Canberra Strategic Transport Model (CSTM) is finalised and signed off by ESDD, and SMEC is provided updated land use assumptions (high density) along the light rail corridor.

Table 4 shows the preliminary strategic transport modelling results for the year 2021. Abbreviations and definitions of terms used in the table include:

- Global: output from the entire CSTM (urban ACT and Queanbeyan)
- PT: Public Transport
- Auto: Car travel as driver or passenger
- HBW: Home-Based Work, also known as Journey-to-Work
- PT Proportion: Proportion of trips using public transport (mode share)
- G2C: Gungahlin to City corridor
- IV: In-vehicle

Table 4: Preliminary Strategic Transport Modelling Results (2021)

Measure	Do Nothing	Option 1	Option 2	Option 3
Global Person Trips	185,910	185,910	185,910	185,910
Global PT Person Trips	15,888	16,116	15,977	16,050
Global PT Proportion	8.5%	8.7%	8.6%	8.6%
Global Auto Vehicle-Km	1,489,783	1,486,141	1,485,229	1,486,573
Global HBW Person Trips	72,366	72,366	72,366	72,366
Global HBW PT Trips	5,530	5,723	5,646	5,731
Global HBW PT Proportion	7.6%	7.9%	7.8%	7.9%
G2C Corridor PT Boardings	1,018[1]	2,234	2,060	1,619
G2C Corridor PT IV Passenger-Km	7,303	13,939	12,198	12,225

G2C Corridor PT Total Passenger-Km	7,699	14,371	12,609	12,641
G2C Corridor LRT Boardings	0	1,190	1,150	1,125
G2C Corridor LRT Boardings Proportion	0	53.3%	55.8%	69.5%
G2C Corridor LRT IV Passenger-Km	0	11,921	10,324	11,774
G2C Corridor LRT IV Passenger-Km Proportion (of PT)	0	85.5%	84.6%	96.3%
G2C Auto Vehicle-Km	33,005	33,010	33,009	33,300

3.1.1.3 Total LRT boardings in the Gungahlin to City corridor (2021)

The predicted number of unique passenger boardings to LRT on the corridor in 2021. CTSM model outputs (Table 4) indicate negligible difference in LRT boardings between the three options, with less than 0.5% variance between the best and worst options.

3.1.1.4 Number of new forced bus-LRT transfers (2013)

The level of bus trips that formerly provided direct service to the City or other major destinations, where passengers would now be forced to transfer from bus to LRT to complete the same journey. Transfers can introduce travel time unreliability, lengthen journey times and increase passenger frustration.

- Option 1 is slightly less than ideal as most bus trips are unchanged, except that a forced transfer is introduced for passengers travelling between the northern and southern halves of the former Red Rapid route. Analysis of MyWay data indicates that on a typical weekday in 2013 a total of 1,132 trips would be affected if this forced transfer were introduced.
- Option 2 is slightly poorer than Option 1 as it also forces a transfer from most bus routes to LRT (or another bus) at Dickson, although it maintains direct bus service to Dickson and between Dickson and City. MyWay analysis indicates that a total of 2,157 trips would be affected per typical weekday by Option 2.
- Option 3 is similar to Option 2 as it forces a transfer to LRT on all bus routes in the corridor, including from the north of Dickson to Dickson, and from the Dickson area to City. Furthermore, it requires two forced transfers to connect between most bus routes in the wider corridor via an intermediary LRT trip, however this trip pattern is currently very uncommon. MyWay analysis indicates that only 26 additional weekday trips would be affected over Option 2.

Table 5: Forced transfer analysis of MyWay ticketing data (Sample weekday 2013)

Measure	Do Nothing	Option 1	Option 2	Option 3
Forced transfers from LRT to Red Rapid south section	0	1,132	1,132	1,132
Forced transfers from Gungahlin-Dickson buses to Dickson-City corridor	0	0	1,025	1,025
Additional forced transfers from Gungahlin-Dickson buses to Belconnen area buses	0	0	0	26

Total Forced Transfers	0	1,132	2,157	2,183

3.1.1.5 LRT Frequency (required by network)

Higher frequency results in less waiting, faster total journey times and better passenger experience. The frequency of LRT service required to meet travel demands varies according to the primacy of LRT within the network. Higher patronage results in higher frequency requirements. Table 4 indicates that expected LRT patronage does not materially differ between the options.

3.1.1.6 Peak hour LRT average speed

Corridor speed: A greater number of LRT stops will result in a slower travel time from end to end.

- Option 1 requires same stops/stations than the existing Red Rapid (12 total) and has the fastest travel times.
- Option 2 requires four additional stops/stations (18 total) and has a slightly reduced travel times.
- Option 3 requires seven additional stops/stations (21 total) and has significantly slower travel times.

3.1.2 Objective: Economic (30%)

Table 6: Project objectives and measures for the objective category Economic

Project Objective	Weighting	Measure	Measure Weight
Affordable capital and operational costs	50%	Stop catchment overlap (2011, 2021 & 2031)	50%
		Reduction in annual bus in-service kilometres (2013)	10%
		Annual LRT passenger kilometres per in-service LRT kilometre (2021 & 2031)	40%
Grow a more diversified Canberra economy	50%	Hectares of land zoned commercial/industrial within 500m walking distance of an LRT stop (2013)	100%
Stimulate sustainable urban redevelopment along the corridor	30%	% area of the Northbourne Ave corridor within 500m walking distance of an LRT stop	100%

3.1.2.1 Overall Score

Table 7: Quantified measures and scores related to the Economic Objective

Measure	Option 1	Option 2	Option 3	Measure Value
Stop catchment overlap (2016, 2021 & 2031)	5	4	3	6%
Reduction in annual bus in-service kilometres (2013)	3	4	5	1.5%
Annual LRT passenger kilometres per in-service LRT kilometre (2021 & 2031)	5	4	5	7.5%
Hectares of land zoned commercial/industrial within 500m walking distance of an LRT stop (2013)	3	4	5	6%
% area of the Northbourne Ave corridor within 500m walking distance of an LRT stop	3	4	5	9%

3.1.2.2 Stop catchment overlap

This relates to the efficiency of investment in new LRT stops on the network. Additional stops/stations may increase coverage, but also introduce some inefficiencies where stop catchments overlap (see Table 1. for the number of stops proposed for each option).

Catchment efficiency is measured by determining how much overlap of population and employment there is between stations using a 750m walking distance. In other words, the overlapped area identifies people and jobs that have access to 2 or more stations (see Appendix B for the full GIS report).

Table 8: Catchment overlap report for each option, by year

Year	Pop. Overlap	Jobs Overlap	% Pop Overlap	% Jobs Overlap
2016				
Option 1	4,344	2,734	26%	7%
Option 2	7,033	6,762	33%	16%
Option 3	9,500	17,820	42%	38%
2021				
Option 1	4,770	3,564	25%	9%
Option 2	7,867	7,747	33%	18%
Option 3	13,061	17,853	54%	38%
2031				
Option 1	5,251	5,251	24%	12%

Option 2	8,017	8,017	30%	21%
Option 3	14,645	14,645	51%	44%

The options can generally be described as following:

- Option 1 has the highest degree of catchment efficiency, having stops spaced generally between 800 -1000km and negligible overlap of catchments
- Option 2 introduces new stations, with a minor level of catchment overlap to achieve a high degree of catchment efficiency
- Option 3 introduces the most new stations, many with overlapping catchments, and achieves a moderate level of catchment efficiency.

For a comprehensive catchment report, please refer to appendices B and C.

3.1.2.3 Reduction in annual bus in-service kilometres (2013)

A reduction of bus in-service kilometres indicates a saving of bus network operational costs. Options that remove parts of bus routes that duplicate the LRT line will have a reduction.

- Option 1 maintains the existing bus network and has a limited reduction in bus service-kilometres due to the remove of the Red Rapid from the corridor.
- Option 2 truncates some longer distance bus route in the corridor and results in a significant reduction in bus service-kilometres.
- Option 3 truncates all longer distance bus routes in the corridor and leads to the slightly larger reduction in bus service-kilometres that Option 2.

Table 9: Gungahlin to City corridor in-service kilometres (Sample weekday Network 12 2013 baseline)

Measure	Do Nothing	Option 1	Option 2	Option 3
Daily bus in-service kilometres Gungahlin to City bus routes	9,253	7,767	6,688	6,279
Reduction from Do Nothing	-	-1,487	-2,565	-2,974
Percent reduction from Do Nothing	-	16%	28%	32%

3.1.2.4 Annual LRT passenger kilometres per in-service LRT kilometre (2021 & 2031)

A measure of efficiency, where passenger-kms travelled approximate travel benefits and service-kms approximate service delivery costs. Under all options the service-km requirements of LRT are the same to accommodate very similar LRT boarding demands.

- Option 1 scores well due to a high level of LRT passenger KM.
- Option 2 scores moderately well due to a high level of LRT passenger KM.
- Option 3 scores well due to a high level of LRT passenger KM.

3.1.2.5 Hectares of land zoned commercial/industrial within 500m walking distance of an LRT stop (2013)

TBD – will be based on updated land use information from EDD.

3.1.2.6 Percentage (%) area of the Northbourne Ave corridor within 500m walking distance of an LRT stop

One measurement of the potential for LRT stimulate urban development along the corridor is by calculating the amount of land that is easily accessible to LRT stops. Each option was tested by using a GIS analysis that calculated the catchment area based on the existing pedestrian network and an assumed network for later years.

The following results reflect the advantages Option 2 over Option 1 due to the introduction of new stops. Option 3 scores the best with the introduction of even more additional stops.

Table 10: Land area within 500m of LRT corridor

Option	Stops	Land Area within 500m of stop	Land Area within 500m of Corridor	%Land Area within 500m
Option 1	12	456	1,332	34%
Option 2	18	564	1,332	42%
Option 3	21	654	1,332	49%

3.1.3 Community (20%)

Table 11: Project objectives and measures for the objective category Community

Project Objective	Weighting	Measure	Measure Weight
Increase social and economic participation	50%	Jobs within 500m walking distance of an LRT stop (2011, 2021 & 2031)	50%
		Education places within 500m walking distance of an LRT stop (2011, 2021 & 2031)	50%
Revitalise the Northbourne Ave corridor	50%	LRT boardings along Northbourne Avenue (2021 & 2031), 2021 & 2031)	100%

3.1.3.1 Community Score

Table 12: Scores for the measures related to the Community objectives

Measure	Option 1	Option 2	Option 3	Measure Value
Jobs within 500m walking distance of an LRT stop (2011, 2021 & 2031)	3	4	5	6%
Education places within 500m walking distance of an LRT stop (2011, 2021 & 2031)	5	5	5	4%
LRT boardings along Northbourne Avenue (2021 & 2031), 2021 & 2031)	3	4	5	10%

3.1.3.2 Jobs within 500m walking distance of an LRT stop (2016, 2021 & 2031)

Table 13: Jobs within 500m walking distance of an LRT stop

Option	2016	2021	2031
Option 1	19,308	18,924	23,073
Option 2	21,491	21,231	25,714
Option 3	27,656	27,228	32,040

3.1.3.3 Education places within 500m walking distance of an LRT stop (2016, 2021 & 2031)

All options provide excellent access to schools along the LRT corridor. In comparing the options, only Option 3 provides additional accessibility advantages to schools. The stop located at Condamine/Ipima Streets provides access to Turner School, however this only a grade school so it has marginal advantages for this measurement.

3.1.3.4 LRT boardings along Northbourne Avenue (2021 & 2031)

The numbers of boardings along Northbourne helps to gauge the potential for LRT to be a redevelopment catalyst. Boardings specifically along Northbourne Avenue have not been modelled. It is assumed that the introduction of new stations along with a high quality service will raise land value properties and spur development.

All options perform well in this regard, but there is some difference between the Options. Option 1 has only 4 stops along the corridor, while Option 2 has 7 and Option 3 has 8.

