Cabramatta East Planning Proposal

Traffic & Transport Assessment

July 2017

Prepared for

Moon Investments Pty Ltd

Prepare by

ARC Traffic + Transport

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Executive Summary

Moon Investments Pty Ltd has commissioned a Planning Proposal (the Proposal) to support the redevelopment of an existing mixed-use parcel of land immediately east of Cabramatta Railway Station, bounded by Fisher Street to the north; existing residential dwellings, a car park and commercial development to the east; Cabramatta Road East to the south; and Broomfield Street to the west (the Site). The Proposal would specifically provide for amendments to existing height and Floor Space Ratios (FSRs) as provided in the Fairfield Local Environmental Plan 2013 (LEP 2013).

Further to detailed discussions with Fairfield City Council (Council) and the Roads & Maritime Service (RMS), this traffic assessment accompanying the Proposal also examines the potential for 'uplift' in areas immediately surrounding the Site as identified in previous Council strategies. These areas (the Study Area Precincts) include existing mixed-use sites immediately east and south of the Site, which along with the Site comprise part of the Cabramatta Town Centre Precinct 4 (CTCP4) as identified in the Cabramatta Town Centre Development Control Plan 5/2000 (CTC DCP); as well as adjacent low density residential areas on the eastern side of the rail line within 800m of Cabramatta Station which have the potential to provide for future high and medium density residential dwellings.

ARC Traffic + Transport has been commissioned to prepare this traffic assessment to determine the potential impacts of the Proposal and broader uplift in surrounding Study Area Precincts on the local and sub-regional road network, with specific focus (as agreed with Council and the RMS) on key intersections along the Hume Highway, Cabramatta Road East and Broomfield Street.

Further to our assessment, ARC has determined the following.

Public & Active Transport

The Site and broader Study Area Precincts have excellent accessibility to public transport (including rail and bus services) as well as to a range of education, retail, commercial, social and recreational services within the broader Cabramatta Town Centre.

The Site and broader Study Area Precincts have access to excellent pedestrian and cycle infrastructure, including access to the regional Parramatta to Liverpool 'Rail Trail' which runs directly adjacent to the Site in Broomfield Street; and pedestrian connections not only to public transport but also to the Cabramatta Town Centre west of the railway line, which would potentially be further enhanced by the provision of a pedestrian overbridge from the Site linking to the Cabramatta Station pedestrian overbridge.

The combination of public transport, pedestrian and cycle access/infrastructure provides significant potential for a reduction in (vehicle) trip generation, building on the existing low mode to car driver percentages evident in the Study Area.

Road Network Operations

The existing Site and adjacent sites within CTCP4 currently generate vehicle trips at a rate below 'standard' retail and commercial rates; to some degree this is a function of the (current) underutilisation of the CTCP4 sites, but moreover it reflects the proximity of CTCP4 to public transport and the broader Cabramatta Town Centre west of the railway. These same proximity factors will assist in reducing the future trip generation of the Site and adjacent CTCP4 sites.

The existing and future trip generation of the Site and broader Study Area Precincts has been determined further to surveys, on-site observations and reference to RMS trip generation guidelines so as to determine the net additional trip generation to the road network arising from the Proposal and uplift in the broader Study Area Precincts. Trips have then been distributed with reference to Bureau of Transport Statistics *Journey to Work* and *Household Travel Survey* data, noting a significant percentage of trips are generated to/from destinations/origins within the Fairfield LGA.

A forecast year 2031 has been adopted for the assessment, with annual increases in background traffic in Hume Highway and Cabramatta Road East determined with reference to RMS forecast data. Three forecast year scenarios have then been finalised, being 2031 with no Proposal (or uplift in the Study Area Precincts); 2031 with the Proposal alone (i.e. no uplift in the Study Area Precincts); and 2031 with the Proposal and uplift in the Study Area Precincts.

The performance of all key intersections (as identified by Council and the RMS) under existing (2016) and future conditions has then been assessed using the SIDRA intersection model (as agreed with Council and the RMS). The SIDRA modelling indicates that: -

- **2016 Base Flows**

  All key intersections operate at an acceptable Level of Service (LoS) with moderate average delays and spare capacity. However, there are existing capacity constraints at the Hume Highway & Hollywood Drive & Chadderton Street intersection, particularly in the PM peak hour relating to the availability of only 2 Hume Highway southbound approach lanes.

- **2031 Base Flows (No Proposal or uplift in Study Area Precincts)**

  By 2031 the intersection of Hume Highway & Hollywood Drive & Chadderton Street operates near capacity, i.e. with a Degree of Saturation (DoS) approaching 1, and Level of Service (LoS) 'D' in the PM peak hour.

  All other key intersections continue to operate at an acceptable Level of Service, with moderate average delays and spare capacity.

- **2031 Plus Proposal Only**

  The additional trip generation arising from the Proposal alone has a very moderate impact on the future operation of the key intersections. All key intersections along the Hume Highway and Cabramatta Road East continue to operate with acceptable delays and spare capacity other than the intersection of Hume Highway & Hollywood Drive & Chadderton Street, where the existing capacity constraints are further exacerbated even by minor additional flows. This results in the Hume Highway & Hollywood Drive & Chadderton Street intersection operating essentially at capacity, and at LoS 'E' in the PM peak hour.

  All local intersections continue to operate at an acceptable LoS, with moderate average delays and spare capacity.

- **2031 Plus Proposal and uplift in Study Area Precincts**

  The additional trip generation arising from the Proposal and uplift in the Study Area Precincts has a moderate impact on the future operation of the key intersections. All key intersections along the Hume Highway and Cabramatta Road East continue to operate at an acceptable LoS with moderate delays and spare capacity other than the intersection of Hume Highway & Hollywood Drive & Chadderton Street, where the existing capacity constraints are further exacerbated even by these moderate additional flows. This results in the Hume Highway & Hollywood Drive & Chadderton Street intersection operating over capacity, and at LoS 'E' in the PM peak hour.

  All local intersections continue to operate at an acceptable LoS, with moderate average delays and spare capacity.

Road Network Operations

Further to the identification of constraints at the intersection of the Hume Highway & Hollywood Drive & Chadderton Street, ARC, in consultation with PDC Consulting, has examined potential upgrades by which to provide additional capacity. In this regard, the Hume Highway kerbside southbound lane is currently dedicated as a left turn lane. Reassigning this lane as a shared through/left lane – specifically given the existing availability of a third departure lane in the Hume Highway south of Hollywood Drive – provides significant capacity benefits. Further to this upgrade, the intersection of Hume Highway & Hollywood Drive & Chadderton Street would operate at an acceptable LoS and with spare capacity through all future scenarios.

It is our understanding that an all but identical upgrade for the intersection was examined as part of a recent Planning Proposal for a mixed-use development in Chadderton Street and further that the RMS has previously provided support for this upgrade. Certainly, our assessment supports what would be a relatively minor upgrade providing significant capacity and delay benefits.

As discussed, all other key intersections continue to operate at an acceptable LoS through all future scenarios, with moderate average delays and spare capacity. Notwithstanding, ARC and PDC Consulting have identified the potential for additional (relatively minor) upgrades within the network to further improve future capacity. These include: -

- At the intersection of Hume Highway & Cabramatta Road East, the Cabramatta Road East approach currently provides a left turn lane, shared left and right turn lane, and a short right turn lane. Clearway conditions are in place in the AM peak only. Extending the current clearway provisions to the PM peak and reassigning existing lanes to instead provide a short left, (clearway extended) shared left and right, and full right turn lanes provides capacity and (reduced) delay benefits under all future scenarios.

- At the priority intersection of Cabramatta Road East & Cabramatta Road East, delays to the right turn movement from north to west increase in both peak hour under all future scenarios, though LoS remains acceptable and there are queuing issues (back in Cabramatta Road East towards Broomfield Street). However, the removal of the right turn provision may warrant consideration in the future as part of broader changes, noting that sensitivity testing indicates that the redistribution of these (minor number of trips) could be accommodated by the adjacent intersection of Cabramatta Road East & Cumberland Street.

- Site trips are expected to be distributed to/from access points to Fisher Street, providing for the removal of existing Site vehicle access points to Broomfield Street and potentially the removal of the existing vehicle access points to Cabramatta Road East. Sensitivity testing indicates that the redistribution of trips assigned (as departure trips) to Cabramatta Road East to the intersection of Cabramatta Road East & Cumberland Street would have no impact on the (good) performance of the Cabramatta Road East & Cumberland Street intersection through all future scenarios.

- The priority intersections of Broomfield Street & Fisher Street, and Cumberland Street & Fisher Street, are forecast to continue operating at a good LoS, though additional No Standing restrictions (on the Fisher Street approaches to each intersection and adjacent to Site access points) may be warranted.

- Future detailed planning will be required to determine the safest and efficient access strategy for Fisher Street.

Broadly therefore, it is the conclusion of ARC that the Proposal and uplift in Study Area Precincts east of the railway line within 800m of Cabramatta Station can be accommodated by the local and sub-regional road network without significant upgrades to the road network.

Parking

The CTC DCP already provides what ARC would consider appropriate and sustainable parking provisions which respond to the proximity of the Site (and adjacent CTCP4 sites) to Cabramatta Station, the bus interchange and of course to the Cabramatta Town Centre west of the railway line.

ARC would recommend that these parking rates are applied to all future development within the CTCP4, noting that these low maximum rates provide significant benefits with regard to vehicle trip reductions, particularly in regard to residential trips. There is also the opportunity to reduce parking further to future detailed assessments of the complementary peak demands for retail, commercial and commuter parking across the Site.

The Fairfield City Wide Development Control Plan 2013 (FCW DCP) prescribes much higher high density residential parking rates for areas outside of the Cabramatta Town Centre Precincts (as described in the CTC DCP), even where those (surrounding) Precincts lie within 800m of Cabramatta Station. While it is our opinion that the CTC DCP rates would be appropriate for application to all high density residential development within 800m of Cabramatta Station, ARC would recommend as a minimum the adoption of the RMS Guide to Traffic Generating Development (GTGD) high density residential parking rates to all future high density within 800m of Cabramatta Station, noting that this would be consistent with *SEPP 65* (and by association the Department of Planning & Environment's Apartment Design Guide) provisions.

In addition, ARC would recommend the adoption of the FCW DCP medium density parking rates as maximum rates to all future medium density within 800m of Cabramatta Station, noting that these rates are generally similar to those detailed in the GTGD.

Introduction

Moon Investments Pty Ltd has commissioned a Planning Proposal (the Proposal) to support the redevelopment of an existing mixed-use parcel of land immediate east of Cabramatta Railway Station, bounded by Fisher Street to the north; existing residential dwellings, a car park and commercial development to the east; Cabramatta Road East to the south; and Broomfield Street to the west (the Site). The Proposal would specifically provide for amendments to existing height and Floor Space Ratios (FSR) as provided in the Fairfield Local Environmental Plan 2013 (LEP 2013).

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ARC Traffic + Transport (ARC) has been commissioned to assess the traffic and transport characteristics of the Proposal and broader uplift in Study Area Precincts east of the railway line within 800m of Cabramatta Station. In preparing this assessment, ARC has: -

- Visited the Site and surrounding areas to observe existing conditions.
- Commissioned and reviewed traffic surveys of key intersections as agreed with Council and the RMS.
- Prepared detailed traffic models of existing and future traffic conditions.
- In consultation with GLN Planning, examined parking rates applicable to the potential land-uses across the Study Area.
- Referenced relevant traffic studies, standards and guidelines, including: -
    - Fairfield LEP
    - CTC DCP
    - Fairfield City Wide Development Control Plan 2013 (FCW DCP)
    - RTA Guide to Traffic Generating Developments (GTGD)
    - RMS Technical Direction 2013 04a – Guide to Traffic Generating Developments; Updated traffic surveys (GTGD Update) and its supporting *Land Use Traffic Generation* assessments.
    - Cabramatta Transport Management and Accessibility Study 2013 (TMAP 2013) prepared by GTA Consultants

As stated, ARC has had the opportunity to discuss the Proposal and the broader assessment principles in detail with Council and RMS officers, specifically in regard to the scope and methodology of this assessment. ARC would from the outset acknowledge the assistance of Council and RMS officers in this regard.

1 Study Area

1.1 Site Location

The Site is located immediately east of Cabramatta Station, and is bordered by Fisher Street to the north; existing residential dwellings, a car park and commercial development to the east; Cabramatta Road East to the south; and Broomfield Street to the west. Further to consultation with Council and landowners – and for the purpose of the Proposal - the Site includes the Fisher Street Car Park; the Seventh Day Adventist Church (70 Broomfield Street); and the existing occupied residential lot and vacant residential lot at 72 and 74 Broomfield Street respectively.

The Site is shown in its local context in **Figure 1.1**.

Figure 1.1 The Site

Source: Nearmap

1.2 Study Area Precincts

As discussed in the **Introduction**, this traffic assessment examines not only the Proposal itself, but also the potential uplift in the (currently) under-utilised CTCP4 commercial area in which the Site lies; and in the (currently) low density residential areas east of the railway line, and more specifically areas within 800m of Cabramatta Station.

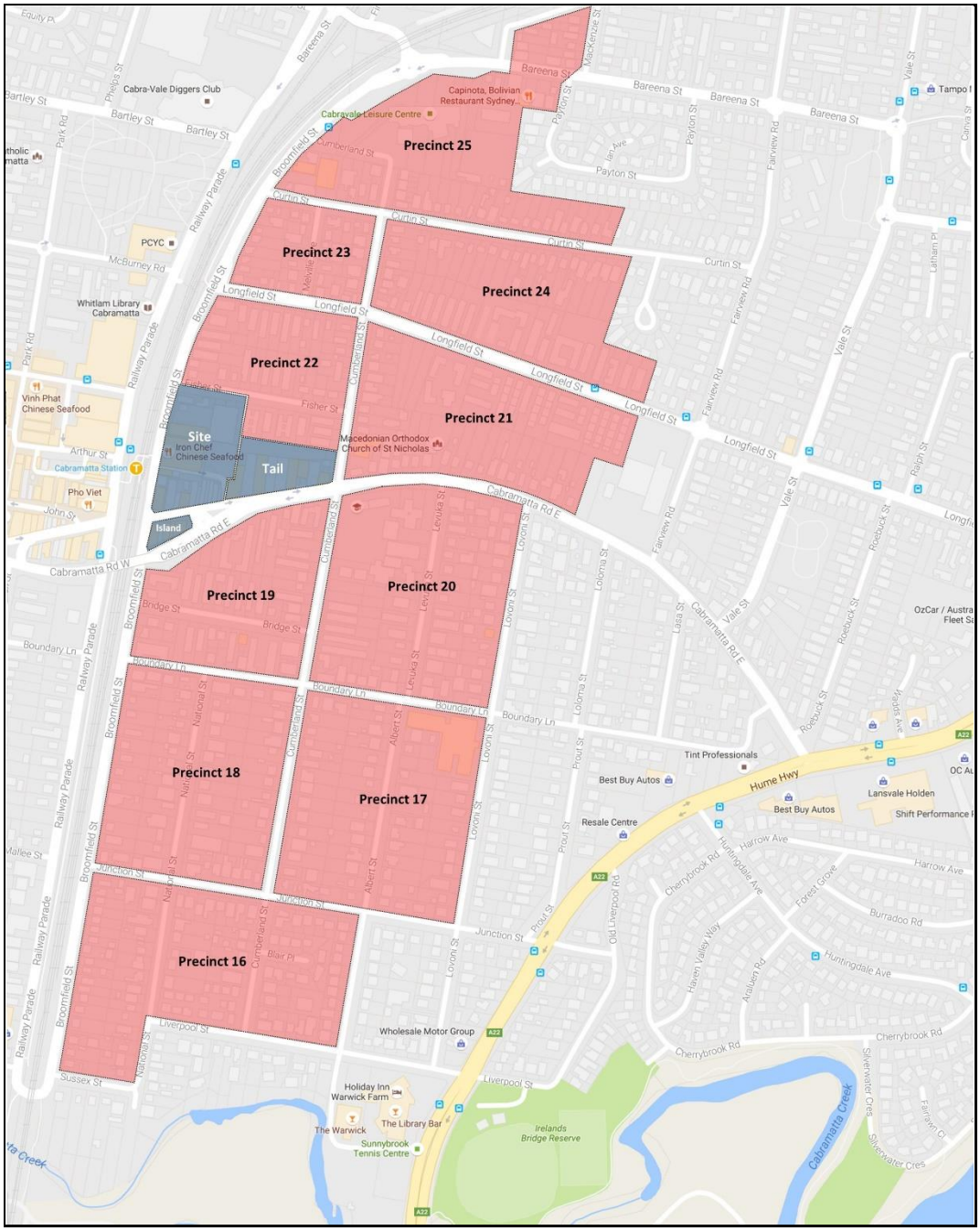
In this regard, GLN Planning has identified a number of 'Precincts' with significant redevelopment potential, which generally align with the (eastern) Precincts previously identified in TMAP 2013 for potential uplift. The identification of these Study Area Precincts allows for further detail to be provided in regard to specific yields across the different parts of the Study Area, which in turn informs the detailed trip generation and trip distribution provided in later sections, noting that the individual Study Area Precincts are essentially designated as travel zones.

Figure 1.2.1 shows the individual sites within CTCP4, while **Figure 1.2.2** shows all of the Study Area Precincts considered in this assessment.

Figure 1.2.1 Cabramatta Town Centre Precinct 4 Sites

Source: Nearmap

Figure 1.2.2 Study Area Precincts

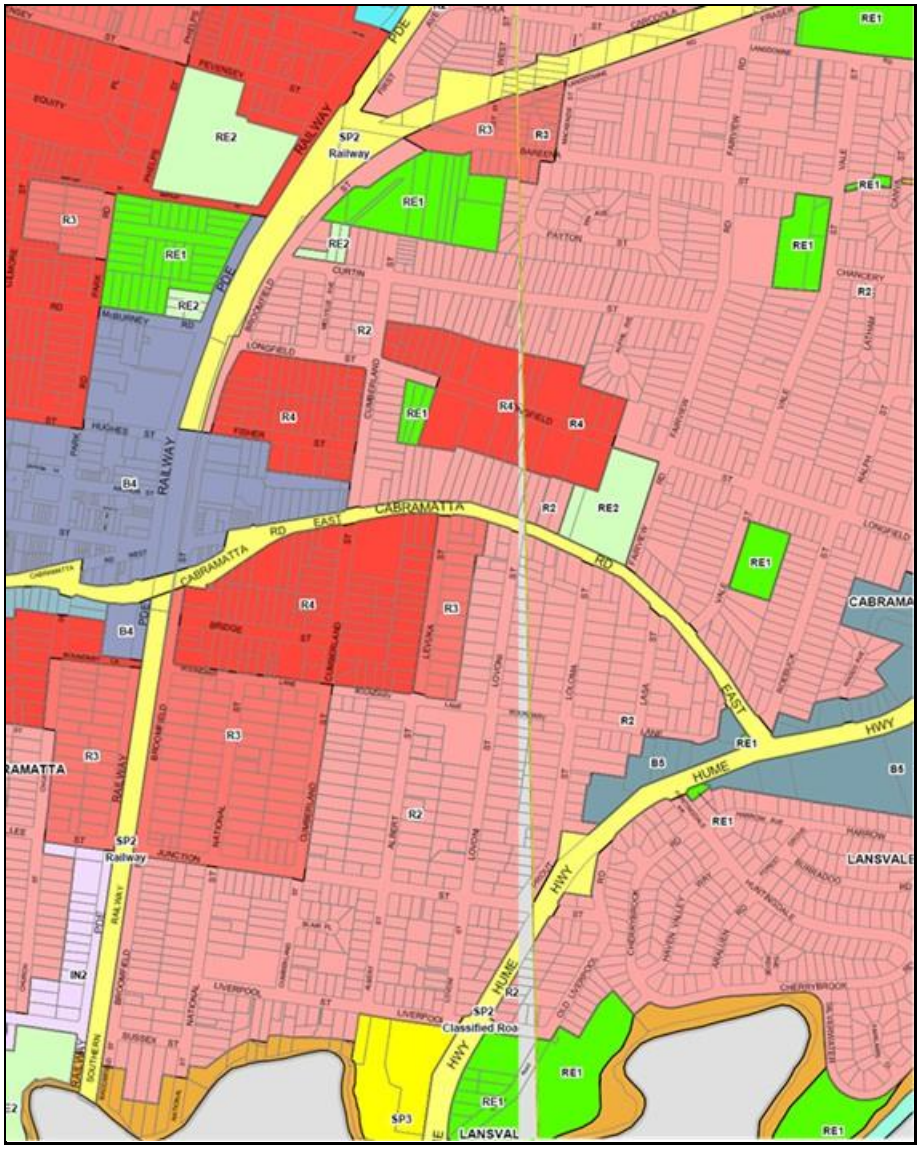


Source: Google, GLN Planning

1.3 Existing Zoning

The majority of the Study Area is zoned residential, including a mix of R2 (low density), R3 (medium density), and R4 (high density); while CTCP4 is zoned B4 (mixed use). Existing zones within the Study Area are shown in **Figure 1.3** below.

Figure 1.3 Existing Study Area Zoning



Source: Fairfield LEP

1.4 Existing Landuses

GLN Planning has prepared detailed information in regard to potential redevelopment across the Study Area, in part based on the methodology previously determined in the TMAP 2013, and further also to Council consultation.

Of key importance in this assessment is the identification of Study Area Precincts (and in some instances individual sites within those Precincts) with a 'realistic' potential for uplift. With regard to CTCP4 (including the Site, Tail and Island) uplift is expected further to increased building heights and FSR changes, and indeed simply through re-energising CTCP4. In the adjacent low density residential Study Area Precincts, the potential exists for the development of high density residential in more immediate proximity to Cabramatta Station (and to the Cabramatta Town Centre), and then medium density residential out to (generally) 800m from Cabramatta Station.

Information in regard to Gross Floor Area (GFA) and Gross Leasable Floor Area (GLFA) within CTCP4, and existing dwelling numbers across the broader Study Area Precincts, has been provided to ARC by GLN Planning as summarised in **Table 1.4** below, noting that some of the Study Area Precincts – and specifically Precincts 19 and 21, which have existing high levels of medium density development and/or particularly fragmented ownership – are not expected to be significantly (if at all) redeveloped in the foreseeable future.

Table 1.4 Study Area Precincts Existing Landuses

Study Area Precincts Existing Landuses	Low Density Residential	Retail	Slow Retail	Commercial	Hotel & Church	Fisher Street Car Park
	Dwellings	GLFA m^2	GLFA m^2	GFA m^2	GFA m^2	Spaces
Site	1	2,441		3,000	2,900	
Tail		851	3,402	3,570		
Island		829		450		
Fisher CP						172
16	88					
17	62					
18	63					
19						
20	30					
21	12					
22						
23	17					
24	32					
25	23					
Total	**328**	**4,121**	**3,402**	**7,020**	**2,900**	**172**

Source: GLN Planning

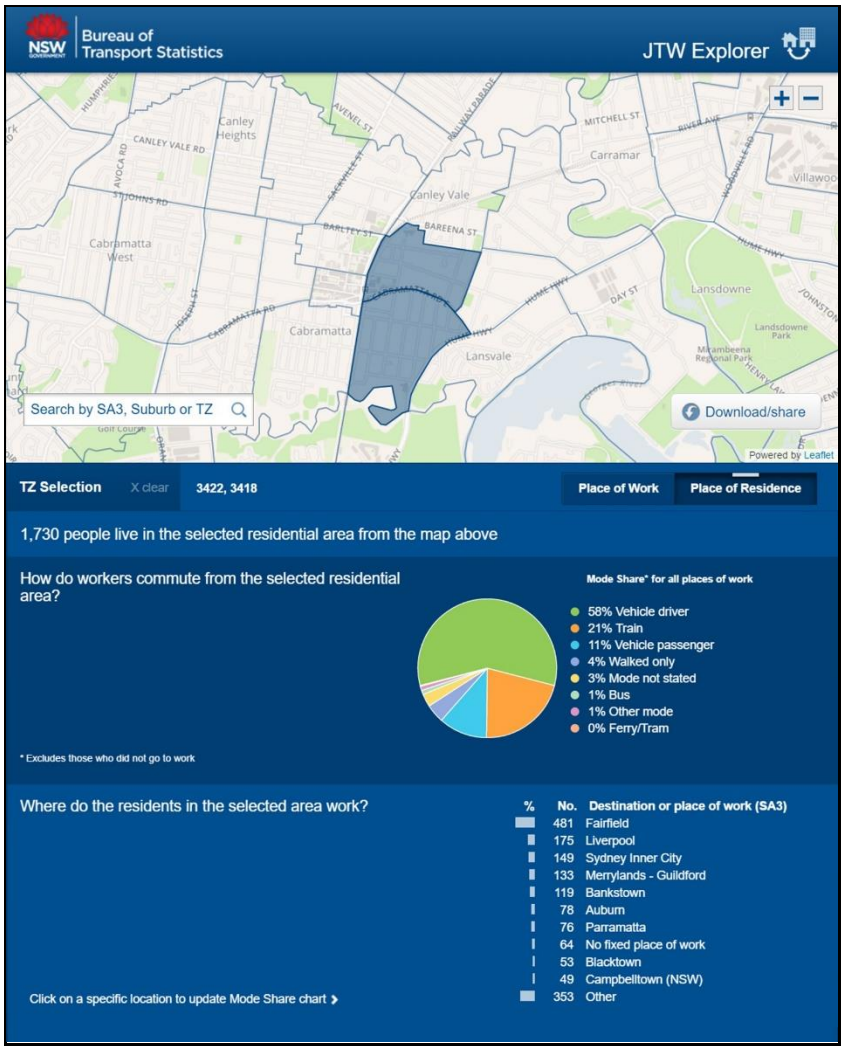
2 Study Area Travel Characteristics

2.1 Residential Travel Characteristics

2.1.1 Journey to Work Travel Mode & Destinations

2011 *Journey to Work* (JTW) data provided by the Bureau of Transport Statistics (BTS) has been reviewed to identify general residential trip characteristics including travel mode and employment destinations. While the JTW data only provides information on one journey purpose (i.e. commuter trips), it consistently provides one of the best indicators of broader peak hour travel characteristics. This review has focused on JTW data for Travel Zones 3418 and 3422, which together encompass the entire Study Area (as well as additional residential areas toward the Hume Highway not examined as part of this assessment). A summary of this data is provided in **Figure 2.1.1**.

Figure 2.1.1 Travel Mode & Destination, Resident Journey to Work Data



Source: BTS

The JTW data indicates a relatively low percentage (58%) of car driver trips (for the journey to work), particularly when it is considered that the majority of the residential population represented by these Travel Zones lies outside of an 800m radius of the Site. Train is the primary non-car mode used (21%).

The JTW data indicates that a high percentage of residents also work within the Fairfield LGA, with other key employment destinations being the adjacent Liverpool LGA, Holroyd LGA and Bankstown LGA.

As previously discussed, while the JTW data provides strong indicators in regard to the existing (and future travel) characteristics within the Study Area, it is important to note that this data relates only to the journey to work; for residents in particular, work trips only comprise a proportion of all (peak period or daily trips), with other key trips including those to educational, service, retail and recreational destinations.

In this regard, the BTS 2011 *Household Travel Survey* (HTS) has also been reviewed. The HTS data similarly indicates that a majority of both discretionary (for example shopping and recreational) trips and non-discretionary trips (for example work and education) trips are within the Fairfield Local Government Area (LGA). This is not surprising; generally, the Study Area residents have excellent and immediate access to all services, either within Cabramatta itself or in the immediate surrounding Fairfield LGA, particularly including access to education, child care and sub-regional centre services at either Cabramatta or Fairfield.

2.1.2 Car Ownership

The HTS indicates that Cabramatta has a higher proportion of dwellings with no car or only 1 car when compared to the broader Sydney Statistical Division (i.e. across Metropolitan Sydney). A breakdown of car ownership is not available at the Travel Zone level, but only at the suburb (Cabramatta) level, which therefore also includes Travel Zones on the western side of the railway line and moreover general low density areas and areas of Cabramatta outside of 800m of Cabramatta Station. A summary of the HTS data is provided below.

Table 2.1.2 Cabramatta Car Ownership

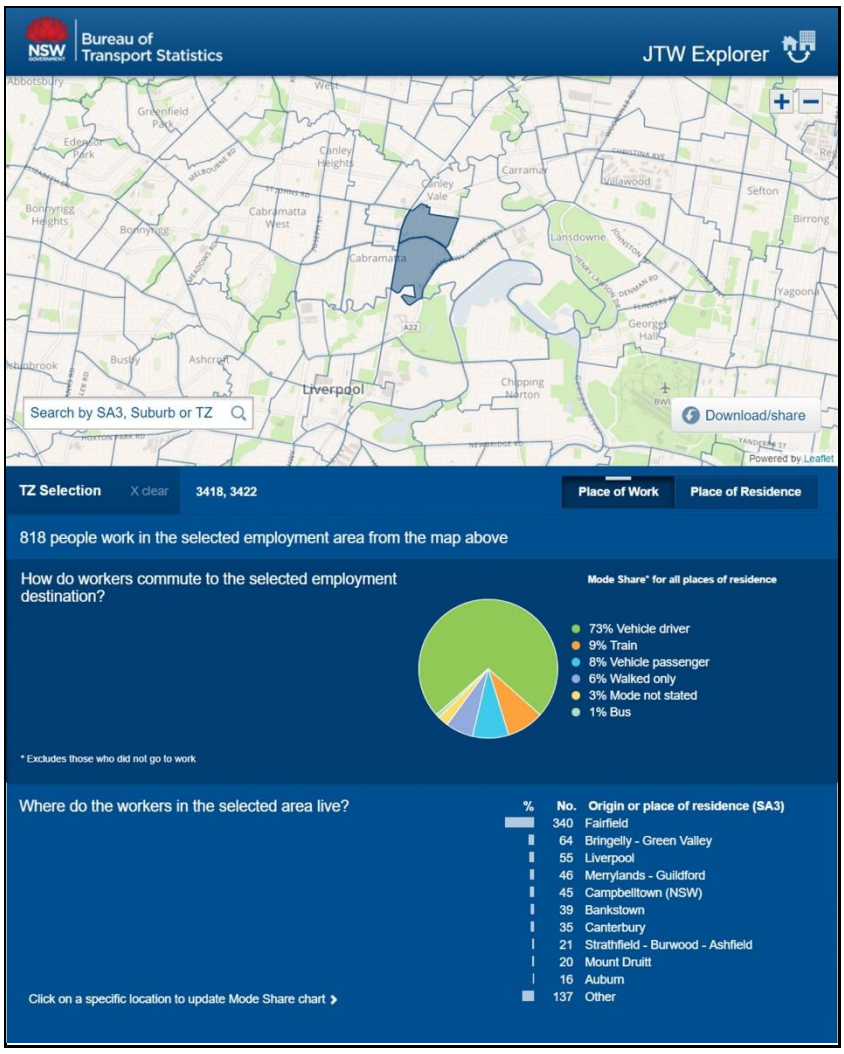
Car ownership							
Cabramatta	2011			2006			Change
Number of cars	Number	%	Fairfield City %	Number	%	Fairfield City %	2006 to 2011
No motor vehicles	1,451	21.6	11.8	1,496	22.5	12.6	-45
1 motor vehicle	2,721	40.5	33.0	2,746	41.2	34.6	-26
2 motor vehicles	1,358	20.2	30.7	1,159	17.4	29.5	+199
3 or more motor vehicles	521	7.7	17.6	419	6.3	14.7	+101
Not stated	676	10.1	6.9	839	12.6	8.6	-163
Total households	**6,725**	**100.0**	**100.0**	**6,659**	**100.0**	**100.0**	**+67**

Source: idcommunity/BTS

2.2 Employee Travel Characteristics

The JTW data for Travel Zones 3418 and 3422 has also been reviewed to determine key employee trip characteristics including travel mode and employee origins. A summary of this data is provided in **Figure 2.2**.

Figure 2.2 Travel Mode & Origin, Employee Journey to Work Data



Source: BTS

The JTW data indicates a relatively high percentage (73%) of car driver trips (for the journey to work), with train again the primary non-car mode used but at only 9% of trips. This in our opinion reflects the availability of on and off-street parking within the Study Area for employees, and moreover a relatively low employment base within the Study Area.

The JTW data indicates that a high percentage of employee also live within the Fairfield, with other employment origins being the adjacent Liverpool LGA and Bankstown LGA. Again, this information tallies with the HTS data.

2.3 Urban Living Index

Urban Taskforce Australia, in association with McCrindle Research, have developed the *Urban Living Index* for suburbs across Metropolitan Sydney that provides a 'rating' for key criteria such as Affordability, Amenity and – of particular relevance to this assessment – Accessibility.

The *Urban Living Index* Accessibility Score is based on the following measures: -

- ***Access to work****: Catching public transport to work is indicative of the accessibility of an area by means other than car.*
- ***Population density****: Higher density areas have greater overall accessibility.*
- ***Walking to work:*** *The proportion of a population who walk to work is an indication of the accessibility their area provides to local employment.*
- ***Transport sustainability****: Households who can get by without a car have greater accessibility overall not only to their workplace but also to other amenities close-by.*

Cabramatta/Lansvale has an Accessibility Score of 15 (out of 20), or 'Excellent' accessibility. This is a significantly high score, reflecting in our opinion the excellent public transport accessibility of the area and transport sustainability. It is noted that there is (at present) only a moderate level of high density residential development in the area, which has a high correlation with the Accessibility Score (and overall *Urban Living Index* rating of an area), as stated in the *Urban Living Index* report: -

The areas of Sydney with the highest Urban Living Index rating correlate closely to the areas with the highest proportion of high density dwellings. These areas congregate around business hubs such as the City of Sydney and have been established such that the infrastructure caters to the needs of these dense populations. Such features include public transport, high number of employing businesses and a high prevalence of retail, food and recreation businesses, all facilitating the liveability and community of these areas.

Given the relatively moderate level of high density residential development in the Cabramatta-Canley Vale area - and noting that the rating is based on the broader Cabramatta-Canley Vale area, the majority of which lies outside of 800m of Cabramatta Station and the Cabramatta Town Centre - it is likely that an Accessibility Score based only on the Study Area (i.e. within 800m of Cabramatta Station) would be even higher than the *Excellent* score provided for the broader Cabramatta-Canley Vale area.

Cabramatta also ranks highly (15/20) in the *Urban Living Index* Amenity Score, which includes consideration of: -

- ***Educational attendance****: The proportion of individuals in attendance at post-school educational institutions indicates high levels of drive and determination, as well as the proximity of higher education institutions to an area.*
- ***Arts and Recreation****: Arts and recreation businesses foster community engagement.*
- ***Restaurants and cafes****: Restaurants and cafes are hubs for community activity and social interaction therefore fostering vibrant communities.*

- ***Shopping****: The ability to shop locally creates greater social cohesion with more opportunities and time for local community connection.*

It is noted that on other measures, Cabramatta currently ranks significantly lower, including Affordability (13/20), Employability (8/20), and – somewhat surprisingly in our opinion – Community (12/20).

Notwithstanding, the Proposal and broader uplift potential in the Study Area Precincts – which would specifically provide for increased residential densities as well as new and revitalised retail, commercial, services and recreational space – in our opinion provides the opportunity to not only take advantage of existing excellent Accessibility and Amenity conditions, but indeed to further increase 'scores' in regard to all of the *Urban Living Index* measures.

2.4 Existing Trip Generation

The trip generation characteristics of the Site and Study Area Precincts are detailed below, noting that the additional development potential provided for by the Proposal (and as forecast for the Study Area Precincts) would result in existing landuses being entirely replaced (by future mixed-use development, and/or high and medium density residential development). As such, it is essential to identify the existing trip generation of the Site and each Study Area Precinct so as to appropriately identify future *additional* flows to the local and sub-regional road network.

2.4.1 Cabramatta Town Centre Precinct 4 Trip Generation

Traffic surveys were conducted at key intersections around the CTCP4 as identified by Council and the RMS, and ARC also undertook observations and spot-surveys across CTPC4 throughout the preparation of this assessment. Based on a review of the traffic surveys (see **Section 4**) and our observations, some of the general trip generation characteristics of CTCP4 include: -

- CTCP4 generates significantly fewer trips than would be estimated with reference to the GTGD Update (or indeed the GTGD), for example based on a standard 'shopping centre' definition. This appears to be a factor of: -
    - The proximity of CTCP4 to the broader Cabramatta Town Centre west of the railway line (and therefore a high number of shared and walk trips).
    - The proximity of CTCP4 to Cabramatta Station and bus interchange (and therefore a high number of public transport trips).
    - The 'local' nature of the existing retail and commercial land-uses.
    - Currently under-utilised individual sites within CTCP4.
    - Land uses with minimal trip generation during the AM or PM peak period.

    It is noted that the Proposal and potential uplift in the adjacent CTCP4 sites is expected to reinvigorate CTCP4 to a large extent, but that many of these trip reduction characteristics are expected to remain in place.

- Further to the identification of shared trips between CTCP4 and the broader Cabramatta Town Centre, there is also a level of shared trips between sites within CTCP4. For example, the general use car park at the rear of the Stardust Hotel is used by Hotel patrons and also by those visiting other sites fronting both Cabramatta Road East and Broomfield Street. Similarly, the Cumberland Street Car Park is used by visitors to sites across CTCP4.

These are of course features of any town centre, and again point to the broader reduction in trips as would otherwise be determined based on an assessment of individual sites.

With reference to the above, the existing trip generation rates of the individual CTCP4 sites is estimated as: -

- **General Retail**
  - 1.0 trips per 100m^2 GLFA in the AM peak
  - 2.0 trips per 100m^2 GLFA in the PM peak

  As previously stated, these rates are generally lower than retail trip generation rates provided in the GTGD Update, to an extent a factor of under-utilisation of retail sites, but also a function of the proximity of the CTCP4 sites to public transport and to the broader Cabramatta Town Centre.

- **Slow Retail**
  - 0.25 trips per 100m^2 GLFA in the AM peak
  - 0.75 trips per 100m^2 GLFA in the PM peak

  These rates – specifically applied to the bulky goods aligned land-uses across the Tail Precinct - are in line with the rates surveyed for similar bulky goods stores in the Land Use Trip Generation and Parking Generation Surveys Bulky Goods / Hardware Stores Analysis Report (Hyder, 2009) upon which the GTGD Update rates are based.

- **Commercial**
  - 1.5 trips per 100m^2 GFA in the AM peak
  - 1.5 trips per 100m^2 GFA in the PM peak

  These rates are generally commensurate with the commercial trip generation rates provided in the GTGD Update, but in the PM peak hour (where they are higher than the GTGD Update rates) account for sites with higher trip generation rates, such as medical offices.

- **Stardust Hotel**
  - 0.1 trips per 100m^2 GFA in the AM peak
  - 1.5 trips per 100m^2 GFA in the PM peak

  The GTGD Update does not provide any comparable rates, but based on our past studies of hotels these rates are generally lower than an average suburban hotel.

- **Church**
  - 0.1 trips per seat in the AM peak
  - 0.1 trips per seat in the PM peak

  The GTGD Update does not provide any comparable rates, but again based on our past studies of churches these rates reflect the very minimal trip generation that occurs during the weekday AM and PM peak periods.

- **Fisher Street Car Park**
  - 60 vph in the AM peak
  - 30 vph in the PM peak

  The trip generation of the Fisher Street Car Park was surveyed in the AM and PM peak periods; while the Proposal would retain public parking (essentially on the same 'site') access options for the future development of the Site may provide for departure trips (from public parking, and/or a redeveloped Fisher Street Car Park) to Cabramatta Road East, i.e. the same departure access currently available from the Hotel Car Park. As such, while the use of the Fisher Street Car Park is not expected to significantly change (as a result of the Proposal) its trip distribution profile might change, and as such its trip generation requires definition.

2.4.2 Residential Precincts Trip Generation

Existing low density residential trip generation can be estimated with reference to the GTGD Update, which provides the following summary low density residential dwelling trip generation rates: -

- **Low Density Residential Dwellings**
  - 0.95 vehicle trips per dwelling in the AM peak hour
  - 0.99 vehicle trips per dwelling in the PM peak hour

It is noted that the GTGD Update references a number of survey sites across western Sydney – including Liverpool – which indicate higher trip generation rates per dwelling than these summary rates in both the AM and PM peak periods. However, based on a review of the traffic survey data (see **Section 2**), consideration of the proximity to and use of public transport by residents (per the JTW data in **Section 1.5**) and the proximity to a range of services within the Cabramatta Town Centre, these summary trip rates are considered appropriate.

2.4.3 Trip Generation Summary

With reference to sections above, the tables below provide a summary of the estimated existing trip generation of the Site and each of the Study Area Precincts. It is again noted that some of the identified Precincts (19 and 21) are not expected to change, and as such the trip generation of these Precincts is assessed (in sections below) simply as existing background traffic.

Table 2.4.3.1 Study Area Precincts Existing AM Peak Hour Trip Generation

Study Area Precincts Existing Trip Generation AM Peak Hour	Low Density	AM Trips	IN	OUT	Commuter	AM Trips	IN	OUT	Retail	AM Trips	IN	OUT	Slow Retail	AM Trips	IN	OUT	Commercial	AM Trips	IN	OUT	Hotel	AM Trips	IN	OUT	Church	AM Trips	IN	OUT	AM TOTAL	IN	OUT
	Dwellings	0.95	20%	80%	Trips	1.00	95%	5%	GLFA m^2	1.00	55%	45%	GLFA m^2	0.25	80%	20%	GFA m^2	1.60	75%	25%	GFA m^2	0.25	90%	10%	Seats	0.10	50%	50%			
Site	1	1	0	1					2,441	24	13	11					3,000	48	36	12	2,000	5	5	1	50	5	3	3	83	57	27
Tail									851	9	5	4	3,402	9	7	2	3,570	57	43	14									74	54	20
Island									829	8	5	4					450	7	5	2									15	10	6
Fisher CP					60	60	57	3																					60	57	3
Precinct 16	88	84	17	67																									84	17	67
Precinct 17	62	59	12	47																									59	12	47
Precinct 18	63	60	12	48																									60	12	48
Precinct 19																															
Precinct 20	30	29	6	23																									29	6	23
Precinct 21	12	11	2	9																									11	2	9
Precinct 22																															
Precinct 23	17	16	3	13																									16	3	13
Precinct 24	32	30	6	24																									30	6	24
Precinct 25	23	22	4	17																									22	4	17
Total	328	312	62	249	60	60	57	3	4,121	41	23	19	3,402	9	7	2	7,020	112	84	28	2,000	5	5	1	50	5	3	3	544	240	304

Table 2.4.3.2 Study Area Precincts Existing PM Peak Hour Trip Generation

Study Area Precincts Existing Trip Generation PM Peak Hour	Low Density	PM Trips	IN	OUT	Commuter	PM Trips	IN	OUT	Retail	PM Trips	IN	OUT	Slow Retail	PM Trips	IN	OUT	Commercial	PM Trips	IN	OUT	Hotel	PM Trips	IN	OUT	Church	PM Trips	IN	OUT	PM TOTAL	IN	OUT
	Dwellings	0.99	80%	20%		1.00	10%	90%	GLFA m^2	2.00	50%	50%	GLFA m^2	0.75	40%	60%	GFA m^2	1.50	25%	75%	GFA m^2	1.50	80%	20%	Seats	0.10	50%	50%			
Site	1	1	1	0					2,441	49	24	24					3,000	45	11	34	2,000	30	24	6	50	5	3	3	130	63	67
Tail									851				3,402	26	10	15	3,570	54	13	40									79	24	55
Island									829	17	8	8					450	7	2	5									23	10	13
Fisher CP					30	30	3	27																					30	3	27
Precinct 16	88	87	70	17																									87	70	17
Precinct 17	62	61	49	12																									61	49	12
Precinct 18	63	62	50	12																									62	50	12
Precinct 19																															
Precinct 20	30	30	24	6																									30	24	6
Precinct 21	12	12	10	2																									12	10	2
Precinct 22																															
Precinct 23	17	17	13	3																									17	13	3
Precinct 24	32	32	25	6																									32	25	6
Precinct 25	23	23	18	5																									23	18	5
Total	328	325	260	65	30	30	3	27	4,121	65	33	33	3,402	26	10	15	7,020	105	26	79	2,000	30	24	6	50	5	3	3	586	359	227

2.5 Existing Trip Distribution

2.5.1 Origin & Destination Distribution

With reference to the available JTW and HTS data, the origin/destination profile for each of the Study Area Precincts used in the trip assignment (see **Section 2.6** below) is shown in **Table 2.5.1** below.

Table 2.5.1 Origin & Destination Profile

Study Area Precincts Origin/Destination Profile	Cabramatta Town Centre Precinct 4 Sites				Residential Precincts									
	Site	Tail	Island	Fisher St Car Park	16	17	18	19	20	21	22	23	24	25
Hume Highway North	20%	20%	20%	15%	30%	30%	30%	30%	30%	30%	30%	30%	30%	30%
Hume Highway South	13%	13%	13%	10%	15%	15%	15%	15%	15%	15%	15%	15%	15%	15%
Cabramatta Road West	23%	23%	23%	25%	20%	20%	20%	20%	20%	20%	20%	20%	20%	20%
Bareena Street	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%	25%
Internal (Study Area)	20%	20%	20%	25%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%

It is noted that a percentage of residential Study Area Precinct trips distributed to both Cabramatta Road West and Bareena Street would essentially comprise local or 'internal' trips to the Cabramatta Town Centre west of the railway.

2.5.2 Arrival & Departure Distribution

The arrival and departure trip distribution profiles for individual landuses in both peak periods are shown in **Table 2.4.3.1** (AM Peak) and **Table 2.4.3.2** (PM Peak) above.

2.6 Existing Trip Assignment

The peak hour trip generation as determined in **Section 2.4** has been assigned to the local road network with regard to the trip distribution profiles outlined in **Section 2.5**. The resulting estimates of existing flows at key intersections generated by the Site, and by the broader Study Area Precincts, are shown in the figures below.