3.1.4 Environmental (20%)

Table 14: Project objectives and measures for the objective category Environmental

Project Objective	Weighting	Measure	Measure Weight
Reduce carbon and other emissions	100%	Reduction in annual car kilometres (2021 & 2031)	25%
		Population within 750m walking distance of an LRT stop (2011, 2021 & 2031) (walk access)	25%
		Population more than 750m walking distance but less than 1500m from an LRT stop (2011, 2021 & 2031) (bicycle access)	50%

3.1.4.1 Environmental Score

Table 15: Scores for the measures related to the Environmental objectives

Measure	Option 1	Option 2	Option 3	Measure Value
Reduction in annual car kilometres (2021 & 2031)	4	5	4	10%
Population within 750m walking distance of an LRT stop (2011, 2021 & 2031) (walk access)	3	4	5	5%
Population more than 750m walking distance but less than 1500m from an LRT stop (2011, 2021 & 2031) (bicycle access)	3	4	5	5%

3.1.4.2 Reduction in annual car kilometres (2021 & 2031)

The reduction in car kilometres travelled is modelled in Table 4. All options perform well, but Option 2 has the best result.

3.1.4.3 Population within 750m walking distance of an LRT stop (walk access)

This measure identifies the number of people that live within 750m of an LRT stop.

As additional stops are introduced in the different option scenarios, an increasing number of people can access the LRT services.

Table 16: Population within 750m walking distance of an LRT stop

Option	2016	2021	2031
Option 1	18,962	21,429	24,501

Option 2	25,676	29,311	33,323
Option 3	32,237	36,483	41,419

3.1.4.4 Population more than 750m walking distance but less than 1500m from an LRT stop (bicycle access)

People travelling by bicycle are able to access the LRT from longer distances.

As additional stops are introduced in the different option scenarios, an increasing number of people can access the LRT services from distances that would be an easy trip by bicycle (between 750m and 1500m).

Table 17 shows the results of GIS analysis. From a coverage and ridership perspective there is significant opportunity to plan for people accessing LRT from wider distances. Each option scores well in this regard, but with the progressive addition of stops, Option 2 and Option 3 score better and best.

Table 17: Population between 750m and 1500m walking distance of an LRT stop

Option	2016	2021	2031
Option 1	50,248	67,213	85,820
Option 2	54,530	72,743	75,971
Option 3	60,836	81,023	105,419

3.1.5 Option Evaluation Results

Overall, Table 18 shows that Option 3 has the greatest net positive impact, followed by Option 2 and Option 1.

Table 18: Summary of Evaluation Methodology Results

Objective Category	Category Weight	Project Objective	Objective Weight	Measure	Measure Weight	Overall Weight	Raw Score (Range 1-5)			Weighted Score		
							Option 1	Option 2	Option 3	Option 1	Option 2	Option 3
Transport	30%	Increase mode share of public transport	70%	Total LRT boardings (2021 and 2031)	70%	14.7%	5	5	5	0.74	0.74	0.74
				Number of new forced bus-LRT transfers (2013)	30%	6.3%	4	2	2	0.25	0.13	0.13
		Optimise frequency and service reliability	30%	Peak hour LRT frequency (2021 and 2031)	50%	4.5%	4	5	5	0.18	0.23	0.23
				Peak hour LRT average speed	50%	4.5%	5	4	5	0.23	0.18	0.23
Economic	30%	Affordable capital and operational costs	50%	Stop catchment overlap and efficiency	40%	6.0%	5	4	3	0.30	0.24	0.18
				Reduction in annual bus in-service kilometres (2013)	10%	1.5%	2	4	5	0.03	0.06	0.08
				Annual LRT passenger kilometres per in-service LRT kilometre	50%	7.5%	5	4	5	0.38	0.30	0.38
		Grow a more diversified Canberra economy	20%	Hectares of land zoned commercial/industrial within 500m walking distance of an LRT stop (2013)	100%	6.0%	3	4	5	0.18	0.24	0.30
		Stimulate sustainable urban development along the corridor	30%	% area of the Northbourne Avenue corridor within 500m of an LRT stop	100%	9.0%	3	4	5	0.27	0.36	0.45
Community	20%	Increase social and economic participation	50%	Jobs within 500m walking distance of an LRT stop	60%	6.0%	3	4	5	0.18	0.24	0.30
				Education places within 500m walking distance of an LRT stop (2011, 2021 and 2031)	40%	4.0%	4	4	5	0.16	0.16	0.20
		Revitalise the Northbourne Avenue corridor	50%	LRT boardings along Northbourne Avenue (2021 and 2031)	100%	10.0%	2	4	5	0.20	0.40	0.50
Environmental	20%	Reduce Carbon and other emissions	100%	Reduction in annual car kilometres	50%	10.0%	4	5	4	0.40	0.50	0.40
				Population within 750m walking distance of an LRT stop (2011, 2021 and 2031)	25%	5.0%	3	4	5	0.15	0.20	0.25
				Population more than 750m but less than 1,500m from an LRT stop (2011, 2021 and 2031) (bicycle access)	25%	5.0%	3	4	5	0.15	0.20	0.25
Total						100.00%				3.79	4.17	4.59

Evaluation	Preferred Option	Score
Network analysis	Option 3	4.59

4 NEXT STAGE – STAGE 2

Upon the determination of a preferred network option, more detailed investigations will be conducted.

For each stop/station identified in Stage 1, more detailed plans will be developed to support integration and interchange with public transport, walking, cycling, and vehicles (i.e. Park & Ride or Kiss & Ride). Special consideration will be taken at the three major interchange locations – City, Dickson, and Gungahlin.

APPENDIX A STOP/STATION TYPES

Facility	Urban Core	Town Centre	Neighbourhood	Collector	Special
Park & Ride	Not provided	Not provided	Not provided	Desirable	Desirable
Kiss & Ride	Required	Required	Desirable	Desirable	Not required
Bike Facilities	Covered stands and lockers	Covered stands and lockers	Covered cycle stands	Rails or cage	Rails or cage
Taxi Rank	Required	Desirable	Not provided	Not provided	Not provided

APPENDIX B STOP/STATION REPORT (TABLE)

2016

Population

Option 01

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	910	1193	1498	2880
City	836	1137	1105	4781
Dickson	349	804	1275	4677
Exhibition Park	53	254	548	1975
Gozzard St	1279	994	857	1663
Hiber St	1893	716	788	2096
Macarthur Ave/Wakefied Ave	1458	2050	2827	5707
Manning clark Cres/Mapleton Ave	901	1058	1684	3629
Nullabor Ave	681	779	1486	3815
Philip Ave	357	722	1105	2836
Sandford St/Morisset Rd	0	0	0	10
Well Station Dr	243	295	584	2422
	8960	10002	13757	36491

Option 02

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	910	1193	1498	2880
City	836	1137	1105	4781
Dickson	349	804	1275	4677
Exhibition Park	53	254	548	1975
Girrahween St	1364	1976	2278	6595
Gungahlin St	1566	919	783	1788
Hamer St	752	1132	1722	2996
Kate Crace St	1590	1084	807	2272
Macarthur Ave/Wakefied Ave	1458	2050	2827	5707
Manning clark Cres/Mapleton Ave	901	1058	1684	3629
Nullabor Ave	681	779	1486	3815
Philip Ave	357	722	1105	2836
Sandford St/Morisset Rd	0	0	0	10
Swinden St	608	696	738	2390
Well Station Dr	243	295	584	2422
	11668	14099	18440	48773

Option 03

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	910	1193	1498	2880
City	836	1137	1105	4781
Condamine St/Lpima St	1751	1992	2513	6284
Dickson	349	804	1275	4677
Exhibition Park	53	254	548	1975
Gould St	1036	1691	2246	6199
Girrahween St	1364	1976	2278	6595
Gungahlin St	1566	919	783	1788
Hamer St	752	1132	1722	2996
Kate Crace St	1590	1084	807	2272
Lysaght St	0	0	36	389
Macarthur Ave/Wakefied Ave	1458	2050	2827	5707
Manning clark Cres/Mapleton Ave	901	1058	1684	3629
Nullabor Ave	681	779	1486	3815
Philip Ave	357	722	1105	2836
Randwick Rd	0	0	84	856
Sandford St/Morisset Rd	0	0	0	10
Swinden St	608	696	738	2390
Well Station Dr	243	295	584	2422
	14455	17782	23319	62501

Jobs

Option 01

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	32	48	445	1530
City	12620	15727	10431	7690
Dickson	1304	1155	1354	1572
Exhibition Park	240	158	52	514
Gozzard St	1580	775	282	188
Hiber St	2139	226	193	283
Macarthur Ave/Wakefied Ave	901	702	1129	4179
Manning clark Cres/Mapleton Ave	29	56	84	294
Nullabor Ave	81	77	78	294
Philip Ave	64	154	247	600
Sandford St/Morisset Rd	255	312	358	1018
Well Station Dr	62	75	166	1630
	19308	19463	14819	19793

Option 02

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	32	48	445	1530
City	12620	15727	10431	7690
Dickson	1304	1155	1354	1572
Exhibition Park	240	158	52	514
Girrahween St	1949	2612	6757	19835
Gungahlin St	1935	541	159	197
Hamer St	344	601	959	736
Kate Crace St	1613	692	191	344
Macarthur Ave/Wakefied Ave	901	702	1129	4179
Manning clark Cres/Mapleton Ave	29	56	84	294
Nullabor Ave	81	77	78	294
Philip Ave	64	154	247	600
Sandford St/Morisset Rd	255	312	358	1018
Swinden St	61	514	1143	2305
Well Station Dr	62	75	166	1630
	21491	23422	23553	42739

Option 03

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	32	48	445	1530
City	12620	15727	10431	7690
Condamine St/Lpima St	755	1479	2173	10758
Dickson	1304	1155	1354	1572
Exhibition Park	240	158	52	514
Gould St	4699	7512	8041	20933
Girrahween St	1949	2612	6757	19835
Gungahlin St	1935	541	159	197
Hamer St	344	601	959	736
Kate Crace St	1613	692	191	344
Lysaght St	385	493	474	956
Macarthur Ave/Wakefied Ave	901	702	1129	4179
Manning clark Cres/Mapleton Ave	29	56	84	294
Nullabor Ave	81	77	78	294
Philip Ave	64	154	247	600
Randwick Rd	125	148	201	686
Sandford St/Morisset Rd	255	312	358	1018
Swinden St	61	514	1143	2305
Well Station Dr	62	75	166	1630
	27656	33065	34442	76072

2021

Population

Option 01

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	1114	1249	1576	3084
City	1060	1684	1260	5354
Dickson	419	934	1377	4874
Exhibition Park	49	237	516	1989
Gozzard St	1304	1125	920	1917
Hiber St	2101	771	942	2393
Macarthur Ave/Wakefied Ave	1548	2204	3018	6066
Manning clark Cres/Mapleton Ave	1059	1089	1774	3879
Nullabor Ave	826	962	1807	4203
Philip Ave	334	685	1066	2854
Sandford St/Morisset Rd	0	0	0	12
Well Station Dr	308	367	743	2906
	10122	11307	14999	39531

Option 02

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	1114	1249	1576	3084
City	1060	1684	1260	5354
Dickson	419	934	1377	4874
Exhibition Park	49	237	516	1989
Girrahween St	1471	2126	2571	7492
Gungahilin St	1675	1020	836	2143
Hamer St	1062	1409	1779	2889
Kate Crace St	1814	1202	982	2448
Macarthur Ave/Wakefied Ave	1548	2204	3018	6066
Manning clark Cres/Mapleton Ave	1059	1089	1774	3879
Nullabor Ave	826	962	1807	4203
Philip Ave	334	685	1066	2854
Sandford St/Morisset Rd	0	0	0	12
Swinden St	652	752	817	2428
Well Station Dr	308	367	743	2906
	13391	15920	20122	52621

Option 03

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	1114	1249	1576	3084
City	1060	1684	1260	5354
Condamine St/Lpima St	1895	2142	2651	6869
Dickson	419	934	1377	4874
Exhibition Park	49	237	516	1989
Gould St	1112	2023	2700	6866
Girrahween St	1471	2126	2571	7492
Gungahilin St	1675	1020	836	2143
Hamer St	1062	1409	1779	2889
Kate Crace St	1814	1202	982	2448
Lysaght St	0	0	46	489
Macarthur Ave/Wakefied Ave	1548	2204	3018	6066
Manning clark Cres/Mapleton Ave	1059	1089	1774	3879
Nullabor Ave	826	962	1807	4203
Philip Ave	334	685	1066	2854
Randwick Rd	0	0	79	809
Sandford St/Morisset Rd	0	0	0	12
Swinden St	652	752	817	2428
Well Station Dr	308	367	743	2906
	16398	20085	25598	67654

Jobs

Option 01

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	52	70	608	2082
City	10776	16386	11029	8945
Dickson	1289	1180	1521	1961
Exhibition Park	126	85	45	510
Gozzard St	2154	1093	397	263
Hiber St	2909	326	291	411
Macarthur Ave/Wakefied Ave	1071	829	1331	4013
Manning clark Cres/Mapleton Ave	41	80	108	381
Nullabor Ave	118	104	101	327
Philip Ave	44	107	185	531
Sandford St/Morisset Rd	262	318	353	954
Well Station Dr	82	89	186	1722
	18924	20667	16155	22100

Option 02

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	52	70	608	2082
City	10776	16386	11029	8945
Dickson	1289	1180	1521	1961
Exhibition Park	126	85	45	510
Girrahween St	1992	2596	5374	19468
Gungahilin St	2634	766	238	281
Hamer St	482	827	1305	1018
Kate Crace St	2196	952	283	504
Macarthur Ave/Wakefied Ave	1071	829	1331	4013
Manning clark Cres/Mapleton Ave	41	80	108	381
Nullabor Ave	118	104	101	327
Philip Ave	44	107	185	531
Sandford St/Morisset Rd	262	318	353	954
Swinden St	66	511	1144	2525
Well Station Dr	82	89	186	1722
	21231	24900	23811	45222

Option 03

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	52	70	608	2082
City	10776	16386	11029	8945
Condamine St/Lpima St	773	1566	2384	8923
Dickson	1289	1180	1521	1961
Exhibition Park	126	85	45	510
Gould St	4759	5659	8146	22304
Girrahween St	1992	2596	5374	19468
Gungahilin St	2634	766	238	281
Hamer St	482	827	1305	1018
Kate Crace St	2196	952	283	504
Lysaght St	396	507	490	998
Macarthur Ave/Wakefied Ave	1071	829	1331	4013
Manning clark Cres/Mapleton Ave	41	80	108	381
Nullabor Ave	118	104	101	327
Philip Ave	44	107	185	531
Randwick Rd	69	89	153	670
Sandford St/Morisset Rd	262	318	353	954
Swinden St	66	511	1144	2525
Well Station Dr	82	89	186	1722
	27228	32721	34984	78117

2031

Population

Option 01

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	1245	1369	1807	3674
City	1277	2703	1734	6364
Dickson	450	1012	1507	5166
Exhibition Park	45	245	555	2006
Gozzard St	1318	1237	1029	2127
Hiber St	2325	895	1027	2564
Macarthur Ave/Wakefied Ave	1787	2329	3208	6440
Manning clark Cres/Mapleton Ave	1213	1170	1856	4113
Nullabor Ave	862	1022	1902	4487
Philip Ave	320	648	1008	2865
Sandford St/Morisset Rd	74	88	125	613
Well Station Dr	384	483	950	3709
	11300	13201	16708	44128

Option 02

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	1245	1369	1807	3674
City	1277	2703	1734	6364
Dickson	450	1012	1507	5166
Exhibition Park	45	245	555	2006
Girrahween St	1567	2316	2858	8834
Gungahilin St	1789	1133	916	2341
Hamer St	1293	1634	1912	3068
Kate Crace St	2071	1353	1070	2585
Macarthur Ave/Wakefied Ave	1787	2329	3208	6440
Manning clark Cres/Mapleton Ave	1213	1170	1856	4113
Nullabor Ave	862	1022	1902	4487
Philip Ave	320	648	1008	2865
Sandford St/Morisset Rd	74	88	125	613
Swinden St	668	773	847	2503
Well Station Dr	384	483	950	3709
	15045	18278	22255	58768

Option 03

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	1245	1369	1807	3674
City	1277	2703	1734	6364
Condamine St/Lpima St	2002	2337	2955	7411
Dickson	450	1012	1507	5166
Exhibition Park	45	245	555	2006
Gould St	1208	2283	3223	8249
Girrahween St	1567	2316	2858	8834
Gungahilin St	1789	1133	916	2341
Hamer St	1293	1634	1912	3068
Kate Crace St	2071	1353	1070	2585
Lysaght St	97	140	254	1187
Macarthur Ave/Wakefied Ave	1787	2329	3208	6440
Manning clark Cres/Mapleton Ave	1213	1170	1856	4113
Nullabor Ave	862	1022	1902	4487
Philip Ave	320	648	1008	2865
Randwick Rd	4	25	125	992
Sandford St/Morisset Rd	74	88	125	613
Swinden St	668	773	847	2503
Well Station Dr	384	483	950	3709
	18256	23063	28812	76607

Jobs

Option 01

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	59	82	882	3383
City	11745	15617	11955	10564
Dickson	1363	1445	1407	2167
Exhibition Park	155	106	52	517
Gozzard St	3243	1644	746	463
Hiber St	4474	665	437	550
Macarthur Ave/Wakefied Ave	1464	961	1232	4389
Manning clark Cres/Mapleton Ave	41	80	112	522
Nullabor Ave	120	105	101	333
Philip Ave	49	113	187	553
Sandford St/Morisset Rd	276	335	411	974
Well Station Dr	84	93	202	1756
	23073	21245	17724	26176

Option 02

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	59	82	882	3383
City	11745	15617	11955	10564
Dickson	1363	1445	1407	2167
Exhibition Park	155	106	52	517
Girrahween St	2198	2816	6455	18465
Gungahilin St	3982	1253	476	403
Hamer St	694	1284	2127	1592
Kate Crace St	3417	1607	420	674
Macarthur Ave/Wakefied Ave	1464	961	1232	4389
Manning clark Cres/Mapleton Ave	41	80	112	522
Nullabor Ave	120	105	101	333
Philip Ave	49	113	187	553
Sandford St/Morisset Rd	276	335	411	974
Swinden St	67	538	1272	2394
Well Station Dr	84	93	202	1756
	25714	26435	27291	48685

Option 03

Stop Name	0-500	500-750	750-1000	1000-1500
B Jefferis/Wizard St	59	82	882	3383
City	11745	15617	11955	10564
Condamine St/Lpima St	858	1664	2802	10958
Dickson	1363	1445	1407	2167
Exhibition Park	155	106	52	517
Gould St	4928	7615	7554	21355
Girrahween St	2198	2816	6455	18465
Gungahilin St	3982	1253	476	403
Hamer St	694	1284	2127	1592
Kate Crace St	3417	1607	420	674
Lysaght St	456	509	493	1022
Macarthur Ave/Wakefied Ave	1464	961	1232	4389
Manning clark Cres/Mapleton Ave	41	80	112	522
Nullabor Ave	120	105	101	333
Philip Ave	49	113	187	553
Randwick Rd	84	106	174	720
Sandford St/Morisset Rd	276	335	411	974
Swinden St	67	538	1272	2394
Well Station Dr	84	93	202	1756
	32040	36329	38314	82741

APPENDIX C STOP/STATION REPORT (PLANS)

Capital Metro Light Rail Integration Study
Fortnightly Progress Report
29 November 2013

To: [redacted], CMA
[redacted], SSP

From: [redacted], SMEC

1. Tasks undertaken by the project team during the past two weeks

- Consultation:
  - ✓ Prepared Draft Consultation Report and submitted to CMA on 21 November 2013
  - ✓ Received comments on the Draft Consultation Report from CMA on 26 November 2013
  - ✓ Commenced addressing Draft Consultation Report comments
- Variation 1:
  - ✓ Completed compilation of land use into TAZ structure. There was a misstep in the procedure we used and it could not be submitted. Failed to inform CMA of the problem.
  - ✓ [*Note: the problem has been detected on 3 December 2013 and the project case land use scenarios will be submitted on 5 December 2013*]
- Variation 2:
  - ✓ TAZ structure approved during the PM meeting on 20 November 2013
  - ✓ Received additional comments from ESDD on 25 November 2013. Addressed comments on the same day and sent updated land use to CMA.
- Attended project management meeting on 20 November 2013. Attendees are as follows:
  - ✓ [redacted] (CMA)
  - ✓ [redacted] (EDD)
  - ✓ [redacted] (SSP)
  - ✓ [redacted] (SMEC)
  - ✓ [redacted] (SMEC)

2. Tasks to be undertaken in the next two weeks

- Finalise tasks associated with Variation 01
- Attend project management meeting on 4 December 2013
- Submit revised Consultation Report (with CMA comments addressed)
- Commence Stage 1 Technical Note rework once advice on which land use scenario is obtained from CMA
- Agree on how to progress with micro-simulation modelling (Variation 04)
- Update the project program once there is agreement on how to progress with micro-simulation modelling

3. Information required from CMA/other government agencies

- Advice on which land use scenario to use for Stage 1 re-analysis

4. **Outstanding issues to be resolved**
   - Variation 04 – Micro-simulation modelling

5. **Current Project Status:** Delayed, based on the most recent project program revision (8 October 2013). Project program to be updated once there is agreement on how to progress with micro-simulation modelling.

Kuffner, Jane

From: [redacted]
Sent: Thursday, 28 November 2013 5:12 PM
To: [redacted]
Cc:
Subject: RE: SSP Invoice 62520 - Project 23550 - LIGHT RAIL INTEGRATION STUDY - CMA
Attachments. RE: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study

[redacted]
The agreed invoicing schedule attached. Thanks[redacted]

From: [redacted]
Sent: Monday, 25 November 2013 12:01 PM
To: [redacted]
Cc: [redacted]
Subject: RE: SSP Invoice 62520 - Project 23550 - LIGHT RAIL INTEGRATION STUDY - CMA

Hi[redacted]
Plse provide a copy of the payment schedule and indicate which items the invoice covers.
Thank you
[redacted]

From: [redacted]
Sent: Monday, 25 November 2013 11:27 AM
To: [redacted]
Cc: [redacted]
Subject: SSP Invoice 62520 - Project 23550 - LIGHT RAIL INTEGRATION STUDY - CMA

Good morning,

Please find attached the SSP November 2013 invoice, Project Summary Report and Expenditure Report (unless invoice is only for management fees).