Figure 2.6.1 Planning Proposal Site Existing AM Peak Hour Trips

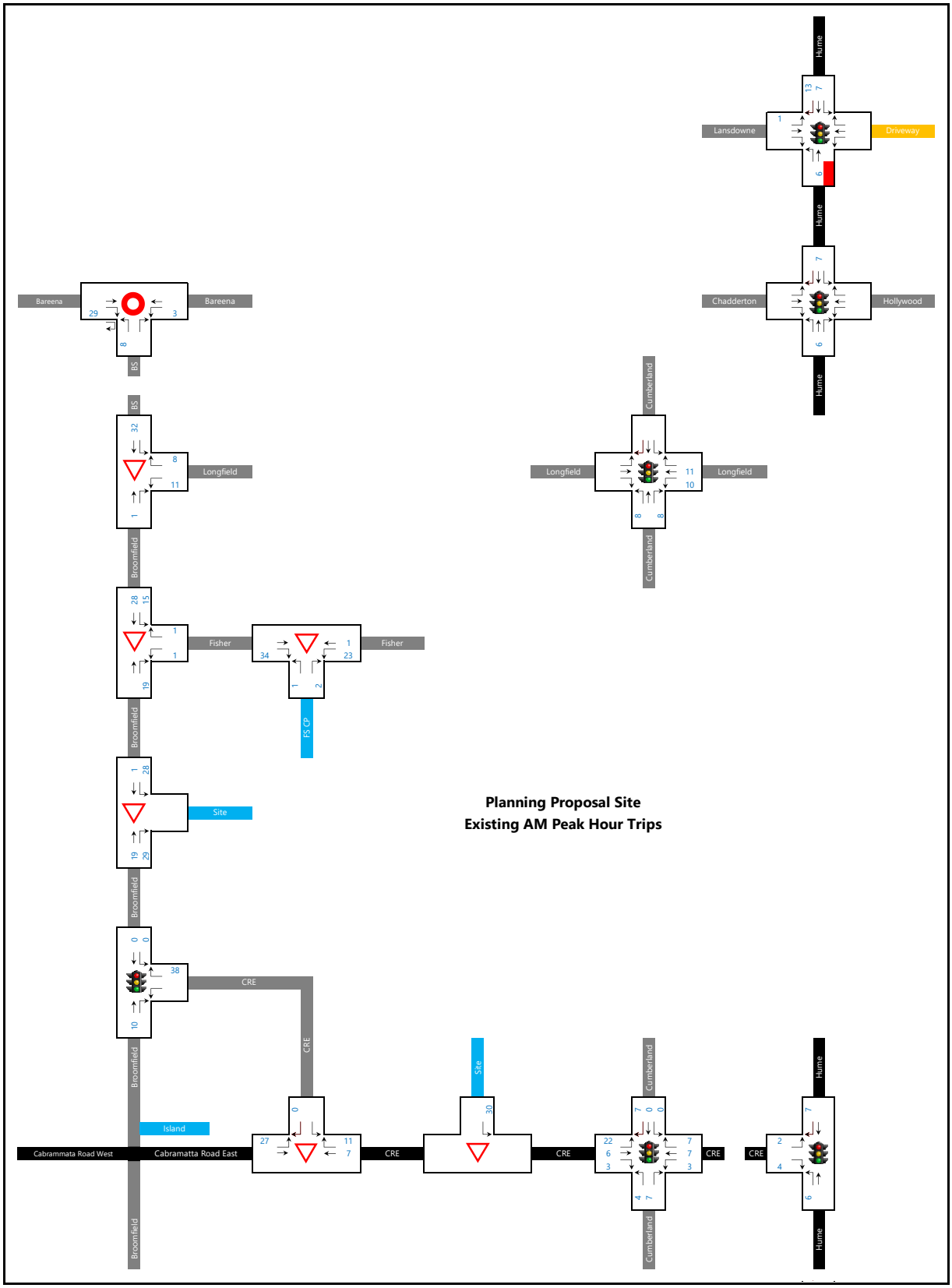


Figure 2.6.2 Planning Proposal Site Existing PM Peak Hour Trips

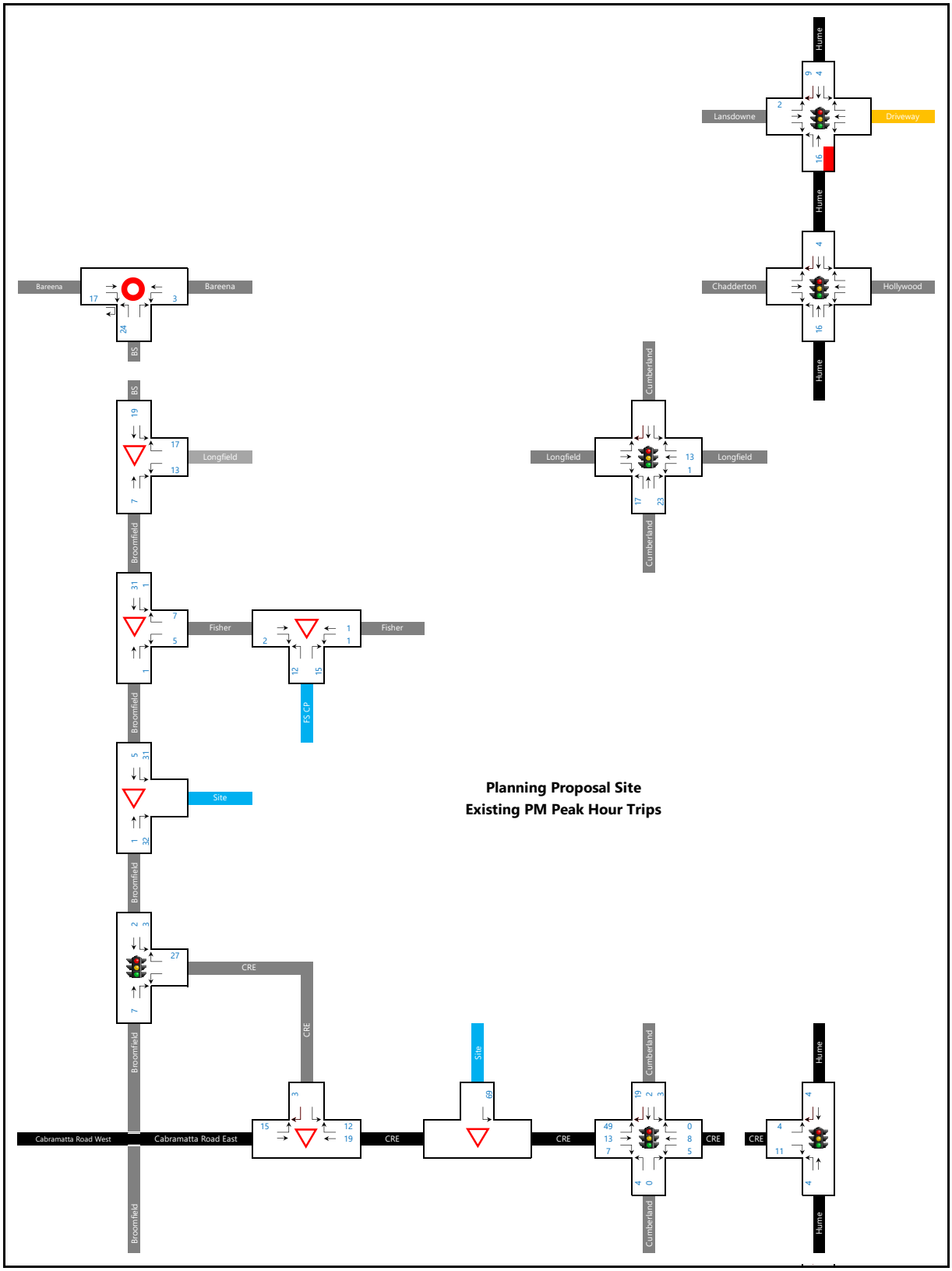


Figure 2.6.3 All Study Area Precincts Existing AM Peak Hour Trips

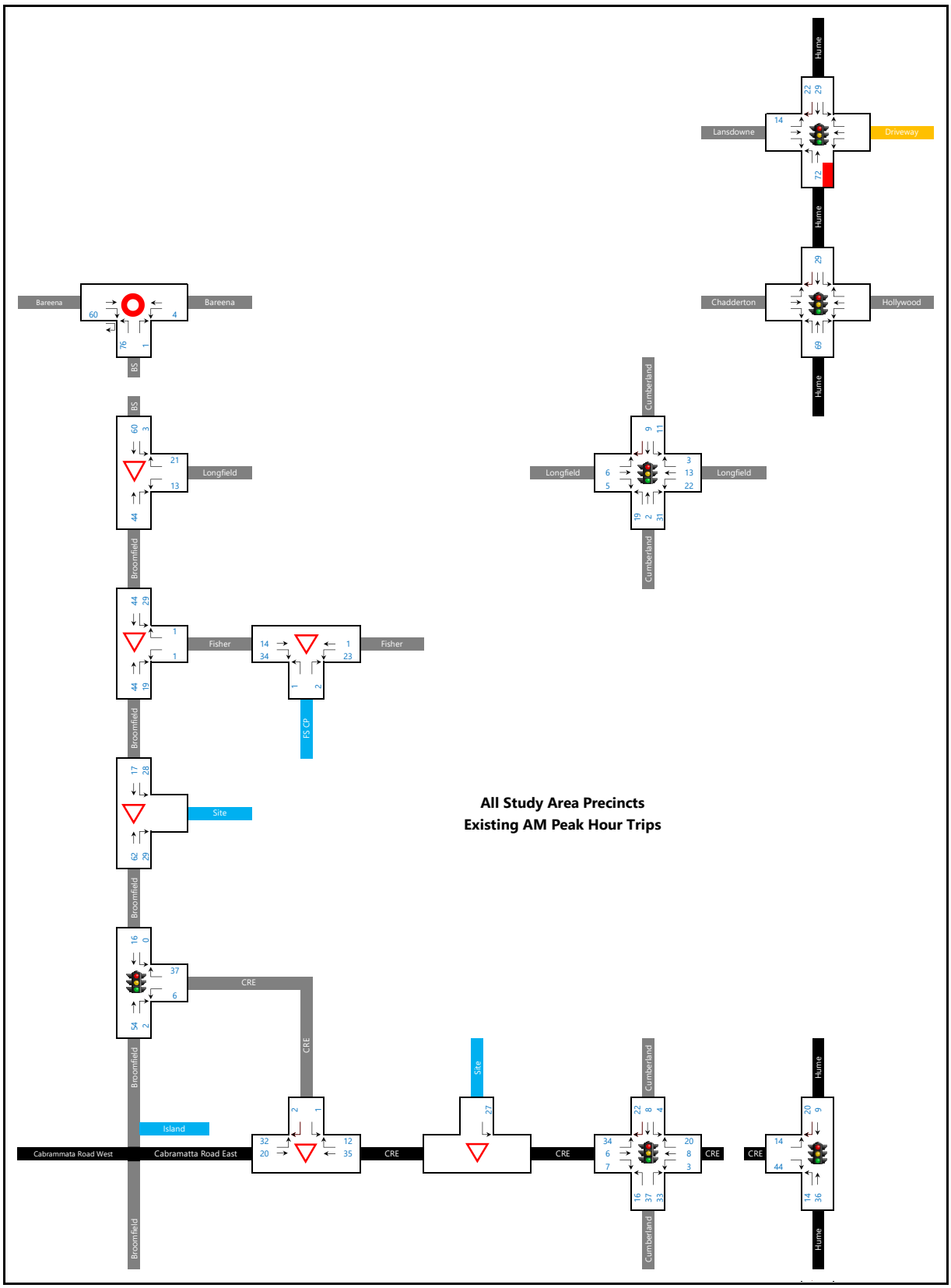
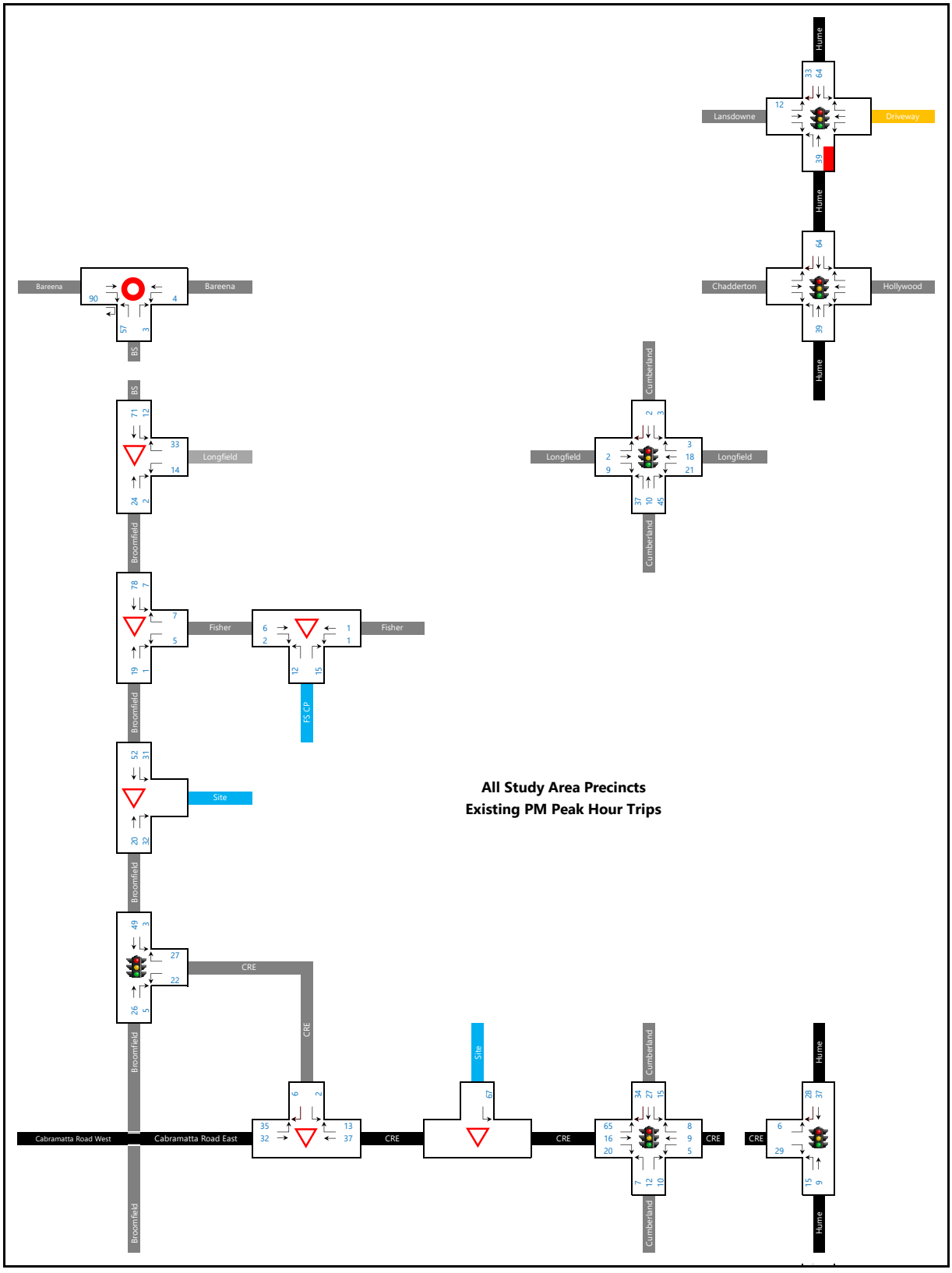


Figure 2.6.4 All Study Area Precincts Existing PM Peak Hour Trips



3 Public & Active Transport

The successful management of the future trip generation of the Proposal and broader uplift in the Study Area Precincts will rely in large part on access to what is already excellent public and active transport infrastructure, and specifically the immediate access to the metropolitan rail network at Cabramatta Station; to the local and sub-regional bus route interchanges at Cabramatta Station; and to the local pedestrian and cycle network, including the existing off-road cycleway (the 'Rail Trail') along Broomfield Street.

The public and active transport opportunities available to the Site and indeed to all Study Area Precincts are examined in sections below.

3.1 Rail

3.1.1 Proximity to Cabramatta Station

All of the CTCP4 sites are located within 400m of Cabramatta Station, while the entire Study Area essentially lies within 800m of Cabramatta Station. These two key 'Ped-Shed' distances are shown in **Figure 3.1.1**.

Figure 3.1.1 Cabramatta Station Ped-Shed

Source: Google

Clearly, all precincts have excellent and immediate access to Cabramatta Station, and of course excellent and immediate access also to bus services (at Cabramatta Station) and more broadly the Cabramatta Town Centre (west of the railway).

3.1.2 Existing Rail Services

The Site is located directly adjacent to Cabramatta Station, which is located on the (T2) Main South Line, but is also serviced by the T3 Bankstown Line and T5 Cumberland Line, making Cabramatta one of the best serviced centres in south-western Sydney, and indeed in Metropolitan Sydney, providing access to every other station in the network either directly or via a maximum of 1 interchange.

The frequency of services varies across the three lines, but in the peak periods: -

- Trains are scheduled every 10 – 15 minutes on the T2 line, providing direct access to key centres such as Campbelltown, Granville, Strathfield, Burwood and then Sydney City (Redfern, Central, Town Hall, Wynyard and City Circle)
- Trains are scheduled every 20 – 30 minutes on the T3 line, providing direct access to key centres such as Liverpool, Bankstown, Tempe and Sydney City
- Trains are scheduled every 30 minutes on the T5 line, providing direct access to key centres such as Campbelltown, Liverpool, Merrylands, Parramatta, Westmead and Blacktown

The Sydney Trains Network is shown in **Figure 3.1.2**.

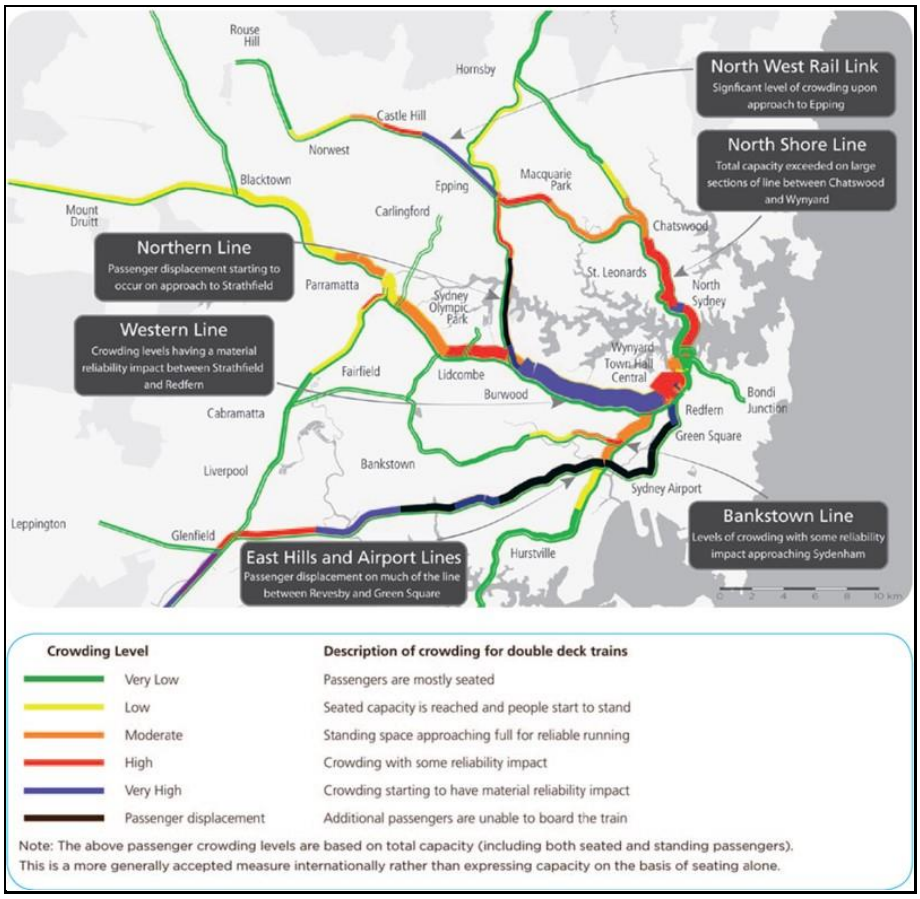
Figure 3.1.2 Sydney Trains Network

Source: Transport Sydney Trains

3.1.3 Future Rail Network

Transport for NSW's *Sydney's Rail Future* acknowledges capacity constraints within the existing rail network, and indeed by 2031 if major capacity improvements are not made, the CBD, Western, Northern, North Shore, Bankstown, East Hills and Airport lines and North-West Rail Link will reach crowding levels during the morning peak period that are deemed 'high' or above. Cabramatta Station however (based on the available capacity of the three lines) has a 'very low' crowding level allowing the majority of passengers to be seated.

3.1.3 2031 Network Performance Forecast



Source: Sydney's Rail Future

In response to constraints elsewhere in the rail network, a range of network improvements and enhancements are proposed in *Sydney's Rail Future*, the key components of which include: -

- Operational efficiencies, including timetable revisions, platform access and incident response management.
- Network efficiencies, including the completion of the South West Rail Links, station upgrades, automatic train operations, dedicated fleet types and additional track infrastructure.
- Implementation of a new rapid transport system, including more efficient services on existing lines and the completion and integration of the North-West Rail Line with the existing Epping to Chatswood.

- A second Sydney Harbour crossing and new CBD rail line, providing direct access from the North-West Rail Line into the Sydney CBD and as importantly freeing up significant capacity within the broader rail network.
- Extension of new single deck services to Bankstown and Hurstville and broader capacity improvements within the southern rail network.

With specific reference to Cabramatta, the conversion of the Bankstown Line (from Bankstown) to a Rapid Transit line would provide an alternative to the existing Sydney City direct services; while requiring an interchange at Bankstown, the frequency of these new rapid services and the extension of direct services through to Chatswood provides significant opportunities for high standard access to commercial centres north of Sydney City.

In addition, connections between Liverpool and Parramatta (through Cabramatta and Fairfield) will be improved not only during peak period but across the day, with a fleet of new trains providing greater reliability and efficiency to these key (for Cabramatta) employment and service centres.

In summary, the Site and all Study Area Precincts are ideally located to take advantage of what are already excellent rail services, services which will only be further enhanced in the future and provide efficient and direct access between Cabramatta Station and the entire Sydney Metropolitan area.

3.2 Bus Services

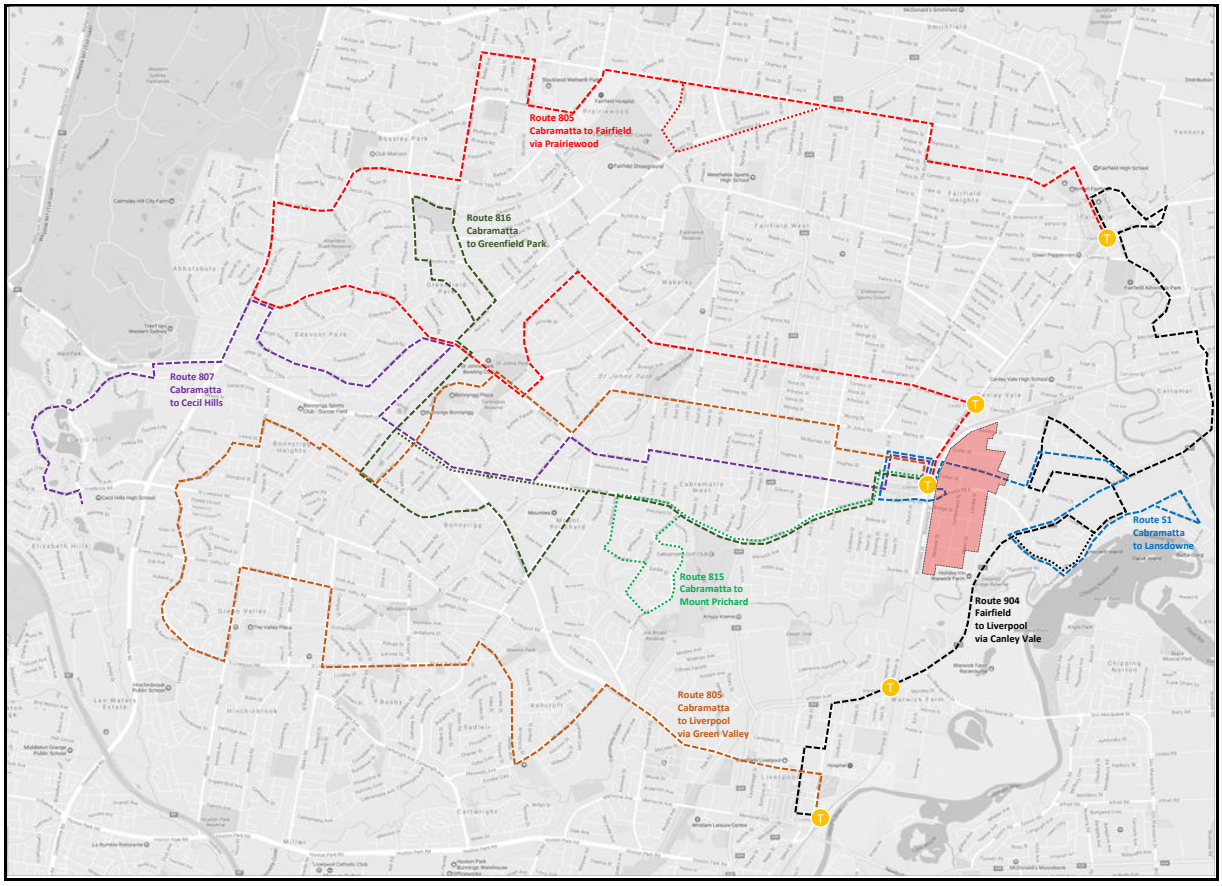
3.2.1 Existing Bus Services

Bus services within Bus Region 3 (in which the Study Area lies) are operated by Transit Systems and Transdev, and include the following routes: -

- Route 805: Cabramatta to Liverpool via Green Valley (15 to 30-minute headway during peak periods)
- Route 807: Cabramatta to Cecil Hills via Edensor Park (30-minute headway during peak periods)
- Route 815: Cabramatta to Mount Pritchard (60-minute headway across the day)
- Route 816: Cabramatta to Greenfield Park via Bonnyrigg (30-minute headway during peak periods)
- Route 904: Fairfield to Liverpool via Canley Vale (30 to 40-minute headway during peak periods)
- Route S1: Cabramatta to Lansvale (60-minute headway across the day)

These existing services are shown in **Figure 3.2.1** below.

Figure 3.2 Existing Bus Services



Source: Transit Systems, Transdev

With the exception of the Route 904 and Route 61 services, all buses utilise the bus stops on the western side of Cabramatta Station. The Route S1 service utilises the bus stops on the eastern side of Cabramatta Station (Broomfield Street) while the Route 904 service operates along Vale Street and Longfield Street immediate east of the Study Area.

3.2.2 Future Bus Services

With reference to **Section 3.1**, the proximity and efficiency of Cabramatta Station to future Study Area residents and workers means that bus services are likely to play a secondary role (to rail) in providing with regard to public transport. Notwithstanding, the importance of such routes for access to local and sub-regional services, recreational areas and of course for many, between home and work, should not be understated given the significant proportion of trips that are contained within the Fairfield LGA. As such, improvements detailed in Transport for NSW's *Sydney's Bus Future* which will further increase public transport opportunities include: -

- A new suburban route from Bankstown to Prairiewood via Fairfield and – perhaps most important – via Wetherill Park and the Greystanes Employment Area, both of which are expected to remain significant employment centres for future residents. Public transport services to the Greystanes Employment Area are particularly poor at present, requiring numerous interchanges, whereas further to this new route a single change (at Fairfield) would be required.

- More generally, the expansion and upgrade of suburban services radiating from the key sub-regional centres (such as Liverpool and Parramatta) again reducing the requirement for multiple transport mode interchanges to access all parts of the Sydney Metropolitan area.

In summary, the Site and all Study Area Precincts are ideally located to take advantage of what are already excellent local and sub-regional bus services, which offer a viable public transport option for key suburban trips within the Fairfield LGA and sub-region.

3.3 Pedestrian & Cycle Infrastructure

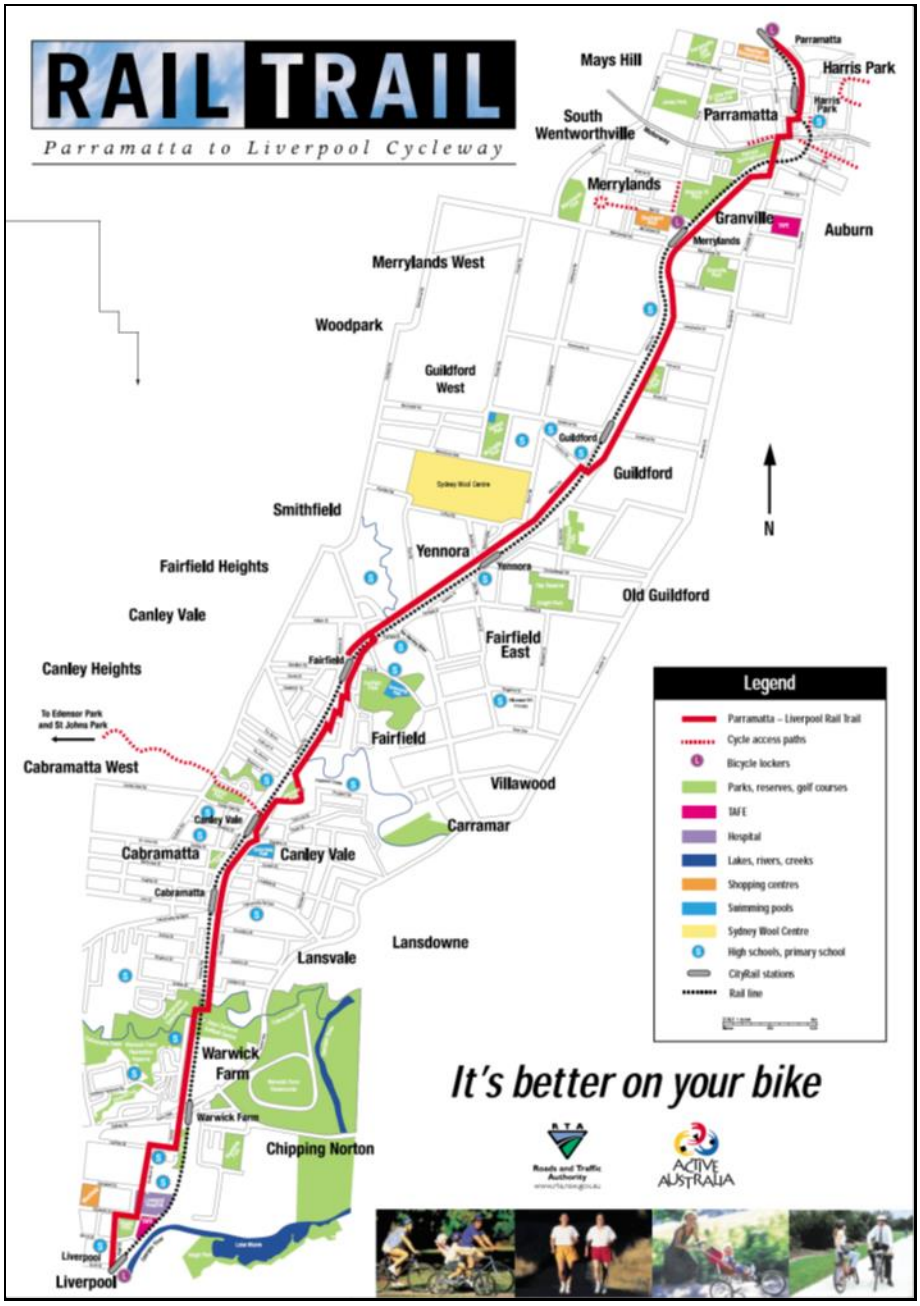
3.3.1 Existing Pedestrian & Cycling Infrastructure

The Parramatta to Liverpool Cycleway (Rail Trail) runs parallel to the T5 railway line from Parramatta through to Liverpool, and in the vicinity of the Study Area runs along Broomfield Street (from Bareena Avenue through Liverpool Street) directly adjacent to the Site. The Parramatta to Liverpool Cycleway provides an off-road cycleway for use both cyclists and pedestrians, and offers trips times of some 30 to 35-minutes to/from Parramatta, and less than 20-minutes to/from Liverpool.

Immediately north of Cabramatta, the Parramatta to Liverpool Cycleway connects to the Regional Cycleway running along Orphan School Creek west to the Western Sydney Parklands. North of Fairfield, the Parramatta to Liverpool Cycleway connects to the Regional Cycleway running along Prospect Creek west to Wetherill Park and then north to Blacktown.

The route of the Parramatta to Liverpool Cycleway is shown in **Figure 3.3.1.1**, while additional sub-regional cycle infrastructure is shown in **Figure 3.3.1.2**.

Figure 3.3.1.1 Parramatta to Liverpool Cycleway



Source: RTA, Active Australia

Figure 3.3.1.2 Sub-Regional Cycle Infrastructure

Source: Fairfield City Council

Within the Study Area, sub-regional (Cabramatta Road East) and local roads generally provide footpaths on at least one side of the road, while signalised crossing points are provided within the CTCP4 at the intersections of Cabramatta Road East & Broomfield Street, and Cabramatta Road East & Cumberland Street. Local roads are also generally 'cycle friendly' as a function of low traffic flows.

The Cabramatta Station pedestrian overbridge (including accessible facilities) also provides an essential link between CTCP4 (and surrounding Precincts east of the railway line) with the Cabramatta Town Centre west of the railway line.

3.3.2 Future Walking & Cycling Infrastructure

As described above, an excellent level of cycle and pedestrian infrastructure is already available to the Study Area for both local and sub-regional access, as well as for access to and through Cabramatta itself. Notwithstanding, the Proposal provides the potential for further improvements, including: -

- A new pedestrian overbridge connecting a podium level within the Site to the existing Cabramatta Station pedestrian overbridge.
- New 'internal' pedestrian connections through the Site (at ground level) and specifically between Broomfield Street and Fisher Street.
- Local footpath and pavement improvements.

- Additional ancillary cycling facilities such as cycle parking/lockers.

In summary, the Site and Study Area Precincts are ideally located to take advantage of what is an already excellent level of cycle and pedestrian infrastructure, while additional augmentation of the cycle/pedestrian network would even further enhance access to key local and indeed sub-regional origins/destinations.

4 Road Network

4.1 Road Classification

The RMS and AustRoads provide guidance in regard to the classification of roads so as to appropriately determine the road hierarchy and allows for an assessment of (potential impacts associated with) traffic flow changes within the context of that hierarchy. The RMS Network Planning Practice Notes (2008) provides the following general classifications relevant to the road network providing for the Site: -

- An Arterial Road will typically have traffic volumes of over 15,000 vehicles per day (or over 1,500 vehicles per peak hour) and provide major inter-regional linkages.
- A Sub-Arterial Road will typically have traffic volumes of between 5,000vpd and 20,000vpd (or 500vph – 2,000vph) and provide secondary inter-regional linkages.
- A Collector Road will typically have traffic volumes of between 2,000vpd and 10,000vpd (or 200vph – 1,000vph) and provide the link between local roads and regional (Arterial/Sub-Arterial) roads.
- A Local Road will typically have traffic volumes of less than 2,000vpd (or less than 200vph) and provide direct access from local areas to the collector, sub-arterial or arterial road network.

4.2 Key Roads

4.2.1 Cabramatta Road (East and West)

Cabramatta Road is a State (Arterial) Road and provides key east-west arterial connectivity between the Hume Highway to the east and the Cumberland Highway to the west (and then further west via Cabramatta Road West to the M7 and Cecil Park). Within the Study Area, Cabramatta Road East generally provides 4 traffic lanes (2 lanes per direction) with clearway restrictions during peak periods, and additional approach lane infrastructure at key intersections (see **Section 4.3** below). Cabramatta Road East has a posted speed limit of 60km/h, with school zone speed restrictions in operation east and west of Cumberland Street in the vicinity of Cabramatta Public School.

4.2.2 Hume Highway

The Hume Highway is a State (Arterial) Road and provides sub-regional access throughout south-west Sydney between Parramatta Road at Ashfield and the M7, M5 and Campbelltown Road interchanges to the south. East of the Study Area, the Hume Highway generally provides 6 traffic lanes (3 lanes per direction) with clearway restrictions and significant additional lane infrastructure at key intersections (see **Section 4.3** below). The Hume Highway has a posted speed limit of 70km/h.

4.2.3 Cumberland Street

Cumberland Street is a collector road which runs north-south through the Study Area from Curtin Street in the north to Liverpool Street in the south. Cumberland Street provides 2 traffic lanes (1 lane per direction) and additional kerbside lanes which are generally utilised for on-street parking and to provide additional approach capacity at its signalised intersections with Cabramatta Road East, and with Longfield Street. Cumberland Street has a posted speed limit of 50km/h, with additional school zone speed limits in the vicinity of Cabramatta Public School.

4.2.4 Longfield Street

Longfield Street is a collector road which runs east-west between the Hume Highway in the east and Broomfield Street in the west. Longfield Street provides 2 traffic lanes (1 lane per direction) and additional kerbside lanes which are generally utilised for on-street parking and bus zones, as well as to provide additional approach capacity at the signalised intersection with Cumberland Street. Longfield Street has a posted speed limit of 50km/h.