Kind regards,

[redacted]
Strategic Finance | Commerce and Works | **ACT Government**
Macarthur House, Level 3 Annex, 12 Wattle Street, Lyneham, ACT 2602
PO Box 818, Dickson ACT 2602 | www.act.gov.au

ACT Government
Commerce and Works

Please consider the environment before printing this email :)

ACT Government
Commerce and Works

Tax Invoice

SHARED SERVICES PROCUREMENT

ABN: 66 676 633 401

Invoice To	Details
CMA - CAPITAL METRO AGENCY INT1089 Level 2 Building 3 9 Sandford Street GPO Box 158 CANBERRA ACT 2601 CAPTIAL METRO AGENCY	**Customer Number:** 174774 **Invoice Number:** 62520 **Invoice Date:** 25-NOV-2013 **Payment Terms:** 28 DAYS NET **Due Date:** 23-DEC-2013 **Amount Payable:** **$68,640.00**

Invoice: LIGHT RAIL INTEGRATION STUDY - CMA

Line	Description	Qty	Unit	Unit Price	Total exc GST	GST	Total inc GST
001	Shared Services Procurement Management Fees - November 2013	1	DOLLAR	$2,400.00	$2,400.00	$240.00	$2,640.00
002	300 - SMEC Consultancy	1	DOLLAR	$60,000.00	$60,000.00	$6,000.00	$66,000.00
				Invoice Totals:	$62,400.00	$6,240.00	$68,640.00

Payment enquiries should be directed to: Shared Services Procurement (02) 6207 6845

Project enquiries should be directed to: THARAN, Mr. Sri

Reference: 23550

Please return this section with your payment to:
Shared Services Accounts Receivable
GPO BOX 158
CANBERRA CITY ACT 2601

Fax: (02) 6207 5468
Email: SharedServicesProcurementAccountsReceivables@act.gov.au

EFT Payments can be made to:
BSB Number: 032-777
Account Number: 000399
Account Name:
ACT Shared Services Procurement
Operating Account

Customer Number: 174774
Invoice Number: 62520
Invoice Date: 25-NOV-2013

Payment Terms: 28 DAYS NET
Due Date: 23-DEC-2013
Amount Payable: **$68,640.00**

No receipt mailed unless requested

[redacted]

From: [redacted]
Sent: Wednesday, 20 November 2013 1:12 PM
To: [redacted]
Cc:
Subject: CMLRIS - proposed paramics model boundary
Attachments: Proposed Paramics Model Boundary.pdf

[redacted]

Attached is our proposed Paramics model boundary.

We can discuss this in the meeting this afternoon.

Cheers,

[redacted]
SMEC Australia Pty Ltd
Suite 2, Level 1, 243 Northbourne Avenue, Lyneham, ACT, 2602, Australia
[redacted] | www.smec.com | LinkedIn

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Project Summary Report

PROJECT NUMBER	23550
PROJECT NAME	LIGHT RAIL INTEGRATION STUDY - CMA
PROJECT OFFICER	[redacted]
DATE PREPARED	19 November 2013

	External	Mgt Fees	Total
Original Budget (Inc GST)	334,766.73	13,200.00	347,966.73
Revised Budget (Inc GST)	386,800.00	13,200.00	400,000.00
Current Budget (Inc GST)	386,800.00	13,200.00	400,000.00
GST on Budget	35,163.64	1,200.00	36,363.64
Current Budget (Ex GST)	351,636.36	12,000.00	363,636.36
Total Budget Allocated (Inc GST)	386,800.00		
Unallocated Budget (Inc GST)	0.00		
Total Expenditure (Inc GST)	66,000.00		
GST Paid	6,000.00		
Total Expenditure (Ex GST)	60,000.00		
Total Invoiced (Inc GST)	(2,640.00)	2,640.00	0.00
GST Invoiced	(240.00)	240.00	0.00
Total Invoiced (Ex GST)	(2,400.00)	2,400.00	0.00
Work in Progress (Inc GST)	(68,640.00)		
Work in Progress (Ex GST)	(62,400.00)		

Project Expenditure Report

GL Period Date Range From 01 Nov 2013 To 30 Nov 2013
GL Date Range From 17 Oct 2013 To 14 Nov 2013
Project Number : 23550
Project Name : LIGHT RAIL INTEGRATION STUDY - CMA
Procurement Solutions Project Officer : [redacted]

Printed: 19 November 2013

Task Number	Task Name	GL Date	Supplier	Supplier Invoice	Cost GST Ex	GST	Cost GST Inc	Comment
300	SMEC Consultancy	11-Nov-13	SMEC	INV0043485	60,000.00	6,000.00	66,000.00	SPS007 Consultants
				Project Total	$60,000.00	$6,000.00	$66,000.00	

[redacted]

From: [redacted]
Sent: Monday, 18 November 2013 2:18 PM
To: [redacted]
Cc:
Subject: RE: CMLRIS - Modelling Issues Discussion

Thanks [redacted]
Plse provide a map showing your proposed boundaries for the Paramics model.

From [redacted]
Sent: Friday, 15 November 2013 5:10 PM
To: [redacted]
Cc:
Subject: CMLRIS - Modelling Issues Discussion

[redacted]

Attached is a discussion of the modelling issues (strategic and micro-simulation) identified and our proposed solutions.

Regards,

[redacted]
SMEC Australia Pty Ltd
Suite 2, Level 1, 243 Northbourne Avenue, Lyneham, ACT, 2602, Australia
[redacted] www.smec.com | LinkedIn

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[redacted]

From: [redacted]
Sent: Monday, 18 November 2013 2:05 PM
To: [redacted]
Cc:
Subject: FW: CMLRIS Land Use - BAU

[redacted]

We identified a couple of issues with the land use spreadsheet I sent you on Friday. The revised version is attached.

Apologies,

[redacted]
SMEC Australia Pty Ltd
[redacted]

From: [redacted]
Sent: Friday, 15 November 2013 5:06 PM
To [redacted]
Cc
Subject: CMLRIS Land Use - BAU

[redacted]

Attached is the land use for the BAU case for all years.

Please review and let me know if you have any comments. If not, this should conclude Variation 2.

Regards,

[redacted]
SMEC Australia Pty Ltd
Suite 2, Level 1, 243 Northbourne Avenue, Lyneham, ACT, 2602, Australia
[redacted]
[redacted] www.smec.com | LinkedIn

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Capital Metro Light Rail Integration Study
Fortnightly Progress Report
15 November 2013

To: [redacted]

From: [redacted]

1. **Tasks undertaken by the project team during the past two weeks**

   - Consultation:
     - ✓ Continued review of online survey responses. Note: feedback period closes on 15 November 2013.
   - Variation 1:
     - ✓ Submitted proposed corridor boundary (based on updated zone boundaries) to CMA. Received some feedback, updated corridor boundary.
     - ✓ Submitted updated development areas and priority. Received some feedback about potential development sites in Mitchell.
     - ✓ Currently working on developing project case land use based on the assumption that there are no comments on the BAU land use
   - Variation 2:
     - ✓ Completed Population growth to 2016, 2021 and 2031
     - ✓ Completed Retail Space, Employment, School Enrolments and Tertiary Enrolments distribution (2011)
     - ✓ Completed Retail Space, Employment, School Enrolments and Tertiary Enrolments growth to 2016, 2021 and 2031
     - ✓ Submitted to CMA for review (no response yet)
   - Attended project management meeting on 6 November 2013. Attendees are as follows:
     - ✓ [redacted] (CMA)
     - ✓ [redacted] EDD)
     - ✓ [redacted] EDD
     - ✓ [redacted] (MRCagney)
     - ✓ [redacted] DC)
     - ✓ [redacted] (Talkforce)
     - ✓ [redacted] (SMEC)
     - ✓ [redacted] (SMEC)
   - Presented draft generic stop layouts during the project management meeting

2. **Tasks to be undertaken in the next two weeks**
   - Finalise tasks associated with Variations 01 and 02
   - Attend project management meeting on 20 November 2013
   - Possibly start on the Stage 1 Technical Note rework once Variation Request 03 is approved

3. **Information required from CMA/other government agencies**
   - *Nil*

4. **Outstanding issues to be resolved**
   - *Nil*

5. **Current Project Status:** Delayed, based on the most recent project program revision (8 October 2013).

[redacted]

From: [redacted]
Sent: Friday, 15 November 2013 5:10 PM
To: [redacted]
Cc:
Subject: CMLRIS - Modelling Issues Discussion
Attachments: 3002353 Modelling Issues Paper Rev0.pdf

[redacted]

Attached is a discussion of the modelling issues (strategic and micro-simulation) identified and our proposed solutions.

Regards,

[redacted]
SMEC Australia Pty Ltd
Suite 2, Level 1, 243 Northbourne Avenue, Lyneham, ACT, 2602, Australia
[redacted]
[redacted]www.smec.com | LinkedIn

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[redacted] 836

From: [redacted]
Sent: Friday, 15 November 2013 5:06 PM
To: [redacted]
Cc:
Subject: CMLRIS Land Use - BAU

[redacted]

Attached is the land use for the BAU case for all years.

Please review and let me know if you have any comments. If not, this should conclude Variation 2.

Regards,

[redacted]
SMEC Australia Pty Ltd
Suite 2, Level 1, 243 Northbourne Avenue, Lyneham, ACT, 2602, Australia
[redacted] | www.smec.com | LinkedIn

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[redacted]

From: [redacted]
Sent: Wednesday, 13 November 2013 11:02 AM
To: [redacted]
Cc:
Subject: RE: Comparison of PB and SMEC GTC Paramics Models

Thank[redacted]
Once the CSTM is recalibrated it will be useful to look at the traffic volumes forecast for Manning Clark Cr, Anthony Rolfe Ave and The Valley Ave.
That should give us the current best estimates.
[redacted]

From: [redacted]
Sent: Wednesday, 13 November 2013 10:55 AM
To: [redacted]
Cc: [redacted]
Subject: Comparison of PB and SMEC GTC Paramics Models

[redacted]

Cheers,

838

[redacted]

SMEC Australia Pty Ltd
Suite 2, Level 1, 243 Northbourne Avenue, Lyneham, ACT, 2602, Australia
[redacted]
[redacted] www.smec.com | LinkedIn

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[redacted]

From: [redacted]
Sent: Tuesday, 12 November 2013 11:58 AM
To: [redacted]
Cc:
Subject: RE: CSTM Outputs Required for Benefits Evaluation

Hi [redacted]
Is all this coming from the CSTM alone?
If yes – plse provide similar tables for the microsimulation and SIDRA modelling.
If no - plse add another column to indicate if the output is from the CSTM, microsimulation, SIDRA or some combination of the 3 models.
Thank you
[redacted]

From: [redacted]
Sent: Tuesday, 12 November 2013 11:42 AM
To: [redacted]
Cc:
Subject: CSTM Outputs Required for Benefits Evaluation

Hi [redacted]

As discussed last week, please find attached the list of outputs that [redacted] requires from the CSTM for the benefits evaluation.

Regards,

[redacted]
SMEC Australia
Suite 2, Level 1, 243 Northbourne Avenue, Lyneham, ACT, 2602, Australia
[redacted] | www.smec.com | LinkedIn

[redacted]

From: [redacted]
Sent: Monday, 11 November 2013 2:38 PM
To: [redacted]
Subject: RE: CMLRIS - Variation 3

Hi [redacted]
We have reviewed SMEC's variation request.
We would accept the variation for re-running the GIS analysis [redacted]
The new land use scenarios do not impact the bus circulation analysis and hence a variation is not appropriate for this.
Project management and updating the Technical Note are considered part of the original scope and do not constitute a variation.
Thank you
[redacted]

From: [redacted]
Sent: Wednesday, 30 October 2013 4:20 PM
To: [redacted]
Cc: [redacted]
Subject: CMLRIS - Variation 3

Hi [redacted]

Please find attached Variation Request 03 to cover the rework necessary for updating the Stage 1 Technical Note based on the revised land use.

Regards,

[redacted]
SMEC Australia
Suite 2, Level 1, 243 Northbourne Avenue, Lyneham, ACT, 2602, Australia
[redacted]
[redacted] | www.smec.com | LinkedIn

SMEC SNOWY MOUNTAINS ENGINEERING CORPORATION

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[redacted]

From: [redacted]
Sent: Tuesday, 5 November 2013 5:54 PM
To: [redacted]
Cc:
Subject: RE: PM meeting tomorrow

Hi [redacted]

[redacted]n Canberra tomorrow to discuss a couple of projects with us, including CMLRIS. There's no specific reason why he's attending, but we just thought it would be good for him to meet the other project team members. Also, if you have any queries or anything that you'd want to discuss relating to the Stage 4 tasks, he will be there tomorrow to directly respond to your queries.

[redacted]s also in town tomorrow and in the meeting, I expect him to provide some updates on some of the Stage 2 work that they've already undertaken (which from my understanding are mostly research based at this stage and nothing specific for any locations yet).