4.2.5 Broomfield Street

Broomfield Street is a collector road which runs parallel to and east of the railway line from Bareena Street in the north to Sussex Street in the south. Broomfield Street provides 2 traffic lanes (1 lane per direction) and additional kerbside lanes which are generally utilised for on-street parking, bus zones (particularly in the vicinity of Cabramatta Station) as well as to provide additional approach capacity at the signalised intersection with Cabramatta Road East. Broomfield Street has a posted speed limit of 50km/h, with a reduced 40km/h High Pedestrian Activity Area speed limit in the vicinity of Cabramatta Station.

4.2.6 Lansdowne Road

Lansdowne Road is a collector road which runs generally east-west from the Hume Highway to Bareena Street, but is also accessible through the area north-east of Cabramatta East via Chancery Street and Vale Street. Lansdowne Road provides 2 traffic lanes (1 lane per direction) and additional kerbside lanes which are generally utilised for on-street parking and bus zones, as well as to provide additional approach capacity at the signalised intersection with Hume Highway. Lansdowne Road has a posted speed limit of 50km/h.

4.2.7 Bareena Street

Bareena Street is a collector road which runs generally east-west from Vale Street to Broomfield Street and then Railway Parade, providing an important crossing of the railway line. East of Broomfield Street, Bareena Street provides 2 traffic lanes (1 lane per direction) and additional kerbside lanes which are generally utilised for on-street parking. Bareena Street has a posted speed limit of 50km/h.

4.2.8 Fisher Street

Fisher Street is a local road running east-west between Cumberland Street and Broomfield Street. Fisher Street provides 2 traffic lanes (1 lane per direction) and additional kerbside lanes which are generally utilised for on-street parking. Fisher Street has a posted speed limit of 50km/h.

4.2.9 Local Streets

A number of local streets within and adjacent to the Study Area provide key access to the primary collector and sub-regional routes (as described above) and form part of local access routes for residents. North of Cabramatta Road East, Longfield Street, Ralph Street and Chadderton Street provide alternative access routes to the Hume Highway, as does Vale Street and Chancery Street to the intersection of Hume Highway & Lansdowne Road.

South of Cabramatta Road East, local roads including Boundary Lane, Junction Street and Liverpool Street provided east-west connectivity between Hume Highway and Broomfield Street. North-west connecting local roads, including Levuka Street/Albert Street, Lovoni Street and Loloma Street, all provide access to and from these local areas to Cabramatta Road East.

Broadly, these local roads provide 2 traffic lanes (1 lane per direction) and additional kerbside lanes which are generally utilised for on-street parking.

4.3 Key Intersections

4.3.1 Sub-Regional Intersections

Sub-regional intersections which would potentially be impacted by the Proposal and broader uplift within the Study Area Precincts are primarily located along the Hume Highway and Cabramatta Road East. Further to consultation (and agreement) with Council and the RMS, the following key sub-regional intersections have been identified for detailed analysis: -

- Hume Highway & Lansdowne Road (Signalised)
- Hume Highway & Hollywood Drive & Chadderton Road (Signalised)
- Hume Highway & Cabramatta Road East (Signalised)
- Cabramatta Road East & Cumberland Street (Signalised)

4.3.2 Local Intersections

Local intersections within the Study Area generally provide the access between the commercial and residential precincts and the key sub-regional intersections/road network. Further to consultation (and agreement) with Council and the RMS the following local intersections have been identified for detailed analysis: -

- Cabramatta Road East & Cabramatta Road East (Priority)
- Cabramatta Road East & Broomfield Street (Signalised)
- Broomfield Street & Longfield Street (Priority)
- Broomfield Street & Bareena Avenue (Roundabout)
- Cumberland Street & Longfield Street (Signalised)

The majority of other local intersections north and south of Cabramatta Road East operate as simple priority intersections, generally with priority to the key north-south routes such as Vale Street (north of Cabramatta Road East) and Cumberland Street and Broomfield Street (south of Cabramatta Road East).

For the local road intersections to Cabramatta Road East: -

- The intersections of Roebuck Street, Vale Street, Lasa Street and Loloma Street provide left in/left out only access.
- The intersection of Fairview Street provides a channelised right turn Cabramatta Road East to Fairview Street but no right turn Fairview Street to Cabramatta Road East.
- The intersection of Lovoni Street provides all movements, including a channelised right turn Cabramatta Road East to Lovoni Street.
- The intersections of Boundary Lane and Levuka Street provide for all movements.

For the local intersections to Hume Highway: -

- The intersection of Junction Street provides left in/left out only access.
- The intersection of Liverpool Street provides a channelised right turn Hume Highway to Liverpool Street, but no right turn Liverpool Street to Hume Highway.

4.4 Existing Traffic Flows

4.4.1 Traffic Count Data

ARC commissioned peak period traffic surveys at each of the key intersections as identified by Council and the RMS (as detailed in sections above). The surveys were conducted in November 2016 by Matrix Traffic & Transport Data, and are attached as **Appendix A** in electronic format.

4.4.2 2016 Peak Period Traffic Flows

With reference to the traffic surveys in **Appendix A**, 2016 peak period traffic flows are provided in the figures below, with the selected peak hours for assessment based on the peak hours identified along the Hume Highway, though it is noted that peak hours are generally consistent across all key intersections, and that there is no evidence of any significant inter-peak periods (within the peak hours).

Figure 4.4.2.1 2016 AM Peak Hour (7:45am – 8:45am) Traffic Flows

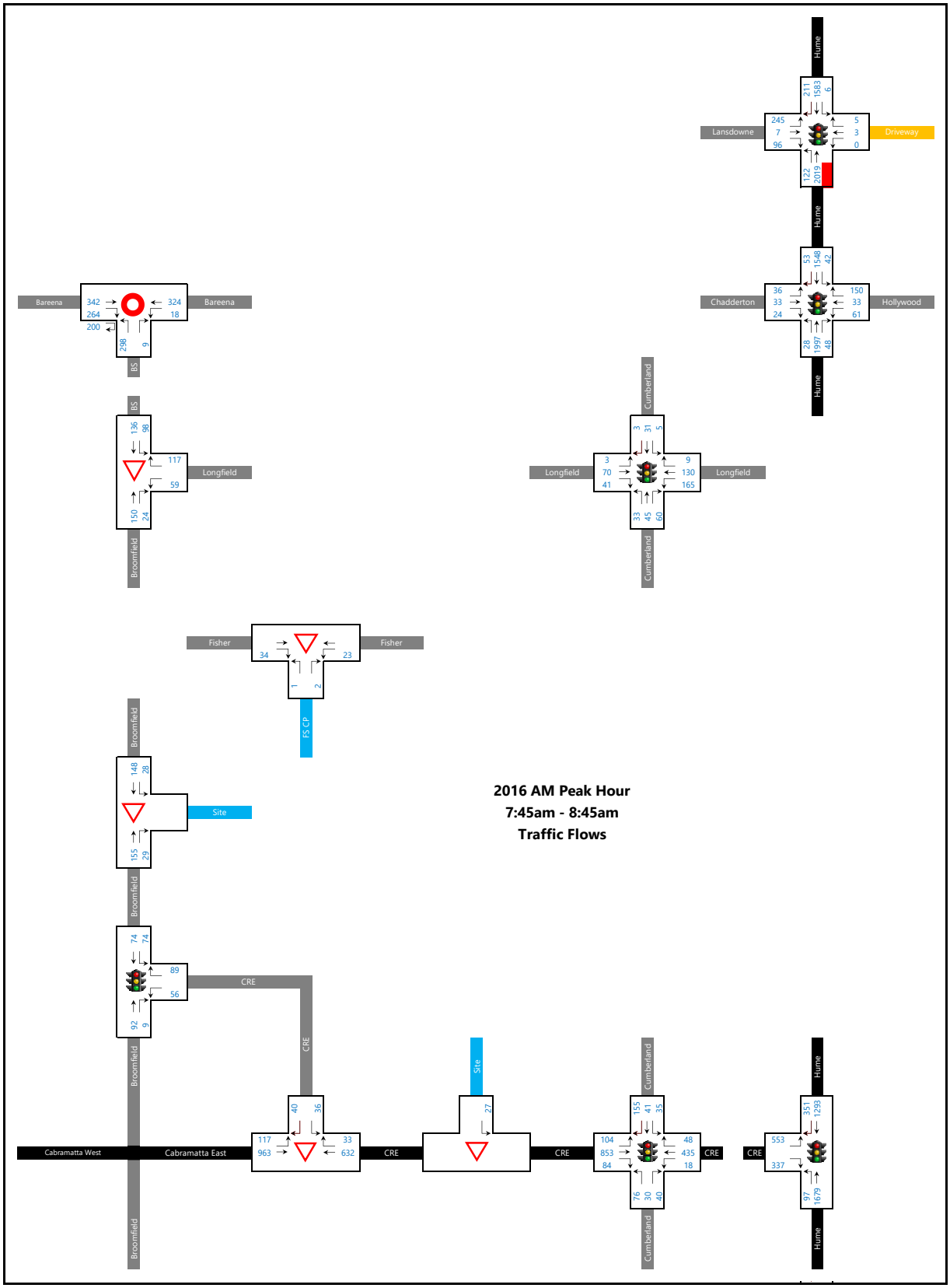
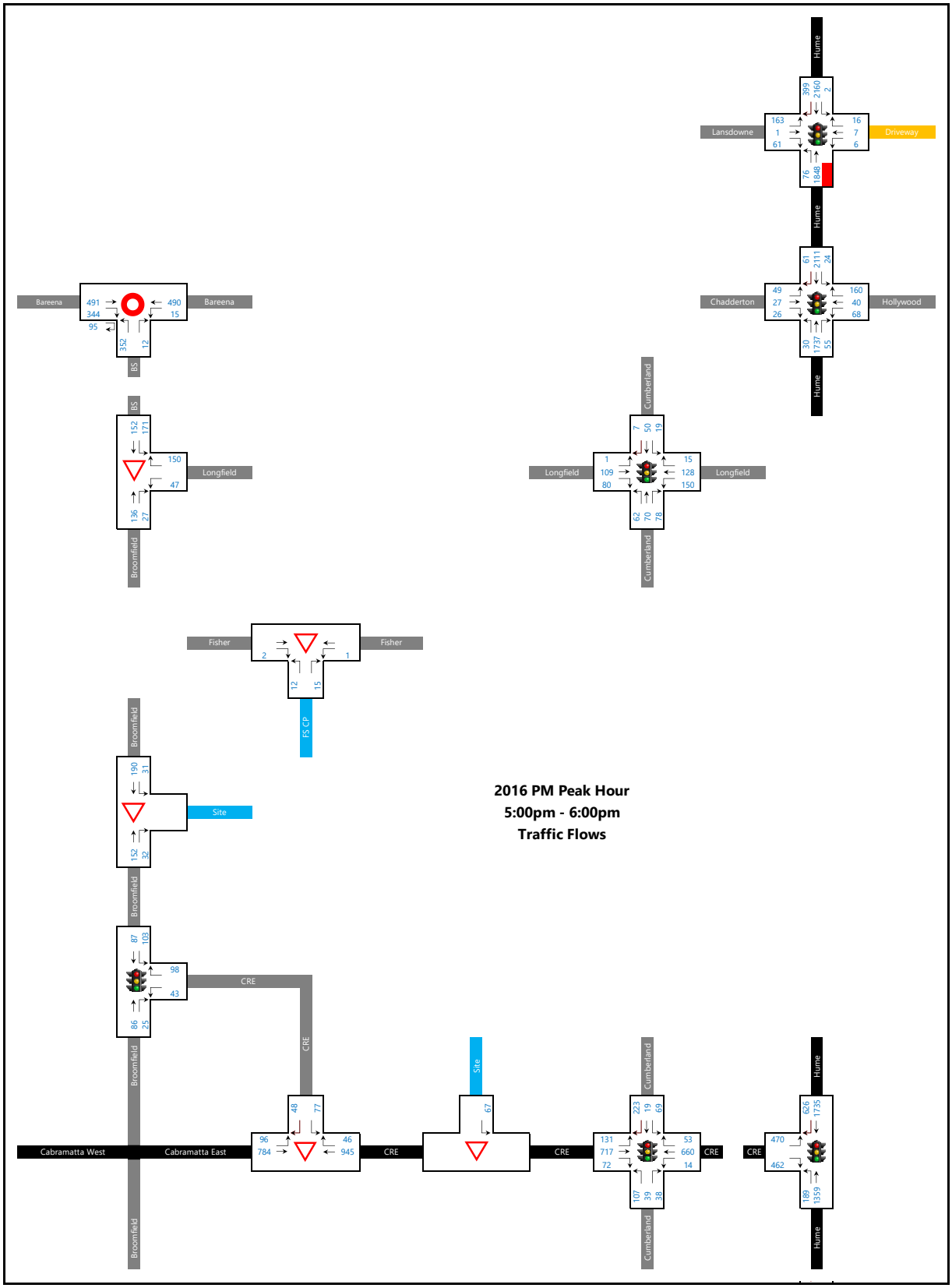


Figure 4.4.2.2 2016 PM Peak Hour (5:00pm – 6:00pm)



4.5 Future Traffic Flows

4.5.1 Average Annual Growth

ARC has examined background traffic growth with reference to the EMME Strategic Traffic Forecasting Model outputs provided to ARC by the RMS, with resulting estimates of annual growth (2016 – 2031) in key roads provided in **Table 4.5.1**.

Table 4.5.1 Average Annual Growth Rates

Forecast Average Annual Growth Rates	AM Peak Period		PM Peak Period	
	North/East	South/West	North/East	South/West
Hume Highway	0.6%	1.0%	0.8%	0.5%
Cabramatta Road East	0.7%	2.4%	1.4%	1.5%
Lansdowne Road	0.5%	0.5%	0.8%	0.5%
Bareena Street	0.5%	1.0%	0.6%	0.8%
Broomfield Street	1.0%	0.8%	1.5%	0.1%

Source: RMS

All other local roads (and specifically Cumberland Street and Longfield Street) are estimated to have only very minor annual growth.

4.5.2 2031 Base Flows

With reference to the 2016 traffic surveys detailed in **Section 4.4.2** and the average growth rates in **Table 4.5.1** above, base traffic flows for a forecast year 2031 have been developed, and are provided in the figures below.

Figure 4.5.2.1 2031 AM Peak Hour Base Flows

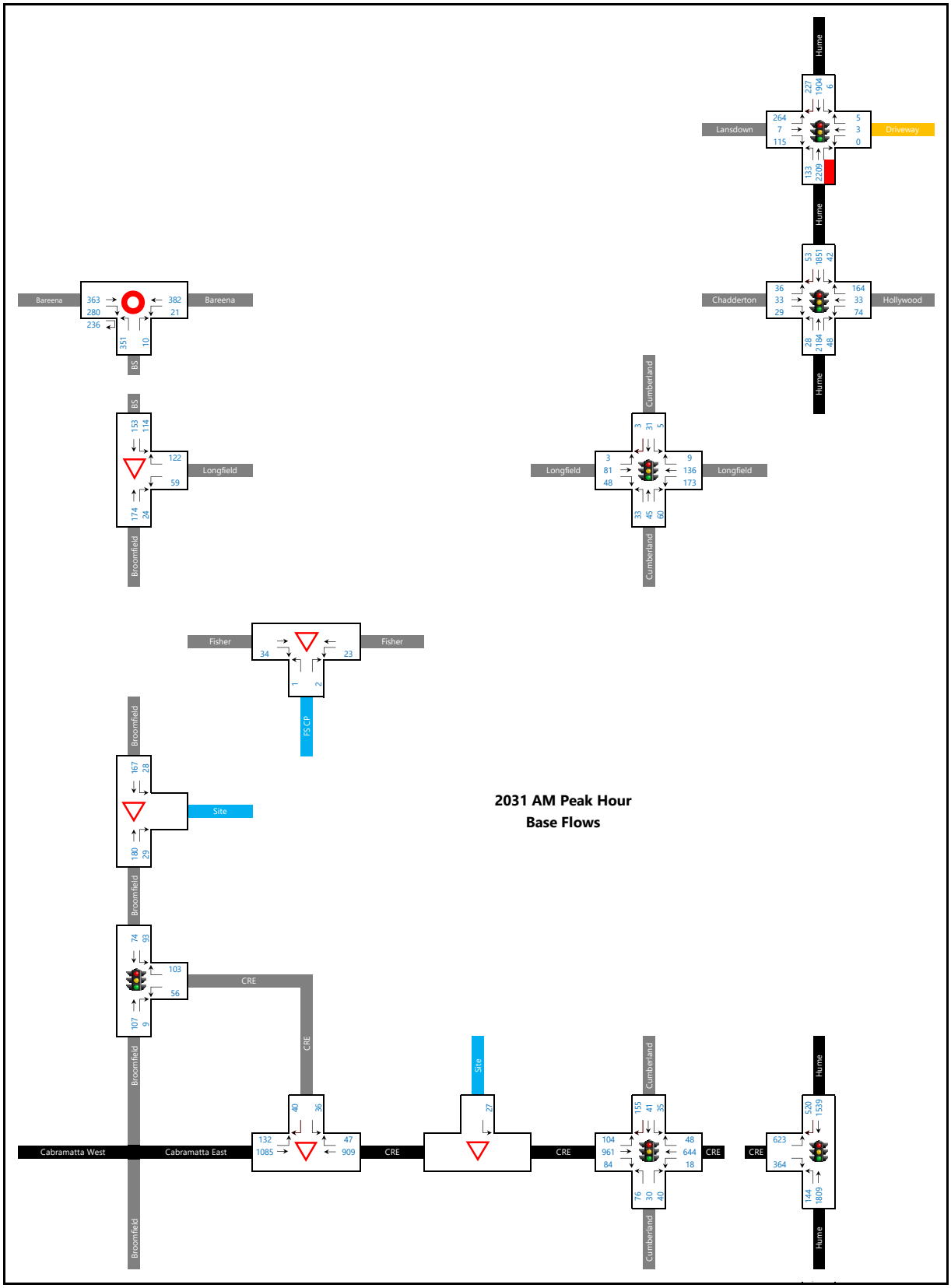
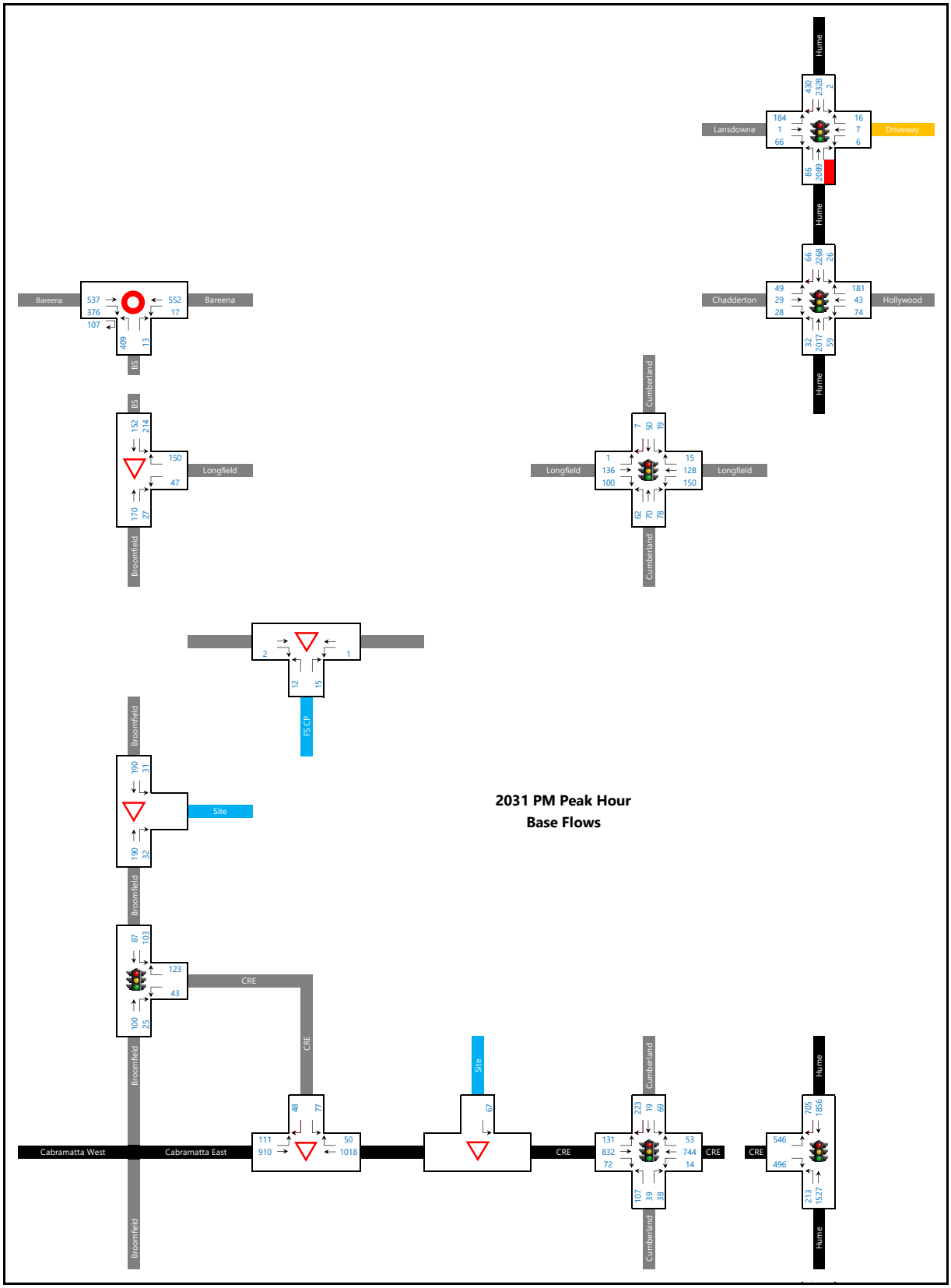


Figure 4.5.2.2 2031 PM Peak Hour Base Flows



4.6 Intersection Operations

4.6.1 SIDRA

The operation of all intersection identified in **Section 4.3** above have been assessed by ARC in association with PDC Consultants using the SIDRA intersection model. SIDRA reports key intersection performance indicators as detailed below.

4.6.1.1 Level of Service

Level of Service (LoS) is a basic performance indicator assigned to an intersection based on average delay. For signalised and roundabout intersections, LoS is based on the average delay to all vehicles, while at priority controlled intersections LoS is based on the worst approach delay. The RMS LoS parameters (as used in the SIDRA analysis) are detailed in **Table 4.6.1.1**.

Table 4.6.1.1 RMS Level of Service Parameters

Level of Service (RMS)	Control delay per vehicle in seconds (d) (including geometric delay)		
	Signals and Roundabouts	Rating	Stop and Give Way Signs
A	d < 14.5	Good	d < 14.5
B	14.5 < d < 28.5	Good with acceptable delay	14.5 < d < 28.5
C	28.5 < d < 42.5	Satisfactory	28.5 < d < 42.5
D	42.5 < d < 56.5	Near capacity	42.5 < d < 56.5
E	56.5 < d < 70.5	At capacity	56.5 < d < 70.5
F	70.5 < d	Over capacity	70.5 < d

Source: SIDRA

4.6.1.2 Degree of Saturation

Degree of Saturation (DoS) is defined as the ratio of demand (arrival) flow to capacity. DoS above 1.0 represent over-saturated conditions (demand flows exceed capacity) and degrees of saturation below 1.0 represent under-saturated conditions (demand flows are below capacity). The capacity of the movement with the highest DoS is reported.

4.6.1.3 Delay

Delay represents the difference between interrupted and uninterrupted travel times through and intersection, and is measured in seconds per vehicle in this assessment. Delays include queued vehicles accelerating and decelerating from/to the intersection stop, as well as general delays to all vehicles travelling through the intersection. With reference to the LoS criteria above, the average intersection delay for signals and roundabouts represents an average of delays to all vehicles on all approaches, while for priority intersections the average delay for the worst approach is used.

4.6.2 Existing Intersection Operations

Table 4.6.2 provides a summary of existing intersection operations further to SIDRA analysis; SIDRA reports are provided in **Appendix B**.

Table 4.6.2 Existing Intersection Operations

2016 Intersection Operations	Level of Service		Average Delay (s)		Degree of Saturation	
	AM	PM	AM	PM	AM	PM
Hume & Lansdowne	B	B	18.1	18.2	0.617	0.752
Hume & Hollywood & Chadderton	B	C	26.3	28.7	0.787	0.897
Hume & Cabramatta East	C	C	29.0	29.9	0.659	0.751
Cabramatta East & Cumberland	B	B	18.1	20.0	0.577	0.645
Cabramatta East & Cabramatta East	B	A	1.5	1.3	0.290	0.247
Cabramatta East & Broomfield	B	B	16.4	16.8	0.215	0.265
Cumberland & Longfield	A	B	14.1	15.0	0.197	0.257
Broomfield & Longfield	A	A	3.9	4.4	0.219	0.271
Broomfield & Bareena	A	A	6.5	7.0	0.393	0.570

With reference to **Table 4.6.2**: -

4.6.2.1 Hume Highway & Lansdowne Road

The intersection of Hume Highway & Lansdowne Road operates at an acceptable LoS in both peaks, with moderate delays and spare capacity.

4.6.2.2 Hume Highway & Hollywood Drive & Chadderton Street

The intersection of Hume Highway & Hollywood Drive & Chadderton Street operates at an acceptable LoS in both the AM and PM peaks, but there are existing capacity constraints arising primarily from the reduced southbound approach capacity in Hume Highway, which is restricted to 2 lanes so as to provide a dedicated left turn lane Hume Highway to Hollywood Drive, noting that 3 departure lanes (in Hume Highway south of Hollywood Drive) are available.

SIDRA testing of an upgraded intersection design, reassigning the existing left turn lane Hume Highway to Hollywood Drive as a shared left and through lane (again, with through traffic able to utilise the available third kerb-side departure lane) indicates significant benefits in regard to both delay and capacity, with SIDRA reporting: -

- LoS 'B' in both the AM and PM peak hours
- In the PM peak hour, an improvement in available capacity (to a DoS 0.666)

It is our understanding that an all but identical upgrade for the intersection was examined as part of a recent Planning Proposal for a mixed-use development in Chadderton Street (recently approved for determination by Council) and further that the RMS has previously provided support for this upgrade.

4.6.2.3 Hume Highway & Cabramatta Road East

The intersection of Hume Highway & Cabramatta Road East operates at a good LoS, with moderate delays and spare capacity in both the AM and PM peaks.

4.6.2.4 Cabramatta Road East & Cumberland Street

The intersection of Cabramatta Road East & Cumberland Street operates at a good LoS, with moderate delays and spare capacity in both the AM and PM peaks.

4.6.2.5 Local Intersections

All other local signalised, roundabout and priority intersection operate at a good LoS, with moderate delays and appropriate spare capacity in both the AM and PM peaks.

4.6.3 2031 Base Flow Intersection Operations

Table 4.6.3 provides a summary of 2031 Base Flow intersection operations further to SIDRA analysis; full SIDRA reports are provided in **Appendix C**.

Table 4.6.3 2031 Base Intersection Operations

2031 Base Flows Intersection Operations	Level of Service		Average Delay (s)		Degree of Saturation	
	AM	PM	AM	PM	AM	PM
Hume & Lansdowne	B	B	18.1	19.2	0.720	0.811
Hume & Hollywood & Chadderton	C	D	36.7	54.7	0.894	0.986
Hume & Hollywood & Chadderton Upgrade	*C*	*B*	*34.4*	*27.7*	*0.894*	*0.755*
Hume & Cabramatta East	C	C	30.8	32.9	0.780	0.854
Cabramatta East & Cumberland	B	B	16.3	19.6	0.555	0.684
Cabramatta East & Cabramatta East	B	B	1.6	1.5	0.347	0.275
Cabramatta East & Broomfield	B	B	16.6	17.4	0.243	0.290
Cumberland & Longfield	A	B	14.1	14.7	0.202	0.290
Broomfield & Longfield	A	A	3.9	4.4	0.240	0.290
Broomfield & Bareena	A	A	7.4	8.6	0.498	0.665

With reference to **Table 4.6.3**: -

4.6.3.1 Hume Highway & Lansdowne Road

The intersection of Hume Highway & Lansdowne Road continues to operate at an acceptable LoS in both peaks, with moderate delays and spare capacity.