Regards,

[redacted]
SMEC Australia
[redacted]

From: [redacted]
Sent: Tuesday, 5 November 2013 5:48 PM
To: [redacted]
Cc:
Subject: RE: PM meeting tomorrow

Hi [redacted]
Plse advise why they are attending.
Thank you
[redacted]

From: [redacted]
Sent: Tuesday, 5 November 2013 5:31 PM
To: [redacted]
Cc:
Subject: PM meeting tomorrow

Hi [redacted]

FYI – [redacted] and [redacted] will also be attending tomorrow's project management meeting.

Regards,

[redacted]
SMEC Australia
Suite 2, Level 1, 243 Northbourne Avenue, Lyneham, ACT, 2602, Australia
[redacted]
[redacted] www.smec.com | LinkedIn

SMEC SNOWY MOUNTAINS ENGINEERING CORPORATION

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[redacted]

882

From: [redacted]
Sent: Monday, 4 November 2013 11:05 AM
To: [redacted]
Cc:
Subject: RE: CMLRIS - Variation 3

[redacted]

In relation to SMEC's variation no 3, can you please advise :

- If the work to be covered in Variation 3 (updating Stage 1 report) is required, then why wasn't it included in Variation 1?
- With regard to updating the Stage 1 report, why this wasn't discussed when we were assessing the Variation 1 and Territory didn't aware that the Variation 1 would lead to further variations and costs?
- Are there any other Variations currently not known to SSP?

Thanks

From: [redacted]
Sent: Wednesday, 30 October 2013 4:20 PM
To: [redacted]
Cc:
Subject: CMLRIS - Variation 3

H[redacted]

Please find attached Variation Request 03 to cover the rework necessary for updating the Stage 1 Technical Note based on the revised land use.

Regards,

[redacted]
SMEC Australia
Suite 2, Level 1, 243 Northbourne Avenue, Lyneham, ACT, 2602, Australia
[redacted]
[redacted] www.smec.com | LinkedIn

SMEC SNOWY MOUNTAINS ENGINEERING CORPORATION

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ACT Government
Commerce and Works

[redacted]
Capital Metro Agency
Level 2 Building 3, 9 Sandford St,
Mitchell ACT 2911

[redacted]

Project: **Capital Metro Light Rail Integration Study**

Contract No: 2013.21126.110

Please find enclosed an executed copy of the Deed of Variation for the abovementioned contract for your records.

A copy of this contract has been forwarded to SMEC Australia Pty. Limited and a copy has also been retained by this office. In any future correspondence with this office in relation to this contract, please quote the above contract number.

As part of the service offered by Shared Services Procurement, this Contract has been posted to the ACT Contracts Register. However, I would take this opportunity to remind you that any variations to this contract need to be notified to Shared Services Procurement to ensure the information held on the ACT Contracts Register is current.

If you have any questions in relation to this matter, please do not hesitate to contact me on [redacted]

Yours sincerely

[redacted]

Senior Contracts Officer
Shared Services
Procurement

4 November 2013

ACT Government

DEED OF VARIATION

Dated	4/11/13
Parties	AUSTRALIAN CAPITAL TERRITORY SMEC AUSTRALIA PTY. LIMITED ACN: 065 475 149
	VARIATION OF CAPITAL METRO LIGHT RAIL INTEGRATION STUDY CONTRACT NUMBER: 2013.21126.110
Prepared by	Shared Services Procurement PO Box 818 DICKSON ACT 2602 Ph: (02) 6207 5554 Fax: (02) 6207 5574 Ref: EF
Version	21 October 2013

PARTIES: **AUSTRALIAN CAPITAL TERRITORY**, the body politic established by section 7 of the *Australian Capital Territory (Self-Government) Act 1988* (Cwlth) **(Territory)** represented by the Environment and Sustainable Development Directorate.

SMEC Australia Pty. Limited, ACN: 065 475 149 of 220 Sharp Street, Cooma, 2630, in the State of New South Wales **(Consultant)**.

BACKGROUND

A. The Territory and the Consultant executed an agreement **(Agreement)** on or about 8 April 2013 in relation to Metro Light Rail Integration Study.

B. Clause 12.7 provides for variations to the Agreement to be made only by the written agreement of the parties.

C. The parties have agreed to vary the Agreement in accordance with the terms of this Deed.

IT IS AGREED by the parties as follows.

1. Interpretation and Governing Law

(1) Unless the context requires or it is otherwise specified in this Deed, any words used in this Deed that are defined in the Agreement have the same meaning for the purpose of this Deed.

(2) This Deed is governed by and construed in accordance with the law for the time being in force in the Territory and the parties submit to the non-exclusive jurisdiction of the courts of the Territory.

2. Effective Date

The variations to the Agreement described in this Deed, take effect on the date of this Deed.

3. Variation

(1) **Item 3(1) Schedule 1** is deleted and replaced with the following.

Item 3(1) Contract Price $376,024.00 (GST inclusive).
A breakdown of the Variation amounts is incorporated into this Agreement at Attachment A

(2) **Schedule 2** is varied by the addition of the Attachment A to this Deed.

SIGNED AS A DEED ON 4 November 2013

SIGNED for and on behalf of the **AUSTRALIAN CAPITAL TERRITORY** in the presence of:

Signature of witness

Eva Fanjul

Print name

Signature of Territory delegate

Andrew Parkinson

Print name

SIGNED by or for and on behalf of **SMEC Australia Pty. Limited** **ACN: 065 475 149** in the presence of:

Signature of ~~director~~/ authorised officer/ ~~individual~~*

*(see note below)

Signature of director/ secretary/ witness*

*(see note below)

SYBILLE TILDSLEY

Print name

JEROME CATIBAGAN

Print name

Signature of second authorised officer*

*(see note below)

Print name

Affix common seal if required under constitution

Note:

Date:	Must be dated on the date the last party signs the Deed or, if signed counterparts of the Deed are exchanged, the date of exchange. Also date the cover page.
Company:	Must be signed in accordance with section 127 of the *Corporations Act 2001* (Cth), for example, by 2 directors or a director and a secretary. Common seal may be affixed if required under the Consultant's constitution.
Individual:	Must be signed by the individual Consultant and witnessed.
Incorporated Association:	Must be signed in accordance with the Consultant's constitution, which may or may not require the common seal to be affixed. As a minimum, 2 authorised officers must sign.

Capital Metro Light Rail Integration Study
Fortnightly Progress Report
1 November 2013

To: [redacted]

From: [redacted]

1. Tasks undertaken by the project team during the past two weeks

- Consultation:
  - ✓ Finalised preparations for the Community Information Sessions
  - ✓ Conducted Community Information Sessions in City, Gungahlin and Dickson on 24, 25 and 26 October 2013, respectively.
  - ✓ Continued review of online survey responses
- Variation 1:
  - ✓ Supplied preliminary Employment and Retail Space redirection to CMA for review and circulation
- Variation 2:
  - ✓ Met with ESDD on 24 October 2013 to discuss differences between Land Use Compendium, Mesh Block and DZN data (resolved)
  - ✓ Completed distribution of 2011 Population (based on Mesh Blocks)
  - ✓ Received updated Employment for City zones (from Sayem Chowdhury, ESDD)
  - ✓ Currently working on:
    - Population growth to 2016, 2021 and 2031
    - Employment and Retail Space distribution
- Attended project management meeting on 23 October 2013. Attendees are as follows:
  - ✓ [redacted]CMA)
  - ✓ [redacted](EDD)
  - ✓ [redacted]EDD)
  - ✓ [redacted]SP)
  - ✓ [redacted](SMEC)
  - ✓ [redacted](SMEC)
- Submitted Variation Request 03 to SSP/CMA on 30 October 2013. This scope variation covers the rework on the Stage 1 Technical Note that MRCagney needs to undertake due to the land use updates.

2. Tasks to be undertaken in the next two weeks

- Continue and finalise tasks associated with Variations 01 and 02
- Attend project management meeting on 6 November 2013
- Possibly start on the Stage 1 Technical Note rework once Variation Request 03 is approved

3. **Information required from CMA/other government agencies**
   - *Nil*

4. **Outstanding issues to be resolved**
   - *Nil*

5. **Current Project Status:** On time, based on the most recent project program revision (8 October 2013). Slight delay in the completion of Variations 01 and 02 but this is not on the critical path.

[redacted]

From: [redacted]
Sent: Wednesday, 30 October 2013 4:20 PM
To: [redacted]
Cc:
Subject: CMLRIS - Variation 3
Attachments: 3002353 Variation Request 3 Rev0.pdf

Hi [redacted]

Please find attached Variation Request 03 to cover the rework necessary for updating the Stage 1 Technical Note based on the revised land use.

Regards,

[redacted]
SMEC Australia
Suite 2, Level 1, 243 Northbourne Avenue, Lyneham, ACT, 2602, Australia
[redacted] www.smec.com | LinkedIn

SMEC SNOWY MOUNTAINS ENGINEERING CORPORATION

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[redacted]

From: [redacted]
Sent: Wednesday, 30 October 2013 10:15 AM
To: [redacted]
Cc: [redacted]
Subject: RE: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study
Attachments: Procurement Plan (Variations and Extensions)- Lightrail_r1.docx; Light Rail Integration Study - procurement fee

[redacted]

As you are aware, the project was initially with ESDD and has now been transferred to CMA.
Therefore, the project is now given a new project number in the SSP Oracle system as : 23550

Having signed the deed of variation for SMEC, here is the update of the budget for this project.

Project cost and SMEC's cost

[redacted]

As agreed, SSP fee will be invoiced progressively 4% of the SMEC fee to reach the agreed total of $13,200. Thanks

[redacted]

From: [redacted]
Sent: Thursday, 17 October 2013 12:05 PM
To: [redacted]
Subject: RE: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study

Hi [redacted]
The timings for the variations are set out in SMEC's proposals.
Thank you
[redacted]

From: [redacted]
Sent: Thursday, 17 October 2013 11:52 AM
To: [redacted]
Subject: RE: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study

[redacted]
Can we assume the timing of the V1 and V2 be anytime they are completed?
Thanks [redacted]

From: [redacted]
Sent: Wednesday, 16 October 2013 5:57 PM
To: [redacted]
Subject: RE: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study

Hi [redacted]
My suggestion would be along the following lines:

1. Submission of Draft Stage 1 Technical Note
2. Approval of Stage 1 Technical Note
3. Approval of Consultation Report
4. Approval of Stage 2 Functional Layout Drawings for stops and stations
5. Approval of Stage 4 Benefit Evaluation
6. Submission of Draft Report
   (including details of Stage 3 updating of models, modelling results and the updated models)
7. Approval of Final Report
8. Approval of Excel spreadsheets for revised land use scenarios
9. Approval of revised TAZ for the CSTM
   and revised BAU land use scenarios

[redacted]

Variation 1
Variation 2

Thank you
[redacted]

From: [redacted]
Sent: Wednesday, 16 October 2013 3:49 PM
To: [redacted]
Subject: FW: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study

[redacted]
SMEC submitted a invoicing schedule taking into account the current two approved variations and original contract. Please let me know whether you are happy to adopt this invoicing schedule.
Thanks [redacted]

From: [redacted]
Sent: Wednesday, 16 October 2013 2:17 PM
To: [redacted]
Cc: [redacted]
Subject: RE: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study

Hi [redacted]

That invoice was based on a previously agreed invoicing schedule when ESDD was still managing the project. It was also based on certain expected completion dates that were assumed to be strictly followed. Given the current program and recent additional variation work, we would like to propose a revised invoicing schedule below, which is now more in line with the 'Pricing Schedule' indicated in our proposal.

Item No.	Milestone	Percentage of Original Fee	Invoice Amount (GST Incl)
1	Stage 1: Identification of the Preferred Network Option	[redacted]	
V1/V2	Completion of Var 01 and Var 02		
2	Public Consultation: Compilation/Summarisation of Public Consultation Outcomes		
3	Stage 2: Presentation of Stop Layouts		
4	Stage 4: Benefits Evaluation (including works done in Stage 3: Transport Modelling and Analysis)		
5	Submission of Draft Report		
6	Submission of Final Report		

		Total	[redacted]

The current invoice that you have only has 20% of the original fee billed. I'll include the remainder of item #1 (15% of original fee) in the next invoice that we'll issue, which will be after completion of Var 01 and 02.