4.6.3.2 Hume Highway & Hollywood Drive & Chadderton Street

The intersection of Hume Highway & Hollywood Drive & Chadderton Street operates at an acceptable LoS in the AM peak while retaining spare capacity, but in the PM peak the existing capacity constraints are further exacerbated, resulting in the intersection operating near capacity. However, SIDRA testing of the upgraded intersection design as detailed in **Section 4.6.2.2** indicates that the upgrade would provide appropriate LoS and DoS through 2031.

4.6.3.3 Hume Highway & Cabramatta Road East

The intersection of Hume Highway & Lansdowne Road continues to operate at an acceptable LoS in both peaks, with moderate delays and spare capacity.

4.6.3.4 Cabramatta Road East & Cumberland Street

The intersection of Cabramatta Road East & Cumberland Street operates at a good LoS, with moderate delays and spare capacity in both the AM and PM peaks.

4.6.3.5 Local Intersections

All other local signalised, roundabout and priority intersection operate at a good LoS, with moderate delays and significant spare capacity in both the AM and PM peaks.

5 Planning Proposal & Study Area Precincts Uplift

5.1 Study Area Precincts Uplift

5.1.1 Landuses

GLN Planning has provided ARC with landuse (and yield) forecasts for the Site and all Study Area Precincts which reflect: -

- Proposed FSR.
- Proposed height limits.
- Retention of ground level retail across the CTCP4.
- Realistic development potential based on (fragmented) ownership, costs and other considerations.

These potential landuses are summarised in **Table 5.1.1**.

Table 5.1.1 Site & Study Area Precincts Landuses

Study Area Precincts Forecast Landuses	High Density	Medium Densty	Retail	Slow Retail	Commercial	Hotel & Church	Fisher Street Car Park
	Dwellings	Dwellings	GLFA m^2	GLFA m^2	GFA m^2	GFA m^2	Spaces
Site	619		4,616		8,189	1,602	
Tail	116		610	2,440	2,711		
Island	23		599		532		
Fisher CP							172
16		175					
17		178					
18	898						
19							
20	206	66					
21	283						
22							
23	177						
24	123	66					
25		60					
Total	**2,445**	**545**	**5,824**	**2,440**	**11,432**	**1,602**	**172**

Source: GLN Planning

With reference to **Table 5.1.1**, it is noted that: -

- Based on our discussions with Council, it is expected that the slow trade retail floor space provided within the Tail Precinct be retained rather than be developed as more 'standard' retail.

- The potential exists for additional commuter parking to be provided within the revised Fisher Street Car Park; however, for the purpose of this assessment the existing number of spaces (and more importantly the existing trip generation) has been considered.

As stated previously, the landuses outlined in **Table 5.1.1** would entirely replace the existing landuses as detailed in **Table 1.4**.

5.2 Access

5.2.1 Cabramatta Town Centre Precinct 4 Sites

Based on our discussions with Council, vehicle access to Broomfield Street is not preferred, and ARC would certainly agree given the availability of access from Fisher Street; as such, this assessment provides for primary vehicle access to Fisher Street and no vehicle access to Broomfield Street.

While the number and location of (future) vehicular access points to Fisher Street would be determined as part of future detailed Development Applications, this assessment also provides for the retention of the Site's Cabramatta Road East vehicular egress only access point, though this may be removed further to future detailed design.

It is expected that all vehicular access to the Tail would continue to be via Cumberland Street (likely in the general vicinity of the existing car park access point to provide appropriate clearance from the intersection of Cabramatta Road East & Cumberland Street). While future detailed studies would be required to determine an appropriate vehicular access point for the Island, this assessment provides for such to Broomfield Street at the southern boundary of the Island.

Figure 5.2.1 summarises the CTCP4 site access points used in this assessment.

Figure 5.2.1 Cabramatta Town Centre Precinct 4 Sites Access

Source: Nearmap

Pedestrian access is expected to be available to all sites within CTCP4 directly from street level as currently provided. In addition, and as discussed in **Section 3**, the potential exists for a new pedestrian overbridge to link the Site with the Cabramatta Station (pedestrian) overbridge, providing a complete pedestrian link between Cabramatta Town Centre west of the railway line and the CTCP4 sites (and indeed with the broader Study Area Precincts).

5.2.2 Study Area (Residential) Precincts Access

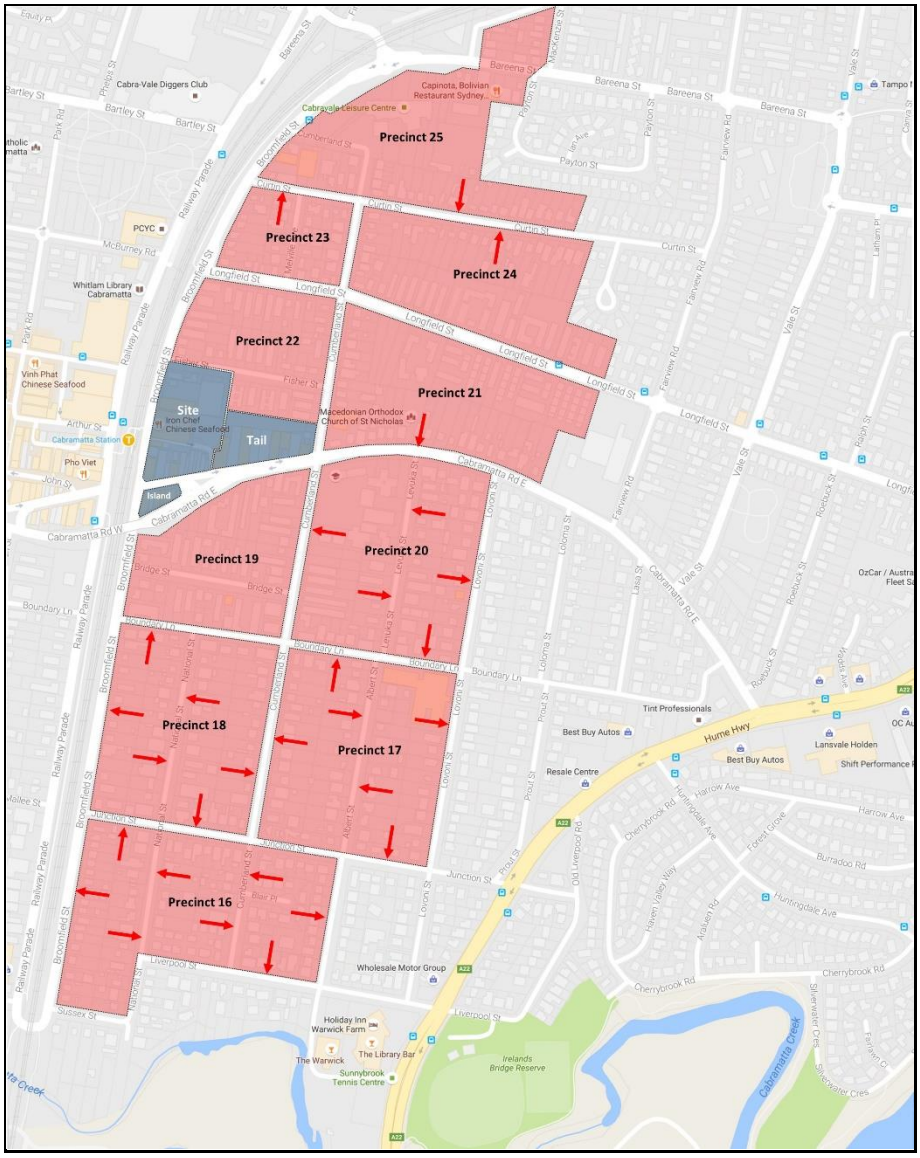
Access points for the Study Area (Residential) Precincts would be direct to local roads, with the actual locations to be determined as part of future detailed Development Applications. Notwithstanding, at this time (and for the purpose of this assessment): -

- Access to Precinct 21 is provided directly to Cabramatta Road East (as left in/left out only); this is a result of the only significant potential for uplift in Precinct 21 being sites along Cabramatta Road East.

- Access to Precincts 23, 24 and 25 is provided to Curtain Street only, again based on the location of the sites within these Precincts with significant potential for uplift.

Figure 5.2.2 summarises the Study Area (Residential) Precincts access points used in this assessment.

Figure 5.2.2 Study Area (Residential) Precincts Access Points



Source: Google

5.3 Trip Generation

5.3.1 High Density Residential Trip Generation

Summary trip generation rates for high density residential development are provided in the GTGD Update, and include a trip rate per unit, and a trip rate per parking spaces. These rates are summarised below: -

- Trip rates per unit
  - 0.19 trips per unit in the AM peak hour
  - 0.15 trips per unit in the PM peak hour

- Trip rates per parking space
  - 0.15 trips per unit in the AM peak hour
  - 0.12 trips per unit in the PM peak hour

With reference to the JTW data detailed in **Section 2**, there is already a relatively low residential mode to car driver mode in the Study Area, and in our opinion the potential for an even higher use of non-car travel modes is excellent when considering proximity to Cabramatta Station, to bus interchanges, and to the Cabramatta Town Centre west of the railway line.

The GTGD Update summary rates are based on survey sites generally within broader regional and sub-regional centres which report slightly higher non-car mode for the journey to work; however, with the introduction of additional retail and commercial space, and again the connectively to the broader Sydney Metropolitan area, there is no reason to suggest that similar levels of non-car mode cannot be achieved.

With reference to **Section 5.8**, the potential for low trip generation is further enhanced by the provision of a restrictive parking policy, specifically using the 'maximum' parking rates provided for in the CTC DCP (for residential within the CTCP4) and the GTGD (cited in SEPP 65/Apartment Design Guide) for high density residential development within 800m of a railway station.

With specific recognition of the proposed parking reductions (and the influence reduced parking has on trip generation) ARC has applied the following rates to high density residential units within the Study Area, noting that these rates represent a 25% increase over the GTGD Update summary rates for high density residential trips per parking space: -

- **Trip rates per parking spaces**
  - 0.1875 trips per parking space in the AM peak hour
  - 0.15 trips per parking space in the PM peak hour

5.3.2 Medium Density Residential Trip Generation

While summary rates for medium density are not provided in the GTGD Update, ARC has reviewed the Trip Generation Surveys Medium Density Residential Dwellings Analysis Report (GTGD Update: Medium Density) prepared for the RMS in 2013. Reference to this report indicates similar summary rates to those provided in the earlier GTGD when non-Sydney region survey sites are included, but a more detailed review of survey sites within the Sydney region – and specifically those sites with high accessibility such as provided to the Study Area Precincts – indicate trip rates in many instances not dissimilar to high density rates.

Table 5.3.2 GTGD Update: Medium Density Medium Density Residential Trip Generation Summary

Table 3.7: Vehicle Trip Rate per dwelling Summary – Sydney (9 Sites)			
	Minimum	Maximum	Average
Daily trips (6am – 7pm)	1.00	5.24	2.72
Site Peak hour trips (within the period 6am – 7pm)	0.19	0.71	0.46
Site AM peak hour (within the period 6am – 9am)	0.10	0.71	0.39
Road network AM peak hour (within the period 6am – 9am)	0	0.71	0.27
Site PM peak hour (within the period 4pm – 7pm)	0.10	0.67	0.37
Road network PM peak hour (within the period 4pm – 7pm)	0.06	0.67	0.31

Source: GTGD Update: Medium Density

Further to consideration of both Sydney and regional survey data in providing 'base rates' for application, the GTGD Update: Medium Density provides the following summary rates: -

- 0.4 trips per dwelling in the AM Peak
- 0.48 trips per dwelling in the PM Peak

These rates have been adopted for the assessment, noting that they represent rates approximately 50% higher than the average Sydney rates.

5.3.3 Retail Trip Generation

As discussed in **Section 2.4.1**, the GTGD and GTGD Update trip generation rates for retail development (shopping centres) are not applicable to CTCP4 for a number of reasons, including the proximity to public transport, proximity to the broader Cabramatta Town Centre, and the 'local' nature of retail in this area.

As detailed in **Section 2.4.1**, current retail premises across CTCP4 have a relatively low trip generation, particularly in the PM peak hour, but further to the Proposal (in particular) there is significant scope for not only additional retail space, but moreover the potential to rejuvenate the entire CTCP4 such that – simply – retail space will become more attractive and therefore generate additional trips.

Conversely, it is expected that the much of the retail space will be given over to local shops, restaurants and cafes, which would generate a higher proportion of walk (and public transport) trips than car trips, and there is no information to suggest the provision of 'fast trade' retail such as a full-line supermarket or the like.

Based on all available information, ARC has adopted the following retail trips rates for the assessment: -

- 1.0 trips per 100m^2 GLFA in the AM Peak
- 3.0 trips per 100m^2 GLFA in the PM Peak

These rates are commensurate with those provided (for retail) in the TIA 2013.

5.3.4 Commercial Trip Generation

Trip generation rates for commercial development are provided in the GTGD Update, and are summarised below: -

- 1.6 trips per 100m^2 GFA in the AM peak hour
- 1.2 trips per 100m^2 GFA in the AM peak hour

These are similar trip rates to those currently evidenced across CTCP4, though again in the PM peak the existing trip generation is estimated as being higher as a factor of local businesses with higher trip generation potential such as medical offices and the like. As such, to provide additional sensitivity in the assessment, ARC has adopted the following commercial trip rates which provide for potentially high business trip generation than currently generated, particularly in the PM peak hour: -

- 1.75 trips per 100m^2 GFA in the AM peak hour
- 1.6 trips per 100m^2 GFA in the AM peak hour

These rates represent an increase of some 10% and 25% over the GTGD Update commercial rates in the AM and PM peak period respectively.

5.3.5 Hotel

The preliminary Site plans indicate that the existing Stardust Hotel would be redeveloped within the Site but with a reduced floor-area. While there is little information to suggest that the existing trips rates (as detailed in **Section 2**) would not similarly apply to the future Hotel, the assessment provides for the following increased trip generation rates (which would essentially provide for the same trip generation as the existing Hotel): -

- 0.5 trips per 100m^2 GFA in the AM peak hour
- 3.0 trips per 100m^2 GFA in the AM peak hour

5.3.6 Church

Similarly, the preliminary Site plans indicate that the existing Anglican Church would be redeveloped within the Site but with a likely (moderate) increase in floor-area. There is no information to suggest that the existing trips rates (as detailed in **Section 2.1**) would not apply to the future Church, noting that regardless it is unlikely that any significant Church activities would be undertaken during the weekday AM and PM peak periods.

5.3.7 Fisher Street Car Park

As discussed previously, the potential exists for additional commuter parking to be provided within the Fisher Street Car Park (if redeveloped within the Site); however, for the purpose of this assessment the existing number of spaces (and more importantly the existing trip generation) has been considered.

5.3.8 Total Trip Generation

With reference to sections above, the tables below provide a summary of the forecast trip generation of the Site and broader Study Area Precincts, as well as the assigned arrival and departure distribution.

Table 5.3.8.1 Study Area Precincts AM Peak Hour Trip Generation Summary

Study Area Precincts Future Trip Generation AM Peak Hour	High Density	Parking Spaces	AM Trips	IN	OUT	Medium Density	AM Trips	IN	OUT	Commuter	AM Trips	IN	OUT	Retail	AM Trips	IN	OUT	Slow Retail	AM Trips	IN	OUT	Commercial	AM Trips	IN	OUT	Hotel	AM Trips	IN	OUT	Church	AM Trips	IN	OUT	AM TOTAL	IN	OUT
	Dwellings	DCP/GTGD	0.1875	20%	80%	Dwellings	0.4	20%	80%	Trips	1	95%	5%	GLFA m^2	1	55%	45%	GLFA m^2	0.25	80%	20%	GFA m^2	1.75	75%	25%	GFA m^2	0.5	90%	10%	Seats	0.1	50%	50%			
Site	619	433	81	16	65									4,616	46	25	21					8,189	143	107	36	995	5	4	0	60	6	3	3	282	157	125
Tail	116	81	15	3	12									610	6	3	3	2,440	6	5	1	2,711	47	36	12									75	47	28
Island	23	16	3	1	2									599	6	3	3					532	5	4	1									14	8	6
Fisher CP										60	60	57	3																					60	57	3
Precinct 16						175	70	14	56																									70	14	56
Precinct 17						178	71	14	57																									71	14	57
Precinct 18	898	952	178	36	143																													178	36	143
Precinct 19																																				
Precinct 20	206	250	47	9	37	66	26	5	21																									73	15	59
Precinct 21	283	300	56	11	45																													56	11	45
Precinct 22																																				
Precinct 23	177	188	35	7	28																													35	7	28
Precinct 24	123	130	24	5	20	66	26	5	21																									51	10	41
Precinct 25						60	24	5	19																									24	5	19
Total	2,445	2,350	441	88	352	545	218	44	174	60	60	57	3	5,824	58	32	26	2,440	6	5	1	11,432	196	147	49	995	5	4	0	60	6	3	3	990	380	610

Table 5.3.8.2 Study Area Precincts PM Peak Hour Trip Generation Summary

Study Area Precincts Future Trip Generation PM Peak Hour	High Density	Parking Spaces	PM Trips	IN	OUT	Medium Density	PM Trips	IN	OUT	Commuter	PM Trips	IN	OUT	Retail	PM Trips	IN	OUT	Slow Retail	PM Trips	IN	OUT	Commercial	PM Trips	IN	OUT	Hotel	PM Trips	IN	OUT	Church	PM Trips	IN	OUT	AM TOTAL	IN	OUT
	Dwellings	DCP/GTGD	0.150	80%	20%	Dwellings	0.48	80%	20%	Trips	1	10%	90%	GLFA m^2	3	50%	50%	GLFA m^2	1.1	40%	60%	GFA m^2	1.6	25%	75%	GFA m^2	3	80%	20%	Seats	0.1	50%	50%			
Site	619	433	65	52	13									4,616	138	69	69					8,189	131	33	98	995	30	24	6	60	6	3	3	370	181	189
Tail	116	81	12	10	2									610	18	9	9	2,440	27	11	16	2,711	43	11	33									101	40	60
Island	23	16	2	2	0									599	18	9	9					532	5	1	4									26	12	13
Fisher CP										30	30	3	27																					30	3	27
Precinct 16						175	84	67	17																									84	67	17
Precinct 17						178	85	68	17																									85	68	17
Precinct 18	898	952	143	114	29																													143	114	29
Precinct 19																																				
Precinct 20	206	250	37	30	7	66	32	25	6																									69	55	14
Precinct 21	283	300	45	36	9																													45	36	9
Precinct 22																																				
Precinct 23	177	188	28	23	6																													28	23	6
Precinct 24	123	130	20	16	4	66	32	25	6																									51	41	10
Precinct 25						60	29	23	6																									29	23	6
Total	2,445	2,350	352	282	70	545	262	209	52	30	30	3	27	5,824	175	87	87	2,440	27	11	16	11,432	180	45	135	995	30	24	6	60	6	3	3	1,061	664	397

5.4 Trip Distribution

5.4.1 Origin & Destination Distribution

There is no information to suggest any significant changes in origin/destination distribution further to the Proposal (or broader uplift within the Study Area Precincts) from that assigned to existing trips as detailed in **Table 2.5.1**. The only difference would be that the high density residential dwellings proposed across the CTCP4 sites would have the same distribution characteristics as the other Study Area (Residential) Precincts.

It is again noted that a percentage of trips distributed to both Cabramatta Road West and Bareena Street would essentially comprise local trips to the Cabramatta Town Centre west of the railway.

5.4.2 Arrival & Departure Distribution

The assigned arrival and departure trip distribution in both peak periods are shown in **Table 5.3.8.1** (AM Peak) and **Table 5.3.8.2** (PM Peak) above. It is noted that both the retail and commercial arrival and departure distribution profiles reflect the observed localised nature of these components.

5.5 Trip Assignment

The peak period trip generation as determined in **Section 5.3** has been assigned to the road network with regard to the trip distribution profiles outlined in **Section 5.4**.

The assignment again references the existing distribution patterns based on our observations through the local area; the existing distribution of trips at key intersections (as detailed in **Section 2** below); and trip time estimates (to/from key external origins/destinations). The assignment also accounts for the proposed vehicular access points as described in **Section 5.2**.

The resulting future trips generated by the Proposal alone, and by uplift across all Study Area Precincts, are shown in the figures below, noting that these figures do not account for the removal of existing flows as detailed in **Section 2.6**.