This revised invoicing schedule above is being submitted for your review and approval.

Regards,

[redacted]
SMEC Australia
Suite 2, Level 1, 243 Northbourne Avenue, Lyneham, ACT, 2602, Australia
[redacted]
[redacted] | www.smec.com | LinkedIn

SMEC SNOWY MOUNTAINS ENGINEERING CORPORATION

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From: [redacted]
Sent: Wednesday, 16 October 2013 10:40 AM
To [redacted]
Cc: [redacted]
Subject: FW: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study
Importance: High

[redacted]

This is about the invoice from SMEC for the stage 1 works completion. This invoice is fo[redacted]
As you can see in the attached payment schedule, I was expecting an invoice for items D1 and D2 amounting to about [redacted]
Can you please check with [redacted] and advise me why there was difference and whether any payment had been made ESDD previously.
Regards, [redacted]

From: [redacted]
Sent: Wednesday, 18 September 2013 2:48 PM
To: [redacted]
Cc: [redacted]
Subject: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study

Dear [redacted]

Please find the attachments of INV0043485 for Capital Metro Light Rail Integration Study.

Should you have any questions relating to this invoice please email actfinance@smec.com or the SMEC contact nominated on this invoice.

Many thanks

[redacted]

From: [redacted]
Sent: Tuesday, 23 April 2013 9:43 AM
To: [redacted]
Subject: Light Rail Integration Study - procurement fee

Hi [redacted]

Following up from our discussion last week, I am happy to confirm that we are happy for the 4% procurement fee to be paid for this study.

Thanks to both you and [redacted] for your excellent assistance so far.

Regards,

[redacted]

Transport Planning | Environment and Sustainable Development | **ACT Government**
Dame Pattie Menzies House, 16 Challis St, Dickson | GPO Box 58 Canberra ACT 2601 | www.environment.act.gov.au

[redacted]

From: [redacted]
Sent: Monday, 21 October 2013 4:20 PM
To: [redacted]
Cc:
Subject: RE: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study

H[redacted]

Sorry for delayed response. I confirm our agreement to the amended invoicing schedule.

Regards,

[redacted]
SMEC Australia
[redacted]

From: [redacted]
Sent: Monday, 21 October 2013 4:18 PM
To: [redacted]
Cc:
Subject: FW: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study

[redacted]
Can you please confirm the arrangements given below.
Thanks[redacted]

From: [redacted]
Sent: Thursday, 17 October 2013 12:13 PM
To: [redacted]
Cc:
Subject: RE: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study

[redacted]
We propose the following amendment to your invoice schedule including completion of works for Variations 1 and 2 as per SMEC proposals submitted. Please advise your concurrence.
Thank[redacted]

1. Submission of Draft Stage 1 Technical Note
2. Approval of Stage 1 Technical Note
3. Approval of Consultation Report
4. Approval of Stage 2 Functional Layout Drawings for stops and statio[redacted]
5. Approval of Stage 4 Benefit Evaluation
6. Submission of Draft Report
   (including details of Stage 3 updating of models, modelling results and the updated models)
7. Approval of Final Report
8. Approval of Excel spreadsheets for revised land use scenarios
9. Approval of revised TAZ for the CSTM and revised BAU land use scenarios

[redacted]
Variation 1
Variation 2

From [redacted]
Sent: Wednesday, 16 October 2013 2:17 PM
To: [redacted]
Cc: [redacted]
Subject: RE: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study

Hi [redacted]

That invoice was based on a previously agreed invoicing schedule when ESDD was still managing the project. It was also based on certain expected completion dates that were assumed to be strictly followed. Given the current program and recent additional variation work, we would like to propose a revised invoicing schedule below, which is now more in line with the 'Pricing Schedule' indicated in our proposal.

Item No.	Milestone	Percentage of Original Fee	Invoice Amount (GST Incl)
1	Stage 1: Identification of the Preferred Network Option	[redacted]	
V1/V2	Completion of Var 01 and Var 02		
2	Public Consultation: Compilation/Summarisation of Public Consultation Outcomes		
3	Stage 2: Presentation of Stop Layouts		
4	Stage 4: Benefits Evaluation (including works done in Stage 3: Transport Modelling and Analysis)		
5	Submission of Draft Report		
6	Submission of Final Report		
	Total		

The current invoice that you have only has 20% of the original fee billed. I'll include the remainder of item #1 (15% of original fee) in the next invoice that we'll issue, which will be after completion of Var 01 and 02.

This revised invoicing schedule above is being submitted for your review and approval.

Regards,

[redacted]
SMEC Australia
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.

From [redacted]
Sent: Wednesday, 16 October 2013 10:40 AM
To: [redacted]
Cc: [redacted]
Subject: FW: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study
Importance: High

[redacted]

This is about the invoice from SMEC for the stage 1 works completion. This invoice is for [redacted]
As you can see in the attached payment schedule, I was expecting an invoice for items D1 and D2 amounting to about [redacted]
Can you please check with [redacted] and advise me why there was difference and whether any payment had been made ESDD previously.
Regards, [redacted]

From [redacted]
Sent: Wednesday, 18 September 2013 2:48 PM
To: [redacted]
Cc: [redacted]
Subject: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study

Dear [redacted]

Please find the attachments of INV0043485 for Capital Metro Light Rail Integration Study.

Should you have any questions relating to this invoice please email actfinance@smec.com or the SMEC contact nominated on this invoice.

Many thanks

[redacted]
SMEC Australia
[redacted]

Capital Metro Light Rail Integration Study
Fortnightly Progress Report
18 October 2013

To: [redacted]

From: [redacted]

1. Tasks undertaken by the project team during the past two weeks

- Consultation:
  - ✓ Attended and facilitated the stakeholder engagement meeting on 10 October 2013
  - ✓ Asked ESDD to loan display boards for the project's Community Information Sessions
  - ✓ Advised CMA to arrange a means for picking up these display boards, transporting them to each information session site and setting them up
  - ✓ Continued review of online survey responses
- Variation 1:
  - ✓ Submitted priority areas (1, 2 and 3) overlaid over Territory Plan land uses for approval (14 October). No feedback received.
  - ✓ Outstanding task: nomination of areas to redistribute population and employment from
- Variation 2:
  - ✓ Submitted revised zone layouts (14, 16 October)
  - ✓ Submitted final zone layout (17 October)
  - ✓ Submitted draft zone connectors (21 October)
  - ✓ Started redistributing land use (population, employment, retail space, enrolments) into new zones
  - ✓ Discovered inconsistencies between Mesh Block data, DZN data and EMME Land Use compendium – started discussion with Sayem (17 October)
- Attended project management meeting on 10 October 2013. Attendees are as follows:
  - ✓ [redacted] (CMA)
  - ✓ [redacted] (EDD)
  - ✓ [redacted] (Talkforce)
  - ✓ [redacted] (?) – was not able to get her name
  - ✓ [redacted] (SMEC)
  - ✓ [redacted] (SMEC)

2. Tasks to be undertaken in the next two weeks

- Continue and finalise tasks associated with Variations 01 and 02
- Attend project management meeting on 23 October 2013
- Finalise preparations for the Community Information Sessions
- Attend Community Information Session in City, Gungahlin and Dickson

3. **Information required from CMA/other government agencies**
   - *Nil*

4. **Outstanding issues to be resolved**
   - Inconsistencies with Mesh Block data, DZN data and EMME Land Use compendium – still awaiting advice from ESDD

5. **Current Project Status:** On time, based on the most recent project program revision (8 October 2013). The could be a slight delay in the completion of Variations 01 and 02

[redacted]

927

From: [redacted]
Sent: Friday, 18 October 2013 9:21 AM
To: [redacted]
Subject: LRIS Program

Hi [redacted]
I note that the latest program shows "finalisation of LRT stop locations" on 25 October 2013.
Please advice what mechanism you are proposing to achieve this and what material you will be providing to us.
Thank you
[redacted]

[redacted]

From: [redacted]
Sent: Thursday, 17 October 2013 4:11 PM
To: [redacted]
Cc:
Subject: RE: CMLRIS - Updated Zones

Hi [redacted]
Yes – we are ok with the zones.
Can you print some maps showing the centroid connector locations or do you need to send us a copy of the model?
Thank you
[redacted]

From: [redacted]
Sent: Thursday, 17 October 2013 3:23 PM
To: [redacted]
Cc:
Subject: RE: CMLRIS - Updated Zones

[redacted]

Attached are the final zones with Zone 543 split into 543 and 930 along the Block boundary.

Can we have your approval to distribute the land use to these zones (we have already started, just need your approval to finalise).

Regards,

[redacted]
SMEC Australia Pty Ltd
[redacted]

From: [redacted]
Sent: Wednesday, 16 October 2013 3:44 PM
To: [redacted]
Cc:
Subject: RE: CMLRIS - Updated Zones

Hi [redacted]
1 final comment – please split the block in the SE corner of Flemington Rd/Morisset Rd out of Zone 543.
Then ok to proceed.
Thank you
[redacted]

From: [redacted]
Sent: Wednesday, 16 October 2013 1:20 PM
To: [redacted]
Cc:
Subject: CMLRIS - Updated Zones

[redacted]

Based on your comments and phone calls over the last couple of days, we have finalised the zone layout (attached).

Changes (from the last submitted version) are:

1. Zone 59 (ANU): split into three zones (59, 928, 929) with boundaries as discussed on the phone
2. Zone 60 (ANU): split into two zones (60, 927) with boundaries as discussed
3. Zone 180 (Racecourse): three zones (922, 923, 924) added around boundary
4. Zone 192 (Downer): split into two zones (192, 920), urban open space excluded
5. Zone 207 (Downer): RZ2 split into new zone (Zone 921)
6. Zone 492 (Gungahlin): Urban open space excluded
7. Zone 545 (Kenny): split into three zones:
    a. Zone 925: dog obedience centre
    b. Zone 545: radio transmission
    c. Zone 926: prison

Regards,

[redacted]
SMEC Australia Pty Ltd
Suite 2, Level 1, 243 Northbourne Avenue, Lyneham, ACT, 2602, Australia
[redacted]
[redacted] www.smec.com | LinkedIn

SMEC SNOWY MOUNTAINS ENGINEERING CORPORATION

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[redacted]

From: [redacted]
Sent: Wednesday, 16 October 2013 1:42 PM
To: [redacted]
Subject: FW: EMME Cordon Count Locations
Attachments: 20131004 - Screenline Data - SMEC.xlsx

Fyi

From: [redacted]
Sent: Friday, 4 October 2013 12:27 PM
To: [redacted]
Cc: [redacted]
Subject: RE: EMME Cordon Count Locations

Hi [redacted]
Thank you for your query. Please find an updated data sheet (attached) and my response below.
Regards
[redacted]

[redacted]
Transport Planning & Projects I Environment and Sustainable Development I **ACT Government**
Phone: [redacted]
Dame Pattie Menzies House 16 Challis St Dickson ACT 2602 I GPO Box 158 Canberra ACT 2601

From: [redacted]
Sent: Wednesday, 2 October 2013 4:46 PM
To: [redacted]
Cc: [redacted]
Subject: RE: EMME Cordon Count Locations

[redacted]

Thankyou for providing this information. I have a few comments and questions:

- Parkes Way between Edinburgh Avenue and Glenloch Interchange doesn't appear in the count data. This is probably the most important count location on the City cordon. Sorry we missed this location. But we have a count of 2008 what we have provided.
- The London Circuit – Commonwealth Avenue ramps were identified but Counts 35 and 36 appear to be on London Circuit itself. It is the ramps that are on the cordon so is it possible to get information for them? It was a mistake as well. We have provided estimates on those ramps.
- Which part of Belconnen Way does count 32 refers? It's identified as Belconnen Way between Haydon Drive and Barry Drive, but there is an intersection (Gungahlin Drive) in between these two, so there are two midblocks. We noticed tubes on Belconnen Way between Barry Drive and Gungahlin Drive, which leaves Belconnen Way between Gungahlin Drive and Haydon Drive not counted. Can you provide the counts for this missing location from SCATS? You're right! Data for missing link provided.
- There is a count at one end of Albatross Crescent but not the other. This is however unlikely to have much of an effect on the overall cordon due to the low hierarchy of the street. Sorry we can't do anything on this one. Please keep in mind Albatross Street was not opened until 2012.
- Counts 27 and 28 refer to locations that weren't requested, is this correct? noted

Cheers

[redacted]
SMEC Australia

[redacted]

From: [redacted]
Sent: Thursday, 26 September 2013 17:03
To: [redacted]
Cc: [redacted]
Subject: FW: EMME Cordon Count Locations

Hi [redacted]
Please find the screen line cordon counts as requested.
Thanks
[redacted]

[redacted]
Transport Planning & Projects I Environment and Sustainable Development I **ACT Government**
Phone: [redacted]
Dame Pattie Menzies House 16 Challis St Dickson ACT 2602 I GPO Box 158 Canberra ACT 2601

From: [redacted]
Sent: Monday, 1 July 2013 1:41 PM
To: [redacted]
Cc: [redacted]
Subject: EMME Cordon Count Locations

[redacted]

The attached file identifies the links for which we have been provided counts (blue) and those that are needed for complete screenline cordons.