Figure 5.5.1 Planning Proposal Site AM Peak Hour Future Trips

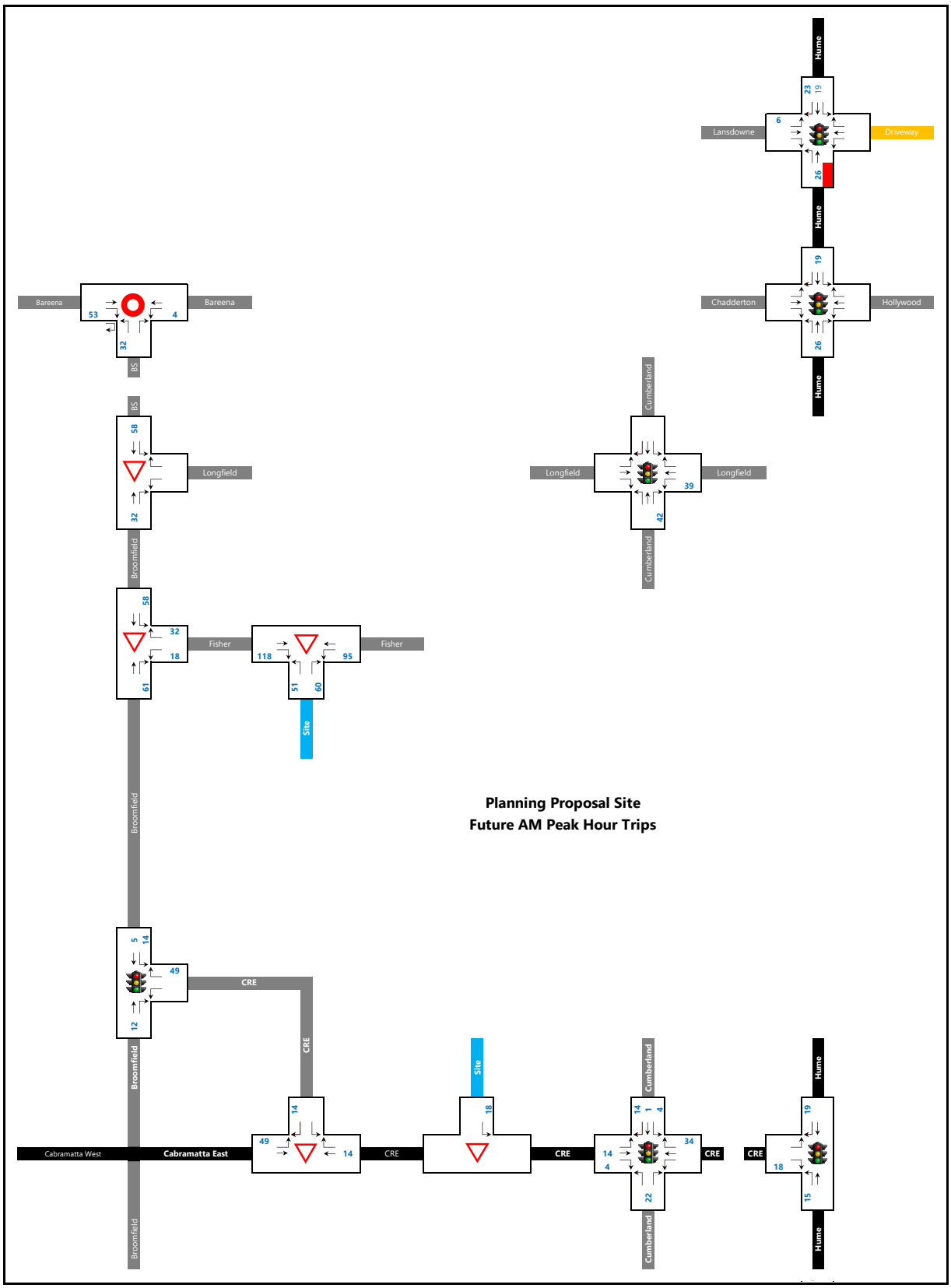


Figure 5.5.2 Planning Proposal Site PM Peak Hour Future Trips

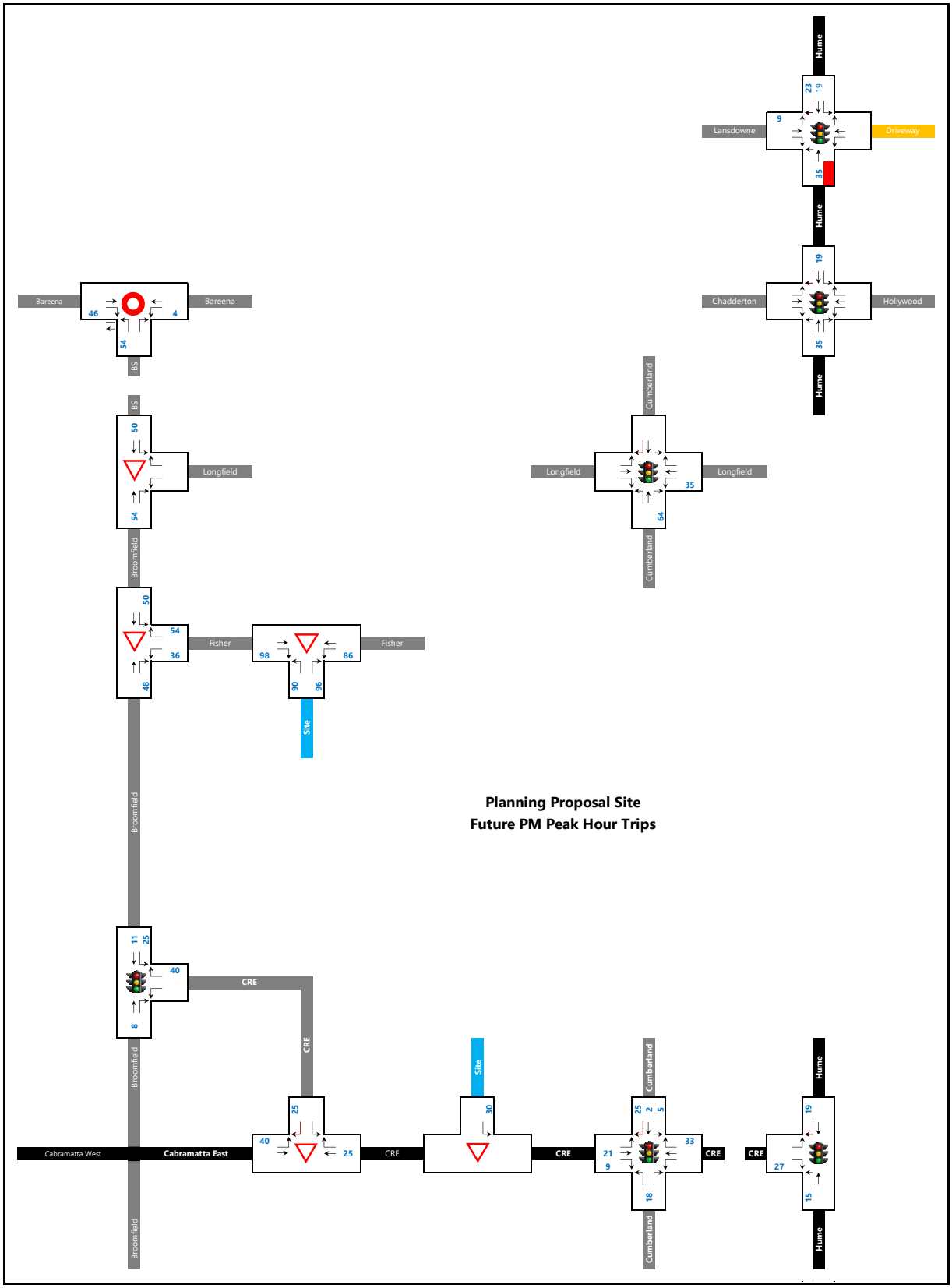


Figure 5.5.3 All Study Area Precincts AM Peak Hour Future Trips

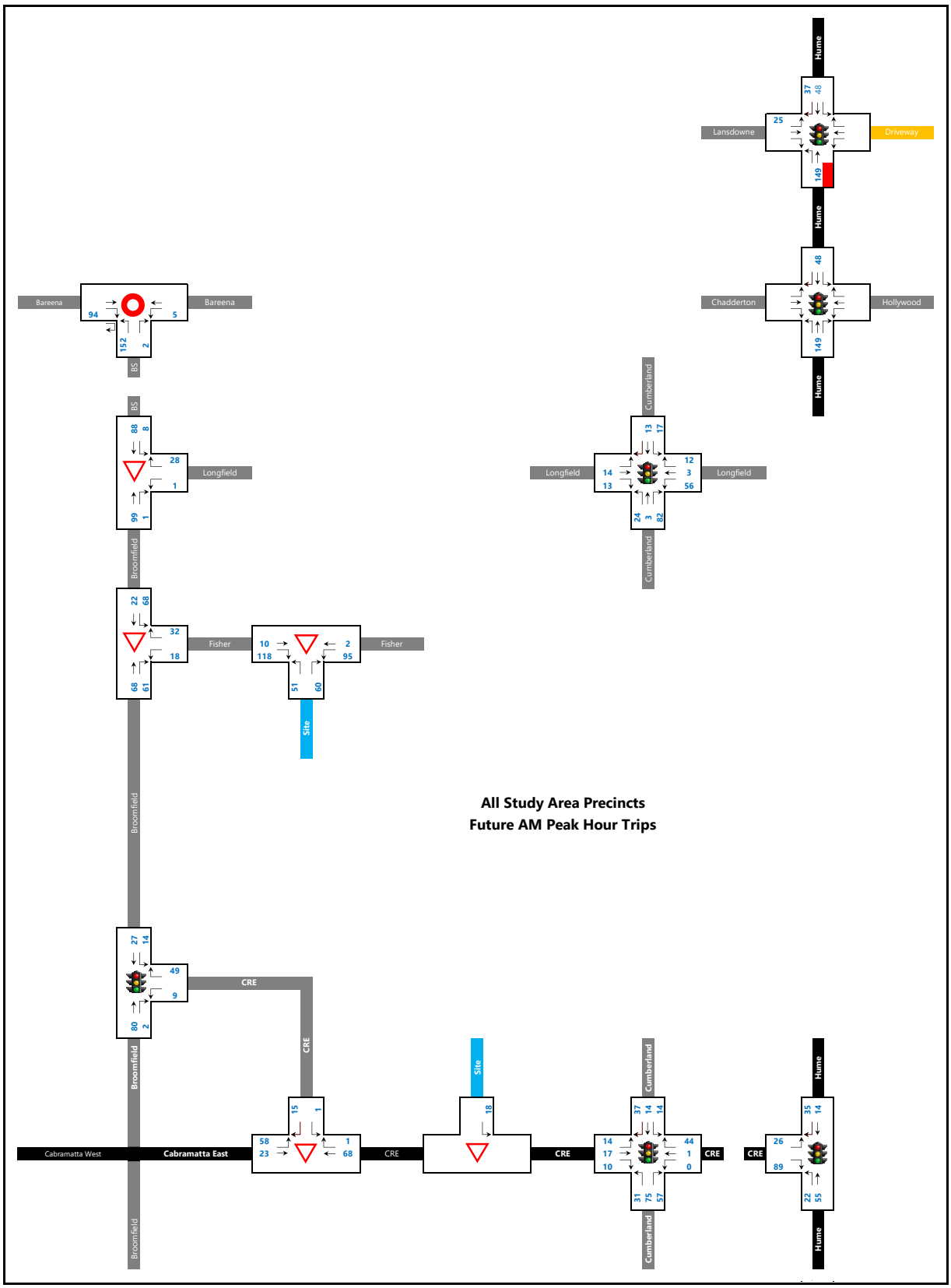
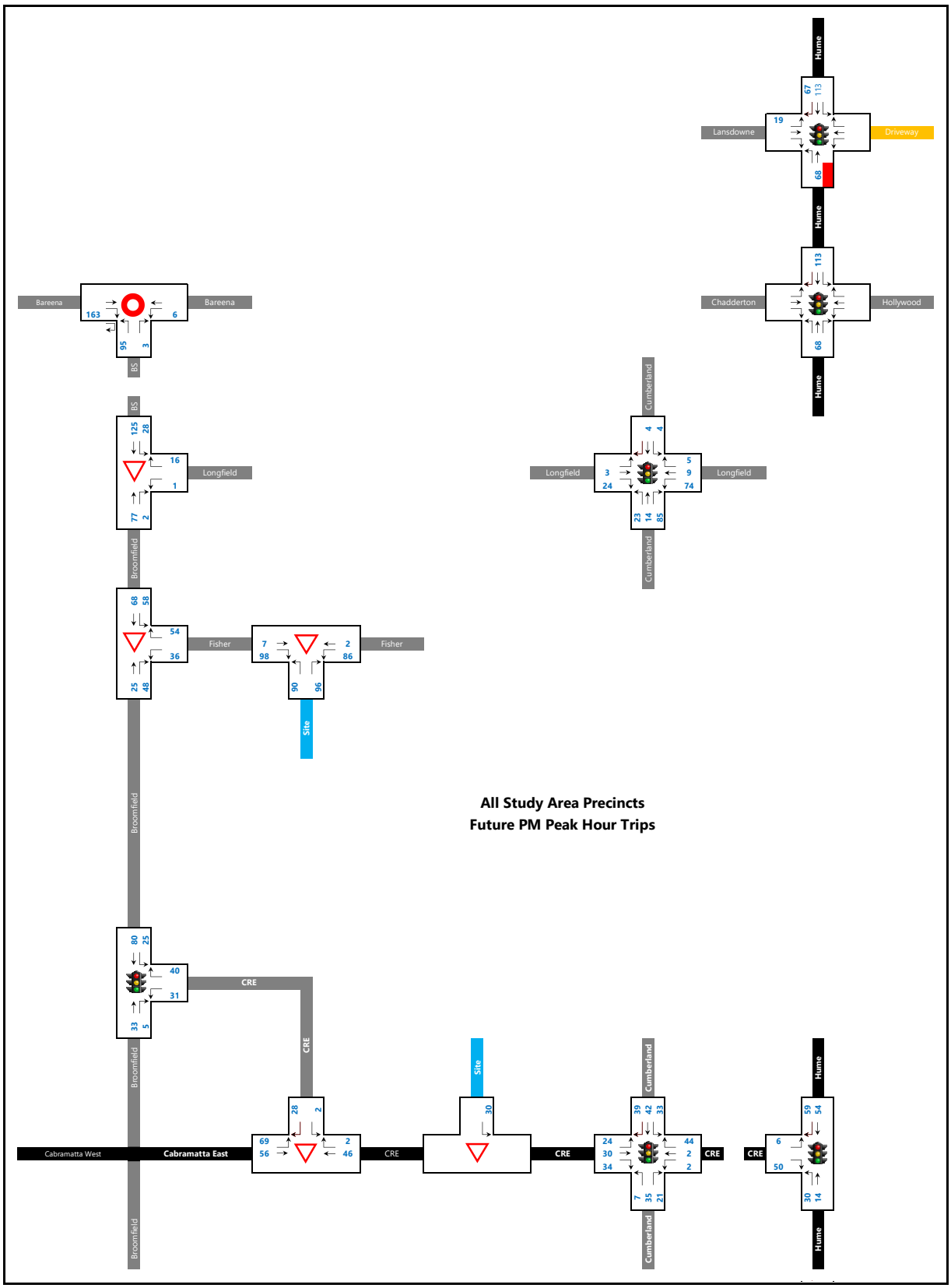


Figure 5.5.4 All Study Area Precincts PM Peak Hour Future Trips



5.6 Future Total Flows

5.6.1 Future Total Flows – Planning Proposal Only

The future total (2031) road network flows further to the Proposal only, i.e. with no additional uplift across other Study Area Precincts, are shown in **Figure 5.6.1.1** (AM Peak Hour) and **Figure 5.6.1.2** (PM Peak Hour); these total flows account for the removal of the existing Site flows as detailed in **Section 2.6**.

5.6.2 Future Total Flows – All Study Area Precincts

The future total (2031) road network flows further to the Proposal and uplift across all Study Area Precincts are shown in **Figure 5.6.2.1** (AM Peak Hour) and **Figure 5.6.2.2** (PM Peak Hour); these total flows account for the removal of the existing Study Area Precinct flows as detailed in **Section 2.6**.

Figure 5.6.1.1 Planning Proposal Only 2031 AM Peak Hour Total Flows

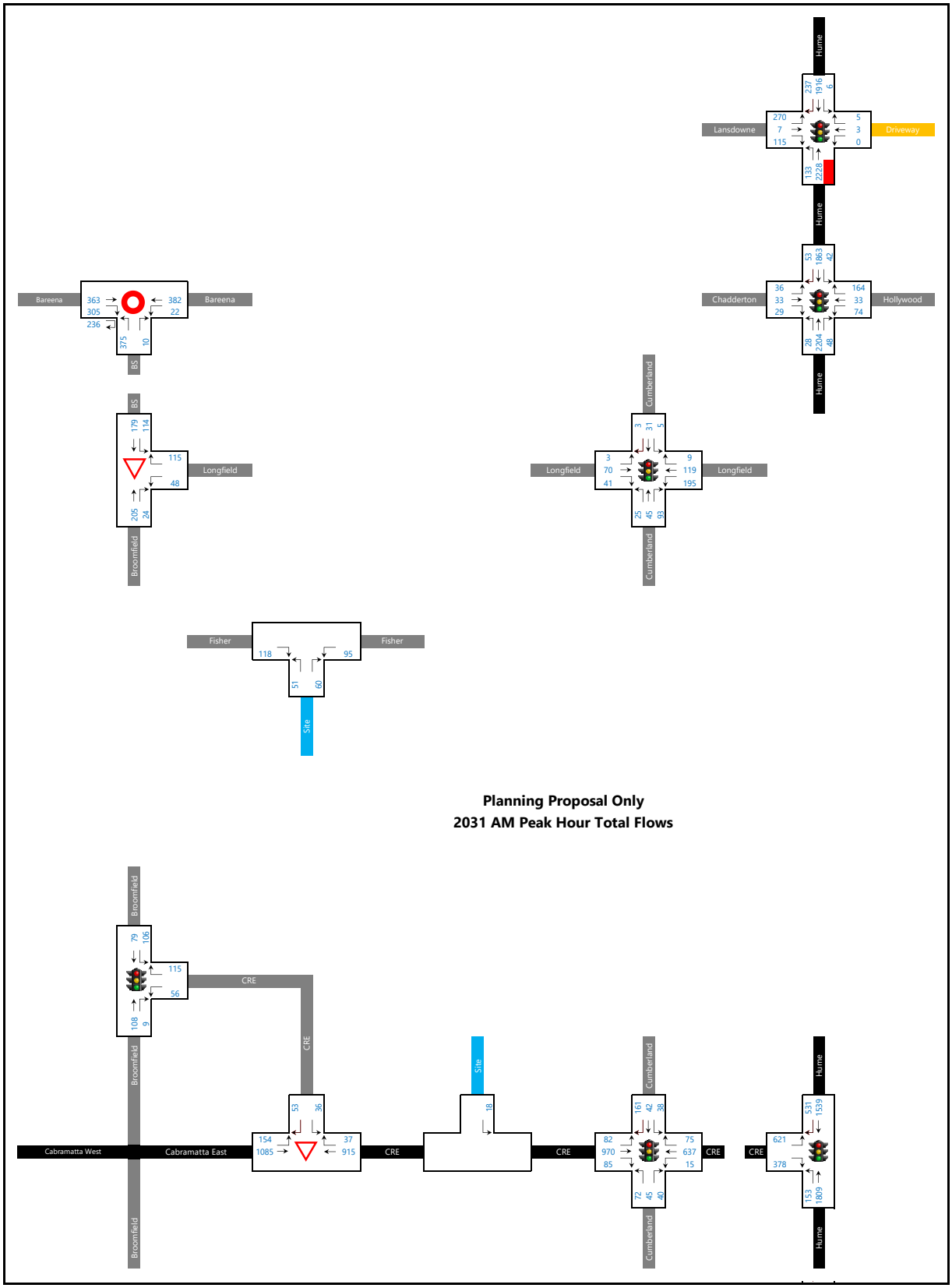


Figure 5.6.1.2 Planning Proposal Only 2031 PM Peak Hour Total Flows

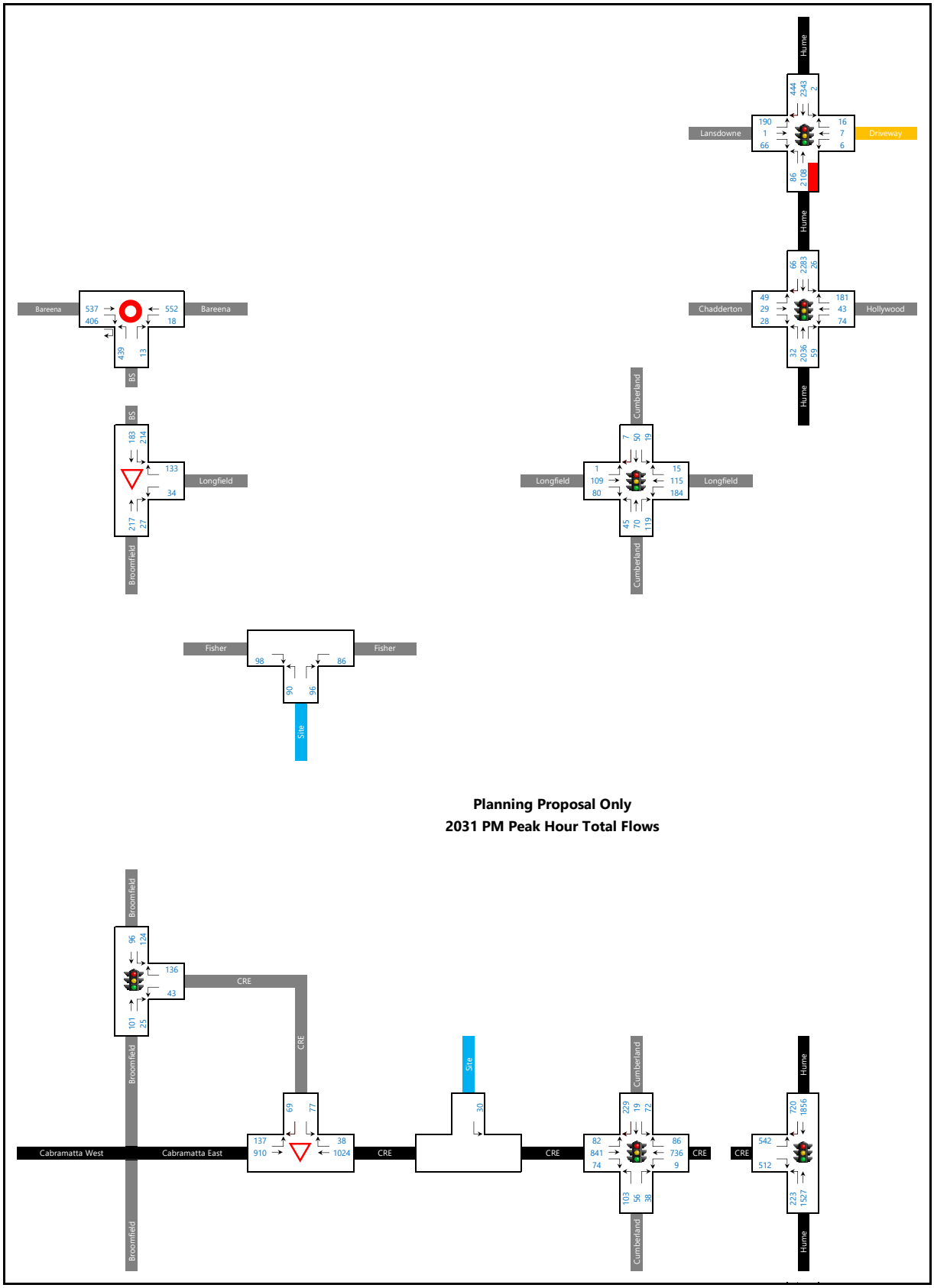


Figure 5.6.2.1 All Study Area Precinct 2031 AM Peak Hour Total Flows

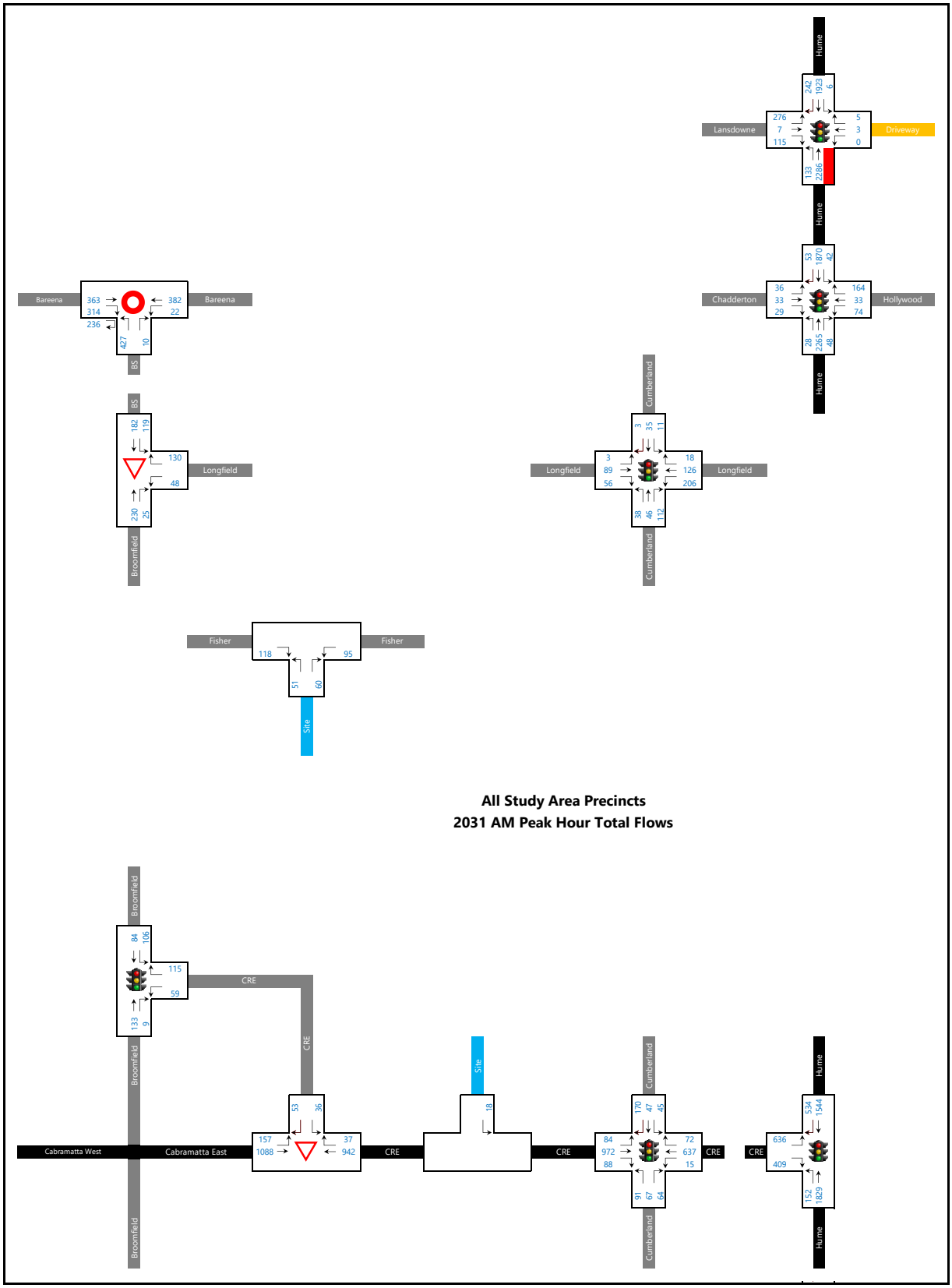
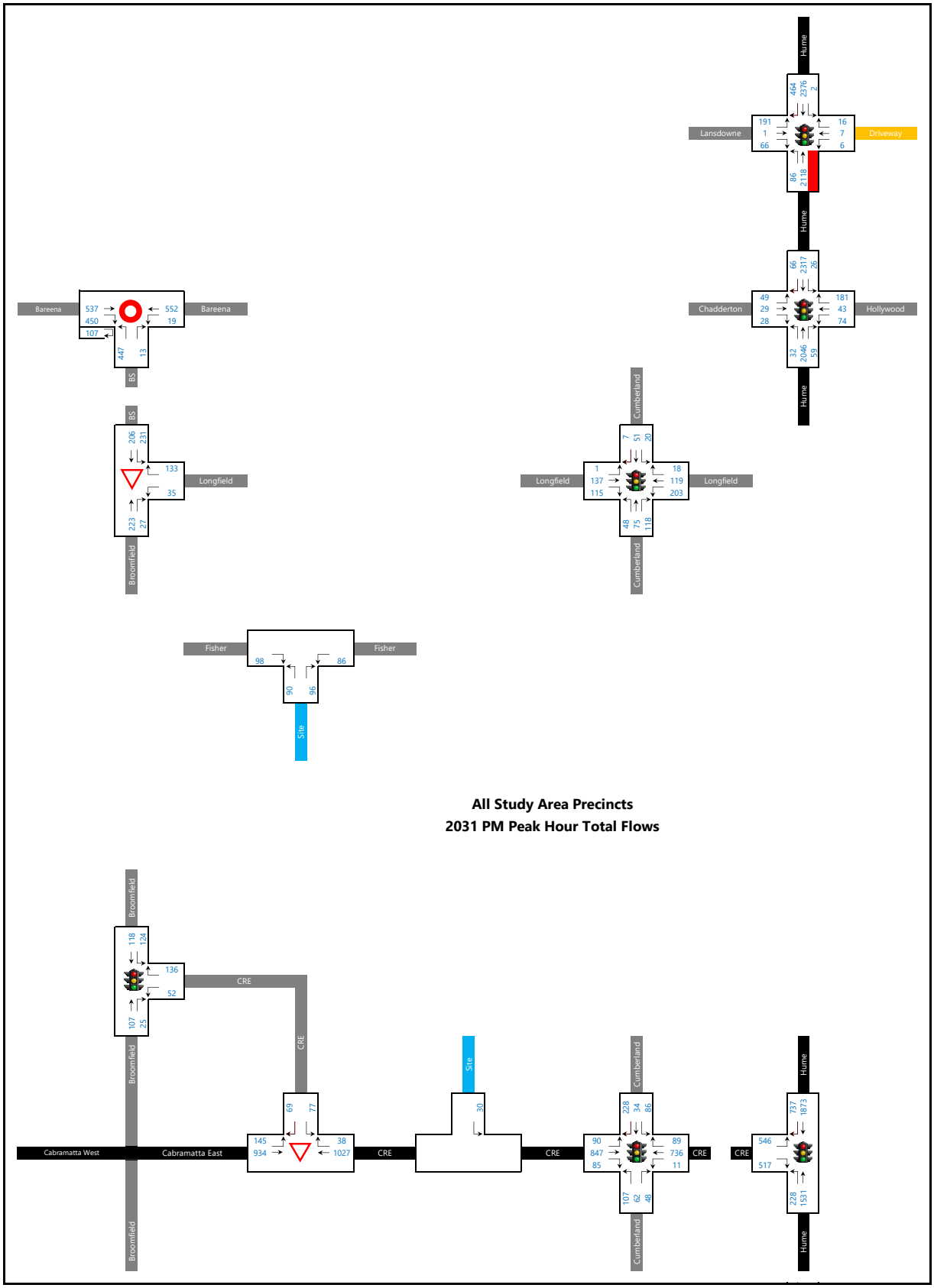


Figure 5.6.2.2 All Study Area Precinct 2031 PM Peak Hour Total Flows



5.7 Future Intersection Operations

5.7.1 Future Intersection Operations – Planning Proposal

The operation of all key intersections further to the Proposal alone has been assessed using the SIDRA model. The results of this analysis are provided in **Table 5.7.1** below.

Table 5.7.1 2031 Planning Proposal Only Intersection Operations

2031 + Planning Proposal Only Intersection Operations	Level of Service		Average Delay (s)		Degree of Saturation	
	AM	PM	AM	PM	AM	PM
Hume & Lansdowne	B	B	18.9	19.5	0.724	0.816
Hume & Hollywood & Chadderton	C	E	35.5	57.8	0.896	0.990
Hume & Hollywood & Chadderton Upgrade	*C*	*B*	*33.5*	*27.8*	*0.896*	*0.755*
Hume & Cabramatta East	C	C	31.5	34.3	0.797	0.877
Cabramatta East & Cumberland	B	B	16.4	20.7	0.559	0.699
Cabramatta East & Cabramatta East	C	B	2.0	1.8	0.474	0.400
Cabramatta East & Broomfield	B	B	16.9	17.9	0.275	0.336
Cumberland & Longfield	B	B	14.8	16.1	0.241	0.298
Broomfield & Longfield	A	A	3.5	4.0	0.234	0.282
Broomfield & Bareena	A	A	7.6	9.3	0.531	0.695

With reference to **Table 5.7.1**: -

5.7.1.1 Hume Highway & Lansdowne Road

The intersection of Hume Highway & Lansdowne Road continues to operate at an acceptable LoS in both peaks, with moderate delays and spare capacity. The Proposal in and of itself has little impact on the operation of the intersection when compared to base 2031 operations.

5.7.1.2 Hume Highway & Hollywood Drive & Chadderton Street

Further to the potential intersection upgrade detailed in **Section 4.6.2.2** the intersection of Hume Highway & Hollywood Drive & Chadderton Street operates at an acceptable LoS in both peaks, with moderate delays and spare capacity. The Proposal in and of itself has little impact on the operation of the intersection when compared to base 2031 operations.

5.7.1.3 Hume Highway & Cabramatta Road East

The intersection of Hume Highway & Cabramatta Road East continues to operate at an acceptable LoS in both peaks, with moderate delays and spare capacity. The Proposal in and of itself has little impact on the operation of the intersection when compared to base 2031 operations.

It is noted that the Cabramatta Road East approach currently provides a left turn lane, shared left and right turn lane, and a short right turn lane. Clearway conditions are in place in the AM peak only. Sensitivity testing undertaken by ARC and PDC Consulting indicates that extending the current clearway provisions to the PM peak and reassigning existing lanes to instead provide a short left, (clearway extended) shared left and right, and full right turn lanes provides capacity and (reduced) delay benefits under all future scenarios.

5.7.1.4 Cabramatta Road East & Cumberland Street

The intersection of Cabramatta Road East & Cumberland Street operates at a good LoS, with moderate delays and spare capacity in both the AM and PM peaks. The Proposal in and of itself has little impact on the operation of the intersection when compared to base 2031 operations.

5.7.1.5 Local Intersections

The majority of other local signalised, roundabout and priority intersection operate at a good LoS, with moderate delays and significant spare capacity in both the AM and PM peaks. Notwithstanding: -

- At the priority intersection of Cabramatta Road East & Cabramatta Road East, delays to the right turn movement from north to west increase in both peak hour under all future scenarios, though LoS remains acceptable and there are queuing issues (back in Cabramatta Road East towards Broomfield Street). However, the removal of the right turn provision may warrant consideration in the future as part of broader changes, noting that sensitivity testing indicates that the redistribution of these (minor number of trips) could be accommodated by the adjacent intersection of Cabramatta Road East & Cumberland Street.