We're having some trouble with the EMME licence at the moment so I can't provide a shapefile at this time, though I can once I get access to EMME again.

Regards

[redacted]
SMEC Australia
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.

This e-mail has been scanned for viruses by Symantec.Cloud.

[redacted]

From: [redacted]
Sent: Wednesday, 16 October 2013 1:24 PM
To: [redacted]
Subject: RE: PP Variation - CMLRIS - Variations 1 and 2
Attachments: Procurement Plan Variations - Light Rail Integration Study - Contract No 201.21126.110.pdf

Hi [redacted]
Signed deed is attached.
Thank you
[redacted]

From: [redacted]
Sent: Wednesday, 16 October 2013 10:44 AM
To: [redacted]
Subject: FW: PP Variation - CMLRIS - Variations 1 and 2

[redacted]
Signed Deed of Variation attached. Please have this signed by you and [redacted] and pass it to me to issue contract amendment.
Thanks [redacted]

From: [redacted]
Sent: Friday, 27 September 2013 9:28 AM
To: [redacted]
Subject: RE: PP Variation - CMLRIS - Variations 1 and 2

Hi [redacted]
I have made a slight adjustment to the wording.
Pls proceed.
Thank you
[redacted]

From: [redacted]
Sent: Thursday, 26 September 2013 4:41 PM
o: [redacted]
Subject: PP Variation - CMLRIS - Variations 1 and 2

[redacted]
I have attached the PP Variation for the two variations you have signed off. If you are happy with the PP Variation document, I can have them signed and send it for your signature.
please note that I have asked SMEC to confirm the rates, hopefully it should be okay.
Thanks [redacted]

From: [redacted]
Sent: Thursday, 26 September 2013 2:32 PM
To: [redacted]
Cc: [redacted]
Subject: RE: CMLRIS - Variation 2

[redacted]
Can you please confirm that the items priced in the two variations are in accordance with the agreed contract rates.
Also, please let me know the final agreed completion date as the revised program.
Thanks [redacted]

From: [redacted]
Sent: Monday, 23 September 2013 5:04 PM
To: [redacted]
Cc: [redacted]
Subject: RE: CMLRIS - Variation 2

Hi [redacted]
Sorry I forgot the attachment.
Please forward the paperwork for the variations to us so we can formalise.
Thank you
[redacted]

From [redacted]
Sent: Monday, 23 September 2013 5:00 PM
To: [redacted]
Cc: [redacted]
Subject: RE: CMLRIS - Variation 2

Hi [redacted]
Please proceed with this variation.
Thank you
[redacted]

From: [redacted]
Sent: Monday, 23 September 2013 4:47 PM
To: [redacted]
Cc: [redacted]
Subject: FW: CMLRIS - Variation 2

[redacted]

Based on a discussion with [redacted] earlier this afternoon, we have revised Variation Request 2 (attached).

On the phone, I told [redacted] that the completion date (based on his changes) would be 22 October. However, there was a typo in the original request and the completion date is now expected to be 24 October.

Regards,

[redacted]
SMEC Australia Pty Ltd
[redacted]

From: [redacted]
Sent: Friday, 20 September 2013 6:27 PM
To: [redacted]
Cc: [redacted]
Subject: CMLRIS - Variation 2

[redacted]

Attached is Variation Request 02 which covers the work requested by [redacted] to update the zone layout and associated land use in the CSTM for the LRT corridor.

Regards,

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

ACT Government
Commerce and Works

Procurement Plan (Variations)

VARIATION OVERVIEW			
To	Glenn Bain, Project Director, CAPITAL METRO AGENCY		
Purpose	This minute seeks your agreement to vary the contract for **Capital Metro Light Rail Integration Study – Contract No: 2013.21126.110** Reasons for variation additional works to complement the scope of works covered in the project brief are: **1: Variation Request 01 for Gungahlin to Civic corridor Land Use forecasts related to increased development in the corridor – SMEC submission dated 3 September 2013. (Attachment A)** **2: Variation Request 02 for updating the layout of Transport Analysis Zones (TAZ) in the Canberra Strategic Transport Model (CSTM) to better model the light rail corridor dated 23 September 2013.**		
Name of Contract	**Capital Metro Light Rail Integration Study**		
Contract Number	**Contract No: 2013.21126.110**	Type of variation	New contract period: Yes New contract price: Yes
Estimated value of the variation ($)	The estimated value of the total variation is **$46,024.00(including GST).** The original value of the contract was **$330,000(including GST).** The estimated total value of this procurement over the proposed period of the contract is: **$376,024.00(including GST).** **1: Variation Request 01 for Gungahlin to Civic corridor Land Use forecasts related to increased development in the corridor – SMEC submission dated 3 September 2013. (Attachment A)** **Amount: $21,912.00 including GST.** **2: Variation Request 02 for updating the layout of Transport Analysis Zones (TAZ) in the Canberra Strategic Transport Model (CSTM) to better model the light rail corridor dated 23 September 2013. (Attachment B)** **Amount: $24,112.00 including GST.**		
Anticipated Commencement Date	What is the anticipated commencement date of variation? **In Progress** Noted the urgency of these additional studies		
Program / contract term implications	What are the implications of the variation to the project / contract? - revised completion date: **30 May 2014**		
Variation to scope of project / contract	Where a significant change to the scope of the project / contract is proposed, a new procurement should be undertaken.		

PERFORMANCE AND RISK	
Risk	State risk level (attach risk plan if high or extreme after treatment). Has this varied from original contract risk assessment? Did the original risk plan identify the possibility of a variation? **No changes to originally approved risk plan** NOTE: this is only required if additional risks have been identified or if the variation plan requires GPB approval

SHARED SERVICES PROCUREMENT RECOMMENDATION			
Project Officer	T Sri Tharan	Phone Number	6207 6879
Signature		Date	26 Sep 2013
Manager	~~Vladan Milic~~ Leslie Leung	Phone Number	(02) 6207 ~~1673~~ 5533
Signature		Date	16/10/2013
Senior Manager / Director / Executive Director	$1 - <$5 million – clearance by Manager & either Director or Executive Director [delete row if not required]	Signature and Date	
Executive Director	$5 million or above – clearance by Manager & Director & Executive Director [delete row if not required]	Signature and Date	

AGENCY ENDORSEMENT			
Name	Derek Stolz	Phone Number	(02) 6205 7191
Position, Branch & Section	Manager, Transport and Integration		
Signature		Date	16 October 2013

DIRECTOR-GENERAL/DELEGATE APPROVAL			
Name	Glenn Bain		
Position	Director-General/~~Delegate~~		
Statement	Funding for this Variation Plan and attachments are approved.		
Signature		Date	16/10/2013

ACT Government
Commerce and Works

Procurement Plan (Variations)

VARIATION OVERVIEW			
To	Glenn Bain, Project Director, CAPITAL METRO AGENCY		
Purpose	This minute seeks your agreement to vary the contract for **Capital Metro Light Rail Integration Study – Contract No: 2013.21126.110** Reasons for variation additional works to complement the scope of works covered in the project brief are: **1: Variation Request 01 for Gungahlin to Civic corridor Land Use forecasts related to increased development in the corridor – SMEC submission dated 3 September 2013. (Attachment A)** **2: Variation Request 02 for updating the layout of Transport Analysis Zones (TAZ) in the Canberra Strategic Transport Model (CSTM) to better model the light rail corridor dated 23 September 2013.**		
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Program / contract term implications	What are the implications of the variation to the project / contract? - revised completion date: **30 May 2014**		
Variation to scope of project / contract	Where a significant change to the scope of the project / contract is proposed, a new procurement should be undertaken.		

	Outline any changes to scope. • **Variations No 1 and 2 are required update the CSTM and land use scenarios so they are suitable for the purposes of the study.** • **Details are given in Attachments A and B.**
Is Government Procurement Board (GPB) sign off required?	Yes/No: **NO (As per Procurement Circular 2007/04)** Variation Plans need to be referred to the GPB for: • variations with values in excess of $1 million or 20% or greater increase in the original value (where the original procurement plan was considered by the GPB); and • variations with values under $1 million or 20% of the original value, but which will result in an overall expenditure in excess of: - $5 million for Territory entities which are administrative units; unless covered by an endorsed strategic procurement plan; or - $1 million for Territory entities other than administrative units; or - $1 million for information and communication technology procurements that include an element of system development or redesign; and - $1 million for all disposal activities. NOTE: Where a variation is to be submitted to the GPB include a copy of the original and/or updated Risk Plan.

ORIGINAL PROJECT	
Background	When was it approved and by whom? **By ESDD Delegate – Minute 4 Dec 2012** Does the original business case continue to support the variation? **Yes** Also include details of any event(s) that occurred without APU (if prior to 30 September 2007) and/or GPB notice, endorsement or approval, eg over-expenditure under the contract. **No**
Provision for variation	Outline the contract clause that allows for the variation. **Clause 12.7** ***This Agreement may only be varied by the written agreement of the parties prior to the expiration of this Agreement***
Key Performance Indicators under the contract	Has the contractor met existing Key Performance Indicators? **Yes** Outline the performance of the contractor in general. **Satisfactory**
Social Procurement	Is this contract suitable for including social procurement clauses currently or in future? **Not Applicable**

PERFORMANCE AND RISK	
Risk	State risk level (attach risk plan if high or extreme after treatment). Has this varied from original contract risk assessment? Did the original risk plan identify the possibility of a variation? **No changes to originally approved risk plan** NOTE: this is only required if additional risks have been identified or if the variation plan requires GPB approval

SHARED SERVICES PROCUREMENT RECOMMENDATION			
Project Officer	T Sri Tharan	Phone Number	6207 6879
Signature		Date	26 Sep 2013
Manager	~~Vladan Milic~~ Leslie Leung	Phone Number	(02) 6207 ~~4673~~ 5533
Signature		Date	16/10/2013
Senior Manager / Director / Executive Director	$1 - <$5 million – clearance by Manager & either Director or Executive Director [delete row if not required]	Signature and Date	
Executive Director	$5 million or above – clearance by Manager & Director & Executive Director [delete row if not required]	Signature and Date	

AGENCY ENDORSEMENT			
Name	Derek Stolz	Phone Number	(02) 6205 7191
Position, Branch & Section	Manager, Transport and Integration		
Signature		Date	

DIRECTOR-GENERAL/DELEGATE APPROVAL			
Name	Glenn Bain		
Position	Director-General/Delegate		
Statement	Funding for this Variation Plan and attachments are approved.		
Signature		Date	

ACT Government
Commerce and Works

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Procurement Plan (Variations)

VARIATION OVERVIEW			
To	Glenn Bain, Project Director, CAPITAL METRO AGENCY		
Purpose	This minute seeks your agreement to vary the contract for **Capital Metro Light Rail Integration Study – Contract No: 2013.21126.110** Reasons for variation additional works to complement the scope of works covered in the project brief are: **1: Variation Request 01 for Gungahlin to Civic corridor Land Use forecasts related to increased development in the corridor – SMEC submission dated 3 September 2013. (Attachment A)** **2: Variation Request 02 for updating the layout of Transport Analysis Zones (TAZ) in the Canberra Strategic Transport Model (CSTM) to better model the light rail corridor dated 23 September 2013.**		
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Anticipated Commencement Date	What is the anticipated commencement date of variation? **In Progress**		
Program / contract term implications	What are the implications of the variation to the project / contract? - revised completion date: **30 May 2014**		
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	Outline any changes to scope. • **Variations No 1 and 2 are required update the CSTM and land use scenarios so they are suitable for the purposes of the study.** • **Details are given in Attachments A and B.**
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Signature		**Date**	26 Sep 2013
Manager	Vladan Milic	**Phone Number**	(02) 6207 1673
Signature		**Date**	
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AGENCY ENDORSEMENT			
Name	Derek Stolz	**Phone Number**	(02) 6205 7191
Position, Branch & Section	Manager, Transport and Integration		
Signature		**Date**	

DIRECTOR-GENERAL/DELEGATE APPROVAL			
Name	Glenn Bain		
Position	Director-General/Delegate		
Statement	Funding for this Variation Plan and attachments are approved.		
Signature		**Date**	

[redacted]

From: [redacted]
Sent: Wednesday, 16 October 2013 10:40 AM
To: [redacted]
Cc:
Subject: FW: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study
Attachments: 3002353 - INV0043485.pdf; 3002353 Invoice Summary Sheet 17-09-2013.pdf; Payment Schedule.pdf

Importance: High

[redacted]

This is about the invoice from SMEC for the stage 1 works completion. This invoice is for $66,000.00.
As you can see in the attached payment schedule, I was expecting an invoice for items D1 and D2 amounting to about $110k.
Can you please check with [redacted] and advise me why there was difference and whether any payment had been made ESDD previously.
Regards, [redacted]

From: [redacted]
Sent: Wednesday, 18 September 2013 2:48 PM
To: [redacted]
Cc:
Subject: SMEC Tax Invoice 0043485 Capital Metro Light Rail Integration Study

Dear [redacted]

Please find the attachments of INV0043485 for Capital Metro Light Rail Integration Study.

Should you have any questions relating to this invoice please email actfinance@smec.com or the SMEC contact nominated on this invoice.

Many thanks

[redacted]
SMEC Australia
T +61 2 6234 1900

969

Suite 2, Level 1
243 Northbourne Avenue
Lyneham Canberra ACT 2602
Telephone +61 2 6234 1900
Facsimile +61 2 6234 1966
www.smec.com

TAX INVOICE

[redacted]
ACT Shared Services Procurement
PO Box 818
Dickson ACT 2602

Invoice No: INV0043485
SMEC Contact: [redacted]
Issue Date: 17/09/2013
Due Date: 17/10/2013
SMEC Ref: 3002353

Total Due: AUD66,000.00

CAPITAL METRO LIGHT RAIL INTEGRATION STUDY

THIS INVOICE	
Professional Fees	AUD60,000.00
GST	6,000.00
Invoice Sub Total	AUD66,000.00
Total Amount Due	AUD66,000.00

PAYMENT REQUESTED WITHIN 30 DAYS

Please arrange payment (referencing Invoice Number) by direct deposit to:

ANZ Banking Group Limited, 136 Sharp Street, Cooma NSW 2630

Account Name: SMEC Holdings Ltd

BSB: 012-575 **Account number:** 8372-52496

Capital Metro Light Rail Integration Study

Invoice Summary Sheet / Variation Register

SMEC Project No 3002353

Description	Value		Invoice No. 43485	Invoice No. xxxxxx	Invoice No. xxxxxx	Invoice No. xxxxxx	Invoice No. xxxxxx	Total Invoiced to Date	Amount Remaining	% Remaining
		Date Sent								
		Date Paid								
Contract Works:										
Capital Metro Light Rail Integration Study	$300,000.00		$ 60,000.00					$ 60,000.00	$ 240,000.00	80%
Original Contract Sum	$ 300,000.00									
Variation Works:	Submitted	Approved								
1) Project Case Land Use Updates	$ 19,920.00	$ 19,920.00						$ -	$ 19,920.00	100%
Revised Total		$ 319,920.00								
	Sub-Total	Sub-Total	$ 60,000.00	$ -	$ -	$ -	$ -	$ 60,000.00	$ 259,920.00	
	GST	GST	$ 6,000.00	$ -	$ -	$ -	$ -	$ 6,000.00	$ 25,992.00	
	Total (inc GST)	Total (inc GST)	$ 66,000.00	$ -	$ -	$ -	$ -	$ 66,000.00	$ 285,912.00	

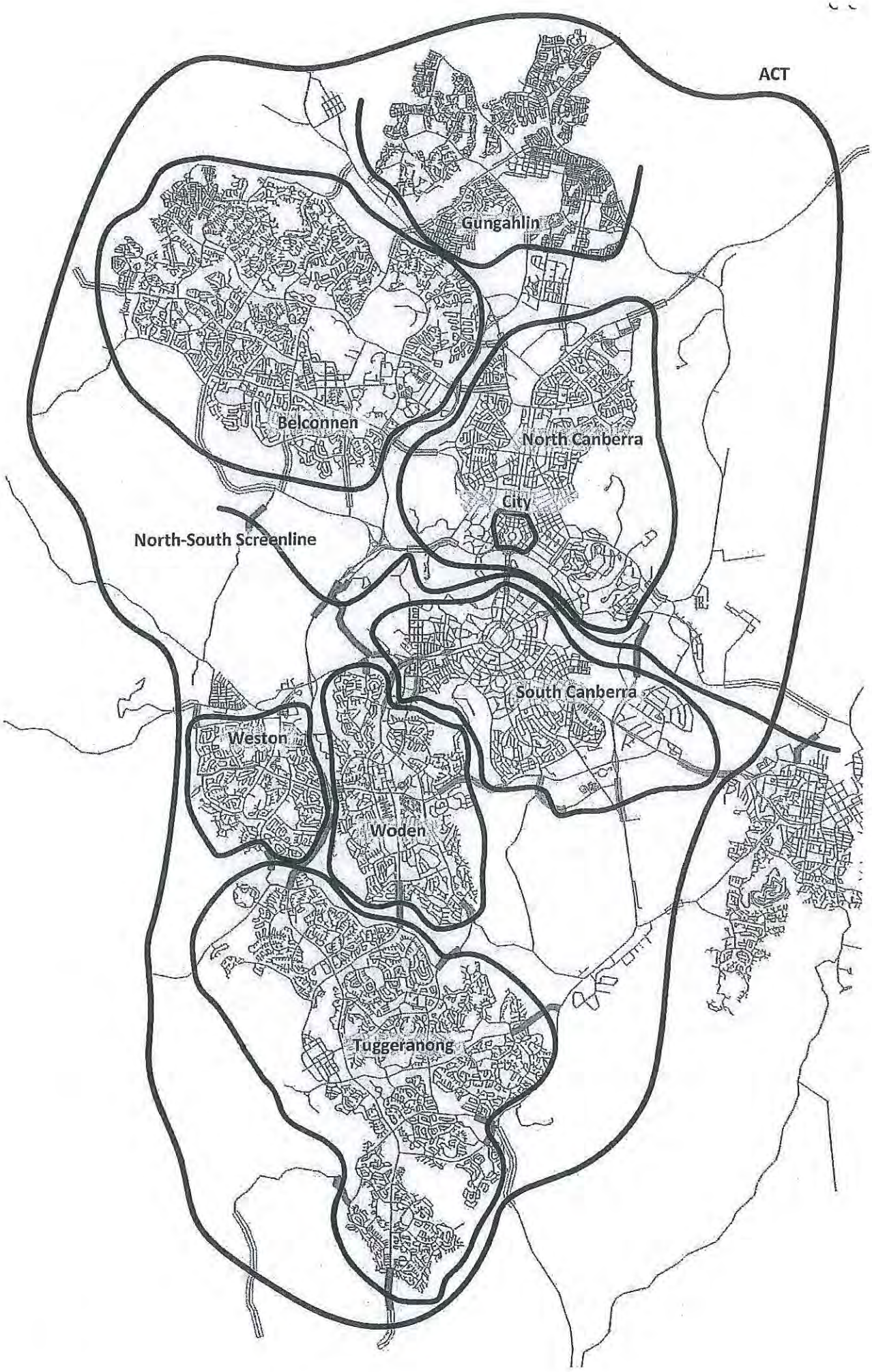
07 Fee

Pricing Schedule

Pay Item	Item Description	Cost ($) including GST SMEC	Sub-Consultant	Total
D1	Preliminaries, sites visits, meetings, project managements and general administration.	29,128.68	7,932.50	37,061.18
D2	STAGE 1- NETWORK ANALYSIS, EVALUATION AND OPTIONS	8,216.21	66,096.25	74,312.46
D3	STAGE 2 – NETWORK INFRASTRUCTURE	3,677.52	90,442.00	94,119.52
D4	STAGE 3 – TRANSPORT MODELLING AND ANALYSIS	32,343.83	3,298.75	35,642.58
D5	STAGE 4 - BENEFIT EVALUATION	1,134.67	12,127.50	13,262.17
D6	Stakeholder Consultation and address comments from relevant agencies and stakeholders	1,838.76	13,640.00	15,478.76
D7	Public Consultation and address comments	1,838.76	20,768.00	22,606.76
D8	Additional studies and reviews (Include details in the Tender submission)	0	0	0
D9	Production of draft reports – Draft for comments.	16,079.38	6,598.75	22,678.13
D10	Production of final reports - Final	13,105.94	1,732.50	14,838.44
D11	~~Sub consultant fees (breakdown fees to be provided)~~	Detailed Above for each Item		
	Total – GST Inclusive	107,363.76	222,636.24	330,000.00

Due to significant budget constraints, the peer review process to be undertaken by Atkins had to be excluded from the fee estimates. However, the SMEC project team strongly recommends including this, particularly for Stages 1 and 2, if additional budget can be provided by the client. The review process would enable the Atkins team to offer international best practice and experience in the development of the integration of LRT in the existing network and the development of network infrastructure. This associated with the local expertise of MRCagney and SMEC would be invaluable to the project going forward.

Similarly, the proposed public consultation process is not ideal, simply because there is not enough budget to cover what we think are necessary tasks to ensure a more comprehensive and effective community engagement process. The consultation budget had to be limited to allow the core tasks of the study to be conducted. However, we know that the previous round of consultation on light rail attracted a large range of input from Canberrans and limiting the consultation budget this way may not really reflect the interest we know this issue will garner. Therefore, we are hoping that further funding on the public consultation process can be considered, which can be discussed with the client at the project's outset.


ACT
Gungahlin
Belconnen
North Canberra
City
North-South Screenline
South Canberra
Weston
Woden
Tuggeranong

990

Kuffner, Jane

From: Stolz, Derek
Sent: Wednesday, 9 October 2013 6:24 PM
To: Bain, Glenn
Cc: Rankin, Irena
Subject: LRIS Presentation
Attachments: 20131010_LRIS_Stakeholder.pptx

Hi Glen
I have just cut down your earlier presentations and added 1 slide on the Integration Study at the end.
Let me know if you need any further changes.
Thank you
Derek

CAPITAL METRO

ACT Government

10 October 2013