- Site trips are expected to be distributed to/from access points to Fisher Street, providing for the removal of existing Site vehicle access points to Broomfield Street and potentially the removal of the existing vehicle access points to Cabramatta Road East. Sensitivity testing indicates that the redistribution of trips assigned (as departure trips) to Cabramatta Road East to the intersection of Cabramatta Road East & Cumberland Street would have no impact on the (good) performance of the Cabramatta Road East & Cumberland Street intersection through all future scenarios.

- The priority intersections of Broomfield Street & Fisher Street, and Cumberland Street & Fisher Street, are forecast to continue operating at a good LoS, though additional No Standing restrictions (on the Fisher Street approaches to each intersection and adjacent to Site access points) may be warranted.

- Future detailed planning will be required to determine the safest and efficient access strategy for Fisher Street.

5.7.2 Future Intersection Operations – Proposal & All Study Area Precincts

The operation of all key intersections further to the Proposal uplift across all Study Area Precincts has been assessed using the SIDRA model. The results of this analysis are provided in **Table 5.7.2** below.

Table 5.7.2 2031 Proposal & All Study Area Precincts Intersection Operations

2031 + Planning Proposal + All Study Area Precincts Intersection Operations	Level of Service		Average Delay (s)		Degree of Saturation	
	AM	PM	AM	PM	AM	PM
Hume & Lansdowne	B	B	19.0	19.9	0.727	0.827
Hume & Hollywood & Chadderton	C	E	39.0	65.9	0.912	1.004
Hume & Hollywood & Chadderton Upgrade	*C*	*B*	*36.8*	*27.9*	*0.912*	*0.755*
Hume & Cabramatta East	C	C	33.3	35.1	0.824	0.894
Cabramatta East & Cumberland	B	B	17.4	21.0	0.575	0.723
Cabramatta East & Cabramatta East	C	B	2.00	1.9	0.471	0.423
Cabramatta East & Broomfield	B	B	16.5	17.5	0.277	0.353
Cumberland & Longfield	B	B	15.3	15.7	0.266	0.358
Broomfield & Longfield	A	A	3.7	4.0	0.266	0.296
Broomfield & Bareena	A	A	8.1	9.8	0.601	0.713

With reference to **Table 5.7.2**: -

5.7.2.1 Hume Highway & Lansdowne Road

The intersection of Hume Highway & Lansdowne Road continues to operate at an acceptable LoS in both peaks, with moderate delays and spare capacity. Uplift across all Study Area Precincts has little impact on the operation of the intersection when compared to base 2031 operations.

5.7.2.2 Hume Highway & Hollywood Drive & Chadderton Street

Further to the potential intersection upgrade detailed in **Section 4.6.2.2** the intersection of Hume Highway & Hollywood Drive & Chadderton Street operates at an acceptable LoS in both peaks, with moderate delays and spare capacity. Uplift across all Study Area Precincts has little impact on the operation of the intersection when compared to base 2031 operations.

5.7.2.3 Hume Highway & Cabramatta Road East

The intersection of Hume Highway & Cabramatta Road East continues to operate at an acceptable LoS in both peaks, with moderate delays and spare capacity. Uplift across all Study Area Precincts has little impact on the operation of the intersection when compared to base 2031 operations.

It is noted that sensitivity testing of the potential revisions to the approach lanes in Cabramatta Road East (as described in **Section 5.7.1.3**) further to uplift across all Study Area Precincts indicates similar benefits to delay and capacity as those determined further to the Proposal alone.

5.7.2.4 Cabramatta Road East & Cumberland Street

The intersection of Cabramatta Road East & Cumberland Street operates at a good LoS, with moderate delays and spare capacity in both the AM and PM peaks. Uplift across all Study Area Precincts has little impact on the operation of the intersection when compared to base 2031 operations.

5.7.2.5 Local Intersections

The majority of other local signalised, roundabout and priority intersection operate at a good LoS, with moderate delays and significant spare capacity in both the AM and PM peaks. Notwithstanding, the comments provided in **Section 5.7.1.5** above in regard to the intersections of Cabramatta Road East & Cabramatta Road East, Broomfield Street & Fisher Street and Cumberland Street & Fisher Street under Proposal only future conditions apply equally further to uplift across all Study Area Precincts.

5.8 Parking

5.8.1 CTC DCP High Density Residential Parking Rates

The CTC DCP provides significantly reduced parking rates for high density residential development within CTCP4 (and indeed across the CTC) which appropriately responds to the availability of public transport and proximity to the CTC itself.

The CTC DCP provides the following parking requirements: -

- Dwelling under 70m^2 (one-bedroom) 0.5 spaces per dwelling
- Dwelling 75m^2 to 100m^2 (two-bedroom) 0.75 spaces per dwelling
- Dwelling over 100m^2 (three-bedroom) 1 space per dwelling

ARC recommends that these parking rates apply to all future residential dwellings within CTCP4, i.e. to the Site, the Tail and the Island.

5.8.2 GTGD High Density Residential Parking Rates

SEPP 65 (and in turn the Apartment Design Guide) provides for parking for high density residential development within 800m of a railway station to be provided in accordance with the GTGD (high density residential) parking rates.

In this regard, the GTGD provides two sets of parking rates, being for regional centres and for sub-regional centres, which are: -

- **Regional Centre**
  - 0.4 spaces per one-bedroom dwelling
  - 0.7 spaces per two-bedroom dwelling
  - 1.2 spaces per three-bedroom dwelling
  - 1 visitor space per 7 dwellings

- **Sub-Regional Centre**
  - 0.6 spaces per one-bedroom dwelling
  - 0.9 spaces per two-bedroom dwelling
  - 1.4 spaces per three-bedroom dwelling
  - 1 visitor space per 5 dwellings

The GTGD Regional rates generally are equivalent (across a mixed size unit) development with the CTC DCP rates.

It is our opinion that the provision of the CTC DCP rates to key residential Precincts – and specifically those precincts within 800m of Cabramatta Station – is realistic; indeed, the distance to Cabramatta Station from, for example, Precinct 18 or Precinct 23 is not significantly different from (the eastern portion of) the Tail, to which the CTC DCP rates apply. As a maximum, ARC would recommend the application of the GTGD Sub-Regional rates (which as stated are essentially provided for regardless under *SEPP 65*) to all future high density residential dwellings across the Study Area (Residential) Precincts.

5.8.2 Medium Density Residential Parking Rates

The FCW DCP provides the following parking rates for medium density residential dwellings outside of 400m from a railway station, noting that all of the Study Area (Residential) Precincts in which medium density development is forecast are outside of this limit (though within 800m): -

- 1 spaces per one or two-bedroom dwelling
- 2 spaces per three-bedroom dwelling
- 1 visitor space per 4 dwellings

ARC recommends that these parking rates be applied as maximum rates to medium density residential dwellings within the Study Area, noting that they are similar to the medium density residential parking rates provided in the GTGD.

5.8.3 Retail and Commercial Parking

The CTC DCP provides the following parking rates for commercial and retail development within CTCP4: -

- Commercial
  - 1 space per 25m^2 GLFA at ground floor level
  - 1 space per 40m^2 GLFA above ground floor level

- Retail (including general retail, cafes, restaurants etc)
  - 1 space per 25m^2 GLFA

- Bulky Goods Retail
  - 1 space per 40m^2 GLFA

Importantly, the CTC DCP also provides the following caveats in regard to parking: -

Note: 1. Where contributions are paid to a centralised car park (in lieu of onsite parking) the above parking requirements may be reduced by 40%.

Note: 2. Car parking requirements for developments with significant cultural, recreational or entertainment uses will be reduced by a total of 70% of that required by the Chapter 12 – Car Parking, Vehicle and Access Management of this [Citywide] *DCP.*

With regard to *Note 1*, the Planning Proposal includes the (redeveloped) Fisher Street Car Park, or more specifically would provide general public parking (available for both short term visitors and commuters) on-site. As such, there is certainly the potential for shared-use of the parking, as many of the peak parking demand periods do not overlap; for example, residential visitor and restaurant demand periods would generally occur outside of commuter peak period demand periods. As such, the provisions in the CTC DCP for a parking reduction (to the retail and commercial parking requirements) could certainly in our opinion be applied to the Site, and indeed to the Tail site (if public parking was to be made available as it currently is).

With regard to *Note 2*, the relative merits of the Site (or broader development within CTCP4) to provide recreational or entertainment uses will require more detailed assessment as part of future Development Applications. Notwithstanding, ARC would suggest there is significant merit in providing a reduction in parking if – for example – significant 'retail' space is in fact given over to restaurants and cafes such as would generate a high percentage of pedestrian traffic rather than vehicular traffic.

6 Conclusions

Further to our assessment of the Planning Proposal, and of the broader uplift across CTCP4 and in the surrounding residential Precincts, ARC has determined the existing road network can accommodate the additional trip generation arising from the Planning Proposal and broader uplift without being significantly impacted.

6.1 Public & Active Transport

The Site and broader Study Area Precincts have excellent accessibility to public transport (including rail and bus services) as well as to a range of education, retail, commercial and recreational services within the broader Cabramatta Town Centre.

The Site and broader Study Area Precincts have excellent pedestrian and cycle infrastructure available, including access to the regional Parramatta to Liverpool 'Rail Trail' which runs directly adjacent to the Site in Broomfield Street; and pedestrian connections not only to public transport but also to the Cabramatta Town Centre itself, which would potentially be further enhanced by the provision of a pedestrian overbridge from the Site linking to the Cabramatta Station pedestrian overbridge.

The combination of public transport, pedestrian and cycle access/infrastructure provides significant potential for a reduction in (vehicle) trip generation, building on the existing low mode to car driver percentages evident in the Study Area.

6.2 Future Intersection Operations

6.2.1 2031 Base Flows (No Proposal or Uplift in Study Area Precincts)

By 2031 the intersection of Hume Highway & Hollywood Drive & Chadderton Street operates near capacity, i.e. with a Degree of Saturation (DoS) approaching 1, and Level of Service (LoS) 'D' in the PM peak hour.

All other key intersections continue to operate at an acceptable Level of Service, with moderate average delays and spare capacity.

6.2.2 2031 Plus Proposal Only

The additional trip generation arising from the Proposal alone has a very moderate impact on the future operation of the key intersections. All key intersections along the Hume Highway and Cabramatta Road East continue to operate at with acceptable delay and spare capacity other than the intersection of Hume Highway & Hollywood Drive & Chadderton Street, where the existing capacity constraints are further exacerbated even by these very moderate additional flows.

This results in the Hume Highway & Hollywood Drive & Chadderton Street intersection operating essentially at capacity, and at LoS 'E' in the PM peak hour.

All local intersections continue to operate at an acceptable level of service, with moderate average delays and spare capacity.

6.2.3 2031 Plus Proposal and Uplift in Study Area Precincts

The additional trip generation arising from the Proposal and uplift in the Study Area Precincts has a moderate impact on the future operation of the key intersections. All key intersections along the Hume Highway and Cabramatta Road East continue to operate at with acceptable delay and spare capacity other than the intersection of Hume Highway & Hollywood Drive & Chadderton Street by 2031, where the existing capacity constraints are further exacerbated even by these moderate additional flows. This results in the Hume Highway & Hollywood Drive & Chadderton Street intersection operating over capacity, and at LoS 'E' in the PM peak hour.

All local intersections continue to operate at an acceptable level of service, with moderate average delays and spare capacity.

6.3 Intersection Upgrades

At the intersection of the Hume Highway & Hollywood Drive & Chadderton Street, the Hume Highway kerbside southbound lane is currently dedicated as a left turn lane. Reassigning this lane as a shared through/left lane – specifically given the existing availability of a third departure lane in the Hume Highway south of Hollywood Drive – provides significant capacity benefits with no significant upgrade costs. Further to this upgrade, the intersection would operate at an appropriate Level of Service and with spare capacity through all future scenarios.

It is our understanding that an all but identical upgrade for the intersection was examined as part of a recent Planning Proposal for a mixed-use development in Chadderton Street (recently approved for determination by Council) and further that the RMS has previously provided support for this upgrade. Certainly, our assessment supports what would be a relatively minor upgrade providing significant capacity and delay benefits through all future scenarios.

At the intersection of Hume Highway & Cabramatta Road East, the Cabramatta Road East approach currently provides a left turn lane, shared left and right turn lane, and a short right turn lane. Clearway conditions are in place in the AM peak only. Sensitivity testing indicates that extending the current clearway provisions to the PM peak and reassigning existing lanes to instead provide a short left, (clearway extended) shared left and right, and full right turn lanes provides capacity and (reduced) delay benefits through all future scenarios.

At the priority intersection of Cabramatta Road East & Cabramatta Road East, delays to the right turn movement from north to west increase under all future scenarios, though LoS remains acceptable and there are no queuing issues (back in Cabramatta Road East towards Broomfield Street). Notwithstanding, the removal of the right turn provision may warrant consideration in the future, noting that sensitivity testing indicates that the redistribution of these (minor number of trips) could be accommodated by adjacent intersections.

Site trips are expected to be distributed to/from access points to Fisher Street, providing for the removal of existing Site vehicle access points to Broomfield Street (and potentially the removal also of the existing vehicle access points to Cabramatta Road East). The priority intersections of Broomfield Street & Fisher Street, and Cumberland Street & Fisher Street, and forecast to continue operating at a good LoS. Future detailed planning will be required to determine the safest and efficient access strategy for Fisher Street.

6.4 Parking

The CTC DCP already provides what ARC would consider appropriate and sustainable parking provisions which appropriately respond to the proximity of the Site (and adjacent CTCP4 sites) to Cabramatta Station, the bus interchange and of course to the Cabramatta Town Centre west of the railway line.

ARC would recommend that these parking rates are applied to all future development within the CTCP4, noting that these low maximum rates provide significant benefits with regard to residential vehicle trip reduction. There is also the opportunity to reduce parking further to future detailed assessments of the complementary peak demands for retail, commercial and commuter parking across the Site.

The FCW DCP prescribes much higher residential parking rates for areas outside of the Cabramatta Town Centre Precincts (as described in the CTC DCP), even where those (surrounding) Precincts lie within 800m of Cabramatta Station. While it is our opinion that the CTC DCP rates would be appropriate for application to all high density residential development within 800m of Cabramatta Station, ARC would recommend as a minimum the adoption of the RMS Guide to Traffic Generating Development (GTGD) high density residential parking rates to all future high density within 800m of Cabramatta Station, noting that this would be consistent with *SEPP 65* (and by association the Department of Planning & Environment's Apartment Design Guide) provisions.

In addition, ARC would recommend the adoption of the GTGD medium density parking rates to all future medium density within 800m of Cabramatta Station.

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ABN: 70 615 064 670

Ref: 17.038r01v04

20/06/2017

Anton Reisch Consulting
19 Canoon Road
Turramura NSW 2074

Attention: Anton Reisch

RE: **Cabramatta East SIDRA Modelling**

Dear Anton,

We refer to recent correspondence concerning the subject Cabramatta East SIDRA modelling which, as instructed by ARC, includes the following intersections:

- Hume Highway and Lansdowne Road
- Hume Highway, Hollywood Drive and Chadderton Street
- Hume Highway and Cabramatta Road East
- Cabramatta Road East and Cumberland Street

Additionally, the SIDRA modelling of the above intersections was required for each of the below scenarios:

- Existing (Year 2016)
- Existing plus 15-year background growth (Year 2031)
- Existing plus 15-year background growth plus Planning Proposal plus All Precincts (Year 2031 + PP + Precincts)
- Existing plus 15-year background growth plus Planning Proposal Only (Year 2031 + PP Only)

Having regarding for the above, we note that SIDRA modelling has been undertaken based on traffic flows provided by ARC, with the Existing (Year 2016) base models calibrated to observed morning and evening peak period traffic conditions.

The detailed SIDRA output results are provided in **Attachment 1**, with a summary of intersection performances presented in **Table 1** overleaf.

Table 1: Summary of SIDRA Results

INTERSECTION	PERIOD	SCENARIO	DEGREE OF SATURATION	AVERAGE DELAY (secs)	LEVEL OF SERVICE
Hume Hwy / Lansdowne Rd	AM	Year 2016	0.617	18.1	B
		Year 2031	0.720	18.5	B
		Year 2031 + PP + Precincts	0.727	19.0	B
		Year 2031 + PP Only	0.724	18.9	B
	PM	Year 2016	0.752	18.2	B
		Year 2031	0.811	19.2	B
		Year 2031 + PP + Precincts	0.827	19.9	B
		Year 2031 + PP Only	0.816	19.5	B
Hume Hwy / Hollywood Dr / Chadderton St	AM	Year 2016	0.787	26.3	B
		Year 2031	0.894	36.7	C
		Year 2031 + PP + Precincts	0.912	39.0	C
		Year 2031 + PP Only	0.896	35.5	C
	PM	Year 2016	0.897	28.7	C
		Year 2031	0.986	54.7	D
		Year 2031 + PP + Precincts	1.004	65.9	E
		Year 2031 + PP Only	0.990	57.8	E
Hume Hwy / Cabramatta Rd East	AM	Year 2016	0.659	29.0	C
		Year 2031	0.780	30.8	C
		Year 2031 + PP + Precincts	0.824	33.3	C
		Year 2031 + PP Only	0.797	31.5	C
	PM	Year 2016	0.751	29.9	C
		Year 2031	0.854	32.9	C
		Year 2031 + PP + Precincts	0.894	35.1	C
		Year 2031 + PP Only	0.877	34.3	C
Cabramatta Rd East / Cumberland St	AM	Year 2016	0.577	18.1	B
		Year 2031	0.555	16.3	B
		Year 2031 + PP + Precincts	0.575	17.4	B
		Year 2031 + PP Only	0.559	16.4	B
	PM	Year 2016	0.645	20.0	B
		Year 2031	0.684	19.6	B
		Year 2031 + PP + Precincts	0.723	21.0	B
		Year 2031 + PP Only	0.699	20.7	B

It is evident from the above that the Hume Highway / Lansdowne Road, Hume Highway / Cabramatta Road East and Cabramatta Road East / Cumberland Street intersections will all operate with acceptable delays and degree of saturation, with a Level of Service B or C under all scenarios tested.

The Hume Highway / Hollywood Drive / Chadderton Street intersection will however experience a substantial increase in delays, with the Level of Service worsening from C to E, during the critical PM peak period. This intersection will also operate over-capacity (i.e. with a degree of saturation of greater than 1.0) under the 'PM Peak, Year 2031 plus Planning Proposal plus All Precincts' scenario. Notwithstanding, a potential upgrade option has been identified for this intersection, with the aim of improving performance. This upgrade option would involve the below amendments to the westbound traffic lanes of Hume Highway:

- Conversion of the 'left-turn only' approach lane into a 'through and left-turn' lane, and
- An increase in the number of departure lanes from 2 to 3 lanes.

The above upgrades were modelled in SIDRA to assess what impact these amendments would have on the intersection performance. A summary of the SIDRA results is presented in **Table 2** below, with the detailed SIDRA outputs provided in **Attachment 1**.

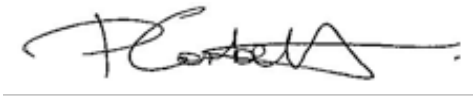
Table 2: Summary of SIDRA Results –Upgrade Option Testing

INTERSECTION	PERIOD	SCENARIO	DEGREE OF SATURATION	AVERAGE DELAY (secs)	LEVEL OF SERVICE
Hume Hwy / Hollywood Dr / Chadderton St	AM	Year 2016 w/ Upgrade	0.787	25.2	B
		Year 2031 w/ Upgrade	0.894	34.4	C
		Year 2031 + PP + Precincts w/ Upgrade	0.912	36.8	C
		Year 2031 + PP Only w/ Upgrade	0.896	33.5	C
	PM	Year 2016 w/ Upgrade	0.666	26.1	B
		Year 2031 w/ Upgrade	0.755	27.7	B
		Year 2031 + PP + Precincts w/ Upgrade	0.755	27.9	B
		Year 2031 + PP Only w/ Upgrade	0.755	27.8	B

By comparing the Hume Hwy / Hollywood Dr / Chadderton St intersection results from **Table 1** and **Table 2**, it is evident that implementation of the abovementioned amendments would result in a substantial improvement to the performance of this intersection. Indeed, only minor changes to the degree of saturation and delays would be experienced, whilst also maintaining an acceptable Level of Service B or C during all scenarios tested. Importantly, it is also evident that this intersection would operate with spare capacity under all scenarios.

Please contact the undersigned should you have any queries or require anything further.

Yours sincerely,



Paul Corbett
Director

Email: pcorbett@pdcconsultants.com.au

Attachments: 1) SIDRA Modelling Results

PDC Consultants

Attachment 1a

Hume Hwy / Lansdowne Rd SIDRA Results

MOVEMENT SUMMARY

Site: 1 [1. Hume Hwy x Lansdowne Rd - AM - Yr 2016]

Intersection: Hume Hwy x Lansdowne Rd
Period: AM Peak
Scenario: Year 2016
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	1589	8.0	0.599	5.1	LOS A	19.1	142.8	0.41	0.38	64.6
6	R2	211	2.4	0.601	64.6	LOS E	9.9	70.8	0.97	0.80	33.4
Approach		1800	7.3	0.601	12.1	LOS A	19.1	142.8	0.47	0.43	58.0
North: Lansdowne Rd											
7	L2	245	2.9	0.496	46.0	LOS D	13.1	93.7	0.86	0.80	37.9
9	R2	103	4.2	0.603	70.2	LOS E	6.8	49.2	1.00	0.79	14.6
Approach		348	3.3	0.603	53.2	LOS D	13.1	93.7	0.90	0.80	31.8
West: Hume Hwy											
10	L2	122	4.1	0.617	23.5	LOS B	28.5	209.4	0.67	0.65	32.7
11	T1	2019	6.2	0.617	17.0	LOS B	28.7	211.4	0.67	0.63	54.5
Approach		2141	6.1	0.617	17.4	LOS B	28.7	211.4	0.67	0.63	53.8
All Vehicles		4289	6.4	0.617	18.1	LOS B	28.7	211.4	0.61	0.56	52.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P4	West Full Crossing	20	61.7	LOS F	0.1	0.1	0.96	0.96
All Pedestrians		20	61.7	LOS F			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [1. Hume Hwy x Lansdowne Rd - PM - Yr 2016]

Intersection: Hume Hwy x Lansdowne Rd
Period: PM Peak
Scenario: Year 2016
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	2162	3.7	0.752	4.3	LOS A	28.7	207.3	0.45	0.43	65.4
6	R2	399	2.5	0.614	51.2	LOS D	17.2	122.6	0.90	0.82	37.1
Approach		2561	3.5	0.752	11.6	LOS A	28.7	207.3	0.52	0.49	58.3
North: Lansdowne Rd											
7	L2	163	2.5	0.235	35.0	LOS C	7.2	51.7	0.72	0.75	41.8
9	R2	62	1.6	0.662	77.8	LOS F	4.3	30.8	1.00	0.81	13.6
Approach		225	2.3	0.662	46.8	LOS D	7.2	51.7	0.80	0.76	34.0
West: Hume Hwy											
10	L2	76	3.9	0.631	29.9	LOS C	29.1	210.6	0.76	0.71	28.7
11	T1	1848	4.0	0.631	23.4	LOS B	29.3	211.9	0.76	0.69	50.4
Approach		1924	4.0	0.631	23.7	LOS B	29.3	211.9	0.76	0.70	49.9
All Vehicles		4710	3.7	0.752	18.2	LOS B	29.3	211.9	0.63	0.59	53.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P4	West Full Crossing	20	61.7	LOS F	0.1	0.1	0.96	0.96
All Pedestrians		20	61.7	LOS F			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [1. Hume Hwy x Lansdowne Rd - AM - 2031 Base]

Intersection: Hume Hwy x Lansdowne Rd
Period: AM Peak
Scenario: Year 2031 Base
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	1910	8.0	0.720	6.3	LOS A	28.3	212.0	0.50	0.47	63.4
6	R2	227	2.4	0.680	66.7	LOS E	11.0	78.4	0.98	0.81	32.9
Approach		2137	7.4	0.720	12.7	LOS A	28.3	212.0	0.55	0.51	57.6
North: Lansdowne Rd											
7	L2	264	2.9	0.598	47.4	LOS D	14.4	103.5	0.88	0.81	37.4
9	R2	122	4.2	0.714	72.4	LOS F	8.3	60.0	1.00	0.85	14.3
Approach		386	3.3	0.714	55.3	LOS D	14.4	103.5	0.92	0.82	30.9
West: Hume Hwy											
10	L2	133	4.1	0.667	23.8	LOS B	32.4	238.4	0.70	0.68	32.4
11	T1	2209	6.2	0.667	17.4	LOS B	32.6	240.6	0.70	0.66	54.3
Approach		2342	6.1	0.667	17.7	LOS B	32.6	240.6	0.70	0.66	53.5
All Vehicles		4865	6.4	0.720	18.5	LOS B	32.6	240.6	0.65	0.61	52.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P4	West Full Crossing	20	61.7	LOS F	0.1	0.1	0.96	0.96
All Pedestrians		20	61.7	LOS F			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [1. Hume Hwy x Lansdowne Rd - PM - 2031 Base]

Intersection: Hume Hwy x Lansdowne Rd
Period: PM Peak
Scenario: Year 2031 Base
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	2330	3.7	0.811	5.0	LOS A	35.9	259.5	0.53	0.50	64.7
6	R2	430	2.5	0.681	52.8	LOS D	19.0	135.9	0.92	0.83	36.7
Approach		2760	3.5	0.811	12.5	LOS A	35.9	259.5	0.59	0.55	57.6
North: Lansdowne Rd											
7	L2	184	2.5	0.271	36.2	LOS C	8.4	59.9	0.74	0.76	41.3
9	R2	67	1.6	0.715	78.7	LOS F	4.7	33.6	1.00	0.84	13.5
Approach		251	2.3	0.715	47.5	LOS D	8.4	59.9	0.81	0.78	33.9
West: Hume Hwy											
10	L2	86	3.9	0.703	30.7	LOS C	34.7	250.9	0.80	0.75	28.2
11	T1	2089	4.0	0.703	24.3	LOS B	34.9	252.5	0.80	0.74	49.9
Approach		2175	4.0	0.703	24.6	LOS B	34.9	252.5	0.80	0.74	49.4
All Vehicles		5186	3.7	0.811	19.2	LOS B	35.9	259.5	0.69	0.64	52.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P4	West Full Crossing	20	61.7	LOS F	0.1	0.1	0.96	0.96
All Pedestrians		20	61.7	LOS F			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [1. Hume Hwy x Lansdowne Rd - AM - 2031 + PP + Precincts]

Intersection: Hume Hwy x Lansdowne Rd
Period: AM Peak
Scenario: Year 2031 + Planning Proposal + Precincts
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	1929	8.0	0.727	6.4	LOS A	29.0	217.1	0.51	0.48	63.4
6	R2	241	2.4	0.686	65.9	LOS E	11.6	83.0	0.98	0.82	33.1
Approach		2170	7.4	0.727	13.0	LOS A	29.0	217.1	0.56	0.52	57.3
North: Lansdowne Rd											
7	L2	275	2.9	0.615	46.8	LOS D	15.0	107.3	0.88	0.81	37.6
9	R2	122	4.2	0.714	72.4	LOS F	8.3	60.0	1.00	0.85	14.3
Approach		397	3.3	0.714	54.7	LOS D	15.0	107.3	0.92	0.82	31.2
West: Hume Hwy											
10	L2	129	4.1	0.674	24.5	LOS B	33.0	242.3	0.71	0.69	31.9
11	T1	2208	6.2	0.674	18.1	LOS B	33.2	244.5	0.71	0.67	53.8
Approach		2337	6.1	0.674	18.4	LOS B	33.2	244.5	0.71	0.67	53.1
All Vehicles		4904	6.4	0.727	19.0	LOS B	33.2	244.5	0.66	0.61	52.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P4	West Full Crossing	20	61.7	LOS F	0.1	0.1	0.96	0.96
All Pedestrians		20	61.7	LOS F			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [1. Hume Hwy x Lansdowne Rd - PM - 2031 + PP + Precincts]

Intersection: Hume Hwy x Lansdowne Rd
Period: PM Peak
Scenario: Year 2031 + Planning Proposal + Precincts
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	2377	3.7	0.827	5.3	LOS A	38.4	277.2	0.55	0.53	64.4
6	R2	463	2.5	0.713	52.5	LOS D	20.6	147.3	0.93	0.83	36.7
Approach		2840	3.5	0.827	13.0	LOS A	38.4	277.2	0.61	0.58	57.2
North: Lansdowne Rd											
7	L2	191	2.5	0.276	35.6	LOS C	8.6	61.7	0.74	0.76	41.6
9	R2	67	1.6	0.715	78.7	LOS F	4.7	33.6	1.00	0.84	13.5
Approach		258	2.3	0.715	46.8	LOS D	8.6	61.7	0.81	0.78	34.3
West: Hume Hwy											
10	L2	86	3.9	0.723	31.7	LOS C	36.0	260.8	0.82	0.77	27.6
11	T1	2119	4.0	0.723	25.3	LOS B	36.2	262.4	0.82	0.76	49.3
Approach		2205	4.0	0.723	25.6	LOS B	36.2	262.4	0.82	0.76	48.8
All Vehicles		5303	3.6	0.827	19.9	LOS B	38.4	277.2	0.71	0.66	52.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P4	West Full Crossing	20	61.7	LOS F	0.1	0.1	0.96	0.96
All Pedestrians		20	61.7	LOS F			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [1. Hume Hwy x Lansdowne Rd - AM - 2031 + PP Only]

Intersection: Hume Hwy x Lansdowne Rd
Period: AM Peak
Scenario: Year 2031 + Planning Proposal Only
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	1921	8.0	0.724	6.4	LOS A	28.7	215.0	0.51	0.48	63.4
6	R2	236	2.4	0.672	65.6	LOS E	11.3	80.8	0.98	0.81	33.1
Approach		2157	7.4	0.724	12.8	LOS A	28.7	215.0	0.56	0.51	57.5
North: Lansdowne Rd											
7	L2	270	2.9	0.601	46.7	LOS D	14.6	105.0	0.88	0.81	37.6
9	R2	122	4.2	0.714	72.4	LOS F	8.3	60.0	1.00	0.85	14.3
Approach		392	3.3	0.714	54.7	LOS D	14.6	105.0	0.92	0.82	31.1
West: Hume Hwy											
10	L2	133	4.1	0.681	24.6	LOS B	33.5	246.6	0.72	0.69	31.8
11	T1	2228	6.2	0.681	18.2	LOS B	33.8	248.9	0.72	0.67	53.7
Approach		2361	6.1	0.681	18.5	LOS B	33.8	248.9	0.72	0.67	53.0
All Vehicles		4910	6.4	0.724	18.9	LOS B	33.8	248.9	0.66	0.61	52.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P4	West Full Crossing	20	61.7	LOS F	0.1	0.1	0.96	0.96
All Pedestrians		20	61.7	LOS F			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [1. Hume Hwy x Lansdowne Rd - PM - 2031 + PP Only]

Intersection: Hume Hwy x Lansdowne Rd
Period: PM Peak
Scenario: Year 2031 + Planning Proposal Only
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	2345	3.7	0.816	5.1	LOS A	36.7	264.9	0.53	0.51	64.6
6	R2	444	2.5	0.703	53.1	LOS D	19.8	141.3	0.93	0.83	36.6
Approach		2789	3.5	0.816	12.7	LOS A	36.7	264.9	0.60	0.56	57.4
North: Lansdowne Rd											
7	L2	190	2.5	0.280	36.3	LOS C	8.7	62.1	0.75	0.76	41.3
9	R2	67	1.6	0.715	78.7	LOS F	4.7	33.6	1.00	0.84	13.5
Approach		257	2.3	0.715	47.4	LOS D	8.7	62.1	0.81	0.78	34.1
West: Hume Hwy											
10	L2	86	3.9	0.710	30.9	LOS C	35.2	254.7	0.81	0.75	28.1
11	T1	2109	4.0	0.710	24.5	LOS B	35.4	256.2	0.81	0.74	49.8
Approach		2195	4.0	0.710	24.7	LOS B	35.4	256.2	0.81	0.74	49.3
All Vehicles		5241	3.7	0.816	19.5	LOS B	36.7	264.9	0.69	0.65	52.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P4	West Full Crossing	20	61.7	LOS F	0.1	0.1	0.96	0.96
All Pedestrians		20	61.7	LOS F			0.96	0.96

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PDC Consultants

Attachment 1b

Hume Hwy / Hollywood Dr / Chadderton St SIDRA Results

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - AM - Yr 2016]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: AM Peak
Scenario: Year 2016
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	61	5.0	0.157	47.6	LOS D	3.5	25.4	0.82	0.73	29.6
2	T1	33	5.0	0.787	61.0	LOS E	12.2	88.8	0.97	0.89	23.5
3	R2	150	5.0	0.787	69.9	LOS E	12.2	88.8	1.00	0.92	16.6
Approach		244	5.0	0.787	63.1	LOS E	12.2	88.8	0.95	0.87	20.8
East: Hume Hwy											
4	L2	42	5.0	0.037	15.9	LOS B	1.0	7.3	0.39	0.67	36.1
5	T1	1548	8.0	0.688	15.6	LOS B	31.6	236.1	0.67	0.62	48.9
6	R2	53	5.0	0.184	59.5	LOS E	3.0	22.2	0.90	0.75	23.5
Approach		1643	7.8	0.688	17.1	LOS B	31.6	236.1	0.67	0.62	47.0
North: Chadderton St											
7	L2	36	5.0	0.052	32.0	LOS C	1.5	10.6	0.66	0.68	30.5
8	T1	33	5.0	0.220	53.6	LOS D	3.3	24.1	0.91	0.72	25.5
9	R2	24	5.0	0.220	58.1	LOS E	3.3	24.1	0.91	0.72	30.4
Approach		93	5.0	0.220	46.4	LOS D	3.3	24.1	0.81	0.70	28.5
West: Hume Hwy											
10	L2	28	5.0	0.785	33.9	LOS C	36.1	264.7	0.87	0.80	40.5
11	T1	1997	5.5	0.785	27.1	LOS B	36.2	265.3	0.86	0.79	40.0
12	R2	48	5.0	0.612	80.6	LOS F	3.4	24.6	1.00	0.77	22.8
Approach		2073	5.5	0.785	28.5	LOS B	36.2	265.3	0.87	0.79	39.2
All Vehicles		4053	6.4	0.787	26.3	LOS B	36.2	265.3	0.79	0.73	39.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	12.5	LOS B	0.0	0.0	0.43	0.43
P4	West Full Crossing	20	58.8	LOS E	0.1	0.1	0.93	0.93
All Pedestrians		40	35.7	LOS D			0.68	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - PM - Yr 2016]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: PM Peak
Scenario: Year 2016
Signals - Fixed Time Isolated Cycle Time = 140 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	68	7.4	0.179	49.6	LOS D	4.0	29.9	0.83	0.74	28.8
2	T1	40	5.0	0.893	73.8	LOS F	15.4	110.8	0.97	1.01	21.3
3	R2	160	3.1	0.893	84.1	LOS F	15.4	110.8	1.00	1.06	14.6
Approach		268	4.5	0.893	73.8	LOS F	15.4	110.8	0.95	0.97	19.0
East: Hume Hwy											
4	L2	24	4.2	0.021	15.8	LOS B	0.6	4.2	0.38	0.66	36.2
5	T1	2111	3.9	0.897	26.9	LOS B	64.3	464.9	0.88	0.86	40.2
6	R2	61	4.9	0.284	68.1	LOS E	3.9	28.2	0.95	0.76	21.8
Approach		2196	3.9	0.897	28.0	LOS B	64.3	464.9	0.87	0.86	39.2
North: Chadderton St											
7	L2	49	4.1	0.079	37.4	LOS C	2.2	16.1	0.71	0.70	28.6
8	T1	27	11.1	0.224	56.4	LOS D	3.2	24.0	0.91	0.72	24.8
9	R2	26	3.8	0.224	60.9	LOS E	3.2	24.0	0.91	0.72	29.7
Approach		102	5.9	0.224	48.4	LOS D	3.2	24.0	0.81	0.71	27.8
West: Hume Hwy											
10	L2	30	3.3	0.568	26.5	LOS B	25.7	186.2	0.69	0.63	44.0
11	T1	1737	4.0	0.568	19.8	LOS B	25.8	186.7	0.68	0.62	45.2
12	R2	55	5.5	0.729	85.2	LOS F	4.1	29.9	1.00	0.82	22.0
Approach		1822	4.0	0.729	21.9	LOS B	25.8	186.7	0.69	0.62	43.6
All Vehicles		4388	4.1	0.897	28.7	LOS C	64.3	464.9	0.80	0.76	38.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	12.4	LOS B	0.0	0.0	0.42	0.42
P4	West Full Crossing	20	60.4	LOS F	0.1	0.1	0.93	0.93
All Pedestrians		40	36.4	LOS D			0.68	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - AM - 2031 Base]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: AM Peak
Scenario: Year 2031 Base
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	74	5.0	0.171	45.3	LOS D	4.1	29.6	0.81	0.73	30.2
2	T1	33	5.0	0.857	65.2	LOS E	13.9	101.8	0.96	0.95	22.7
3	R2	164	5.0	0.857	76.0	LOS F	13.9	101.8	1.00	1.00	15.7
Approach		271	5.0	0.857	66.3	LOS E	13.9	101.8	0.94	0.92	20.3
East: Hume Hwy											
4	L2	42	5.0	0.039	17.1	LOS B	1.1	7.7	0.41	0.68	35.2
5	T1	1851	8.0	0.849	21.5	LOS B	47.2	353.2	0.83	0.78	44.0
6	R2	53	5.0	0.184	59.5	LOS E	3.0	22.2	0.90	0.75	23.5
Approach		1946	7.9	0.849	22.5	LOS B	47.2	353.2	0.83	0.78	42.8
North: Chadderton St											
7	L2	36	5.0	0.049	30.0	LOS C	1.4	10.2	0.63	0.67	31.3
8	T1	33	5.0	0.246	53.9	LOS D	3.6	26.4	0.91	0.73	25.4
9	R2	29	5.0	0.246	58.5	LOS E	3.6	26.4	0.91	0.73	30.3
Approach		98	5.0	0.246	46.5	LOS D	3.6	26.4	0.81	0.71	28.8
West: Hume Hwy											
10	L2	28	5.0	0.894	50.7	LOS D	51.5	377.7	0.98	0.99	34.2
11	T1	2184	5.5	0.894	44.2	LOS D	51.6	378.3	0.97	0.99	31.5
12	R2	48	5.0	0.612	80.6	LOS F	3.4	24.6	1.00	0.77	22.8
Approach		2260	5.5	0.894	45.0	LOS D	51.6	378.3	0.97	0.98	31.3
All Vehicles		4575	6.5	0.894	36.7	LOS C	51.6	378.3	0.90	0.89	34.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	13.8	LOS B	0.0	0.0	0.45	0.45
P4	West Full Crossing	20	56.1	LOS E	0.1	0.1	0.91	0.91
All Pedestrians		40	34.9	LOS D			0.68	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - PM - 2031 Base]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: PM Peak
Scenario: Year 2031 Base
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	74	7.4	0.197	48.2	LOS D	4.4	32.6	0.84	0.74	29.2
2	T1	43	5.0	0.986	102.2	LOS F	21.2	153.0	0.96	1.20	17.6
3	R2	181	3.1	0.986	124.4	LOS F	21.2	153.0	1.00	1.33	10.9
Approach		298	4.4	0.986	102.3	LOS F	21.2	153.0	0.95	1.17	15.2
East: Hume Hwy											
4	L2	26	4.2	0.023	16.2	LOS B	0.6	4.5	0.39	0.67	35.9
5	T1	2268	3.9	0.984	77.4	LOS F	109.4	791.7	0.99	1.23	22.4
6	R2	66	4.9	0.297	65.5	LOS E	4.0	29.4	0.95	0.76	22.3
Approach		2360	3.9	0.984	76.4	LOS F	109.4	791.7	0.98	1.21	22.4
North: Chadderton St											
7	L2	49	4.1	0.076	35.0	LOS C	2.1	15.2	0.69	0.70	29.4
8	T1	29	11.1	0.231	53.8	LOS D	3.3	24.7	0.91	0.73	25.4
9	R2	28	3.8	0.231	58.3	LOS E	3.3	24.7	0.91	0.73	30.4
Approach		106	5.9	0.231	46.3	LOS D	3.3	24.7	0.81	0.71	28.5
West: Hume Hwy											
10	L2	32	3.3	0.675	29.0	LOS C	32.3	233.6	0.77	0.71	42.7
11	T1	2017	4.0	0.675	22.2	LOS B	32.3	234.1	0.76	0.69	43.3
12	R2	59	5.5	0.755	82.9	LOS F	4.2	31.1	1.00	0.84	22.4
Approach		2108	4.0	0.755	24.0	LOS B	32.3	234.1	0.77	0.70	42.1
All Vehicles		4872	4.0	0.986	54.7	LOS D	109.4	791.7	0.88	0.98	27.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	12.9	LOS B	0.0	0.0	0.44	0.44
P4	West Full Crossing	20	57.9	LOS E	0.1	0.1	0.93	0.93
All Pedestrians		40	35.4	LOS D			0.68	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - AM - 2031 + PP + Precincts]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: AM Peak
Scenario: Year 2031 + Planning Proposal + Precincts
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	74	5.0	0.179	46.2	LOS D	4.1	30.3	0.82	0.74	30.0
2	T1	33	5.0	0.896	69.9	LOS E	14.6	106.9	0.96	1.00	21.9
3	R2	164	5.0	0.896	82.7	LOS F	14.6	106.9	1.00	1.07	14.8
Approach		271	5.0	0.896	71.2	LOS F	14.6	106.9	0.94	0.97	19.4
East: Hume Hwy											
4	L2	42	5.0	0.038	16.7	LOS B	1.0	7.6	0.41	0.68	35.5
5	T1	1870	8.0	0.847	20.5	LOS B	46.9	351.1	0.83	0.77	44.7
6	R2	53	5.0	0.184	59.5	LOS E	3.0	22.2	0.90	0.75	23.5
Approach		1965	7.9	0.847	21.5	LOS B	46.9	351.1	0.82	0.77	43.5
North: Chadderton St											
7	L2	36	5.0	0.051	32.7	LOS C	1.5	11.0	0.66	0.68	30.3
8	T1	33	5.0	0.254	54.4	LOS D	3.6	26.4	0.91	0.73	25.3
9	R2	29	5.0	0.254	59.5	LOS E	3.6	26.4	0.92	0.73	30.0
Approach		98	5.0	0.254	47.9	LOS D	3.6	26.4	0.82	0.71	28.4
West: Hume Hwy											
10	L2	28	5.0	0.912	55.3	LOS D	56.6	414.6	0.99	1.04	32.8
11	T1	2263	5.5	0.912	48.9	LOS D	56.7	415.3	0.98	1.03	29.8
12	R2	48	5.0	0.612	80.6	LOS F	3.4	24.6	1.00	0.77	22.8
Approach		2339	5.5	0.912	49.6	LOS D	56.7	415.3	0.98	1.03	29.6
All Vehicles		4673	6.4	0.912	39.0	LOS C	56.7	415.3	0.91	0.91	33.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	13.3	LOS B	0.0	0.0	0.44	0.44
P4	West Full Crossing	20	57.0	LOS E	0.1	0.1	0.92	0.92
All Pedestrians		40	35.2	LOS D			0.68	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - PM - 2031 + PP + Precincts]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: PM Peak
Scenario: Year 2031 + Planning Proposal + Precincts
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	74	3.1	0.197	48.0	LOS D	4.3	31.3	0.83	0.74	29.7
2	T1	43	5.0	0.987	104.0	LOS F	21.4	154.4	0.96	1.21	17.4
3	R2	181	3.1	0.987	125.9	LOS F	21.4	154.4	1.00	1.34	10.8
Approach		298	3.4	0.987	103.4	LOS F	21.4	154.4	0.95	1.17	15.1
East: Hume Hwy											
4	L2	26	4.2	0.023	16.2	LOS B	0.6	4.5	0.39	0.67	35.9
5	T1	2315	3.9	1.004	101.1	LOS F	127.9	925.3	1.00	1.36	18.5
6	R2	66	4.9	0.297	65.5	LOS E	4.0	29.4	0.95	0.76	22.3
Approach		2407	3.9	1.004	99.2	LOS F	127.9	925.3	0.99	1.34	18.6
North: Chadderton St											
7	L2	49	4.1	0.076	35.0	LOS C	2.1	15.2	0.69	0.70	29.4
8	T1	29	11.1	0.240	54.8	LOS D	3.4	25.0	0.92	0.73	25.2
9	R2	28	3.8	0.240	59.4	LOS E	3.4	25.0	0.92	0.73	30.1
Approach		106	5.9	0.240	46.9	LOS D	3.4	25.0	0.81	0.71	28.3
West: Hume Hwy											
10	L2	32	3.3	0.685	29.2	LOS C	33.0	239.0	0.78	0.72	42.7
11	T1	2047	4.0	0.685	22.4	LOS B	33.1	239.5	0.77	0.70	43.2
12	R2	59	5.5	0.755	82.9	LOS F	4.2	31.1	1.00	0.84	22.4
Approach		2138	4.0	0.755	24.2	LOS B	33.1	239.5	0.77	0.70	41.9
All Vehicles		4949	4.0	1.004	65.9	LOS E	127.9	925.3	0.89	1.04	24.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	12.9	LOS B	0.0	0.0	0.44	0.44
P4	West Full Crossing	20	57.9	LOS E	0.1	0.1	0.93	0.93
All Pedestrians		40	35.4	LOS D			0.68	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - AM - 2031 + PP Only]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: AM Peak
Scenario: Year 2031 + Planning Proposal Only
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	74	5.0	0.179	46.2	LOS D	4.1	30.3	0.82	0.74	30.0
2	T1	33	5.0	0.896	69.9	LOS E	14.6	106.9	0.96	1.00	21.9
3	R2	164	5.0	0.896	82.7	LOS F	14.6	106.9	1.00	1.07	14.8
Approach		271	5.0	0.896	71.2	LOS F	14.6	106.9	0.94	0.97	19.4
East: Hume Hwy											
4	L2	42	5.0	0.038	16.7	LOS B	1.0	7.6	0.41	0.68	35.5
5	T1	1862	8.0	0.843	20.1	LOS B	46.2	345.9	0.82	0.77	45.1
6	R2	53	5.0	0.184	59.5	LOS E	3.0	22.2	0.90	0.75	23.5
Approach		1957	7.9	0.843	21.1	LOS B	46.2	345.9	0.82	0.77	43.8
North: Chadderton St											
7	L2	36	5.0	0.051	32.7	LOS C	1.5	11.0	0.66	0.68	30.3
8	T1	33	5.0	0.254	54.4	LOS D	3.6	26.4	0.91	0.73	25.3
9	R2	29	5.0	0.254	59.5	LOS E	3.6	26.4	0.92	0.73	30.0
Approach		98	5.0	0.254	47.9	LOS D	3.6	26.4	0.82	0.71	28.4
West: Hume Hwy											
10	L2	28	5.0	0.889	48.7	LOS D	50.9	373.2	0.97	0.98	34.9
11	T1	2204	5.5	0.889	42.2	LOS C	51.0	373.8	0.96	0.97	32.4
12	R2	48	5.0	0.612	80.6	LOS F	3.4	24.6	1.00	0.77	22.8
Approach		2280	5.5	0.889	43.1	LOS D	51.0	373.8	0.96	0.96	32.1
All Vehicles		4606	6.5	0.896	35.5	LOS C	51.0	373.8	0.89	0.88	34.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	13.3	LOS B	0.0	0.0	0.44	0.44
P4	West Full Crossing	20	57.0	LOS E	0.1	0.1	0.92	0.92
All Pedestrians		40	35.2	LOS D			0.68	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - PM - 2031 + PP Only]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: PM Peak
Scenario: Year 2031 + Planning Proposal Only
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	74	7.4	0.197	48.2	LOS D	4.4	32.6	0.84	0.74	29.2
2	T1	43	5.0	0.986	102.2	LOS F	21.2	153.0	0.96	1.20	17.6
3	R2	181	3.1	0.986	124.4	LOS F	21.2	153.0	1.00	1.33	10.9
Approach		298	4.4	0.986	102.3	LOS F	21.2	153.0	0.95	1.17	15.2
East: Hume Hwy											
4	L2	26	4.2	0.023	16.2	LOS B	0.6	4.5	0.39	0.67	35.9
5	T1	2283	3.9	0.990	84.1	LOS F	114.5	828.3	1.00	1.27	21.1
6	R2	66	4.9	0.297	65.5	LOS E	4.0	29.4	0.95	0.76	22.3
Approach		2375	3.9	0.990	82.8	LOS F	114.5	828.3	0.99	1.25	21.2
North: Chadderton St											
7	L2	49	4.1	0.076	35.0	LOS C	2.1	15.2	0.69	0.70	29.4
8	T1	29	11.1	0.231	53.8	LOS D	3.3	24.7	0.91	0.73	25.4
9	R2	28	3.8	0.231	58.3	LOS E	3.3	24.7	0.91	0.73	30.4
Approach		106	5.9	0.231	46.3	LOS D	3.3	24.7	0.81	0.71	28.5
West: Hume Hwy											
10	L2	32	3.3	0.681	29.1	LOS C	32.7	237.0	0.77	0.71	42.7
11	T1	2036	4.0	0.681	22.4	LOS B	32.8	237.5	0.76	0.70	43.2
12	R2	59	5.5	0.755	82.9	LOS F	4.2	31.1	1.00	0.84	22.4
Approach		2127	4.0	0.755	24.2	LOS B	32.8	237.5	0.77	0.70	42.0
All Vehicles		4906	4.0	0.990	57.8	LOS E	114.5	828.3	0.89	1.00	26.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	12.9	LOS B	0.0	0.0	0.44	0.44
P4	West Full Crossing	20	57.9	LOS E	0.1	0.1	0.93	0.93
All Pedestrians		40	35.4	LOS D			0.68	0.68

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PDC Consultants

Attachment 1c

Hume Hwy / Cabramatta Rd East SIDRA Results

MOVEMENT SUMMARY

Site: 1 [3. Hume Hwy x Cabramatta Rd E - AM - Yr 2016]

Intersection: Hume Hwy x Cabramatta Road East
Period: AM Peak
Scenario: Year 2016
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	1293	8.6	0.490	8.3	LOS A	17.7	133.0	0.46	0.42	62.6
6	R2	351	7.4	0.637	57.7	LOS E	14.4	106.9	0.94	0.82	33.4
Approach		1644	8.3	0.637	18.8	LOS B	17.7	133.0	0.56	0.51	53.8
North: Cabramatta Rd East											
7	L2	553	4.5	0.630	38.4	LOS C	25.5	185.1	0.84	0.84	38.5
9	R2	337	3.9	0.630	60.7	LOS E	12.5	90.5	0.97	0.82	40.0
Approach		890	4.3	0.630	46.8	LOS D	25.5	185.1	0.89	0.83	39.2
West: Hume Hwy											
10	L2	97	7.2	0.659	35.3	LOS C	30.3	222.8	0.83	0.77	49.5
11	T1	1697	5.8	0.659	29.3	LOS C	30.3	222.8	0.83	0.75	49.3
Approach		1794	5.9	0.659	29.6	LOS C	30.3	222.8	0.83	0.75	49.3
All Vehicles		4328	6.5	0.659	29.0	LOS C	30.3	222.8	0.74	0.68	48.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	20	26.2	LOS C	0.0	0.0	0.62	0.62
P4	West Full Crossing	20	61.7	LOS F	0.1	0.1	0.96	0.96
All Pedestrians		40	43.9	LOS E			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [3. Hume Hwy x Cabramatta Rd E - PM - Yr 2016]

Intersection: Hume Hwy x Cabramatta Road East
Period: PM Peak
Scenario: Year 2016
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	1735	3.8	0.665	12.2	LOS A	31.6	228.6	0.62	0.57	59.7
6	R2	626	3.0	0.738	35.3	LOS C	12.1	86.7	0.98	0.85	40.7
Approach		2361	3.6	0.738	18.3	LOS B	31.6	228.6	0.71	0.65	53.7
North: Cabramatta Rd East											
7	L2	470	2.8	0.586	25.8	LOS B	18.8	134.7	0.67	0.78	43.7
9	R2	462	1.5	0.751	60.9	LOS E	14.5	102.5	0.96	0.86	40.0
Approach		932	2.2	0.751	43.2	LOS D	18.8	134.7	0.81	0.82	41.4
West: Hume Hwy											
10	L2	189	3.7	0.710	45.1	LOS D	28.5	206.9	0.91	0.87	45.7
11	T1	1359	4.6	0.710	38.8	LOS C	28.8	209.6	0.92	0.83	44.9
Approach		1548	4.5	0.710	39.5	LOS C	28.8	209.6	0.92	0.83	45.0
All Vehicles		4841	3.6	0.751	29.9	LOS C	31.6	228.6	0.80	0.74	47.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	20	34.9	LOS D	0.1	0.1	0.72	0.72
P4	West Full Crossing	20	57.9	LOS E	0.1	0.1	0.93	0.93
All Pedestrians		40	46.4	LOS E			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [3. Hume Hwy x Cabramatta Rd E - AM - 2031 Base]

Intersection: Hume Hwy x Cabramatta Road East
Period: AM Peak
Scenario: Year 2031 Base
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	1539	8.6	0.555	6.9	LOS A	20.3	152.9	0.45	0.41	63.7
6	R2	520	7.4	0.775	52.4	LOS D	20.2	150.5	0.91	0.84	34.9
Approach		2059	8.3	0.775	18.4	LOS B	20.3	152.9	0.56	0.52	53.8
North: Cabramatta Rd East											
7	L2	623	4.5	0.715	35.0	LOS C	32.1	233.0	0.85	0.86	39.8
9	R2	364	3.9	0.761	69.6	LOS E	12.8	92.6	1.00	0.87	37.9
Approach		987	4.3	0.761	47.8	LOS D	32.1	233.0	0.91	0.86	38.9
West: Hume Hwy											
10	L2	144	7.2	0.780	40.6	LOS C	36.7	270.3	0.92	0.85	47.4
11	T1	1809	5.8	0.780	34.9	LOS C	36.7	270.3	0.93	0.84	46.6
Approach		1953	5.9	0.780	35.3	LOS C	36.7	270.3	0.93	0.84	46.7
All Vehicles		4999	6.6	0.780	30.8	LOS C	36.7	270.3	0.77	0.71	47.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	20	29.4	LOS C	0.1	0.1	0.66	0.66
P4	West Full Crossing	20	61.7	LOS F	0.1	0.1	0.96	0.96
All Pedestrians		40	45.5	LOS E			0.81	0.81

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [3. Hume Hwy x Cabramatta Rd E - PM - 2031 Base]

Intersection: Hume Hwy x Cabramatta Road East
Period: PM Peak
Scenario: Year 2031 Base
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	1856	3.8	0.711	13.0	LOS A	36.0	260.2	0.66	0.61	59.1
6	R2	705	3.0	0.831	40.8	LOS C	15.4	110.8	1.00	0.90	38.6
Approach		2561	3.6	0.831	20.7	LOS B	36.0	260.2	0.75	0.69	52.3
North: Cabramatta Rd East											
7	L2	546	2.8	0.718	27.0	LOS B	23.1	165.9	0.71	0.80	43.2
9	R2	496	1.5	0.854	69.0	LOS E	17.0	120.6	0.97	0.94	38.1
Approach		1042	2.2	0.854	47.0	LOS D	23.1	165.9	0.83	0.87	40.1
West: Hume Hwy											
10	L2	213	3.7	0.799	47.6	LOS D	34.3	249.0	0.96	0.91	44.9
11	T1	1527	4.6	0.799	41.7	LOS C	34.5	251.2	0.96	0.88	43.7
Approach		1740	4.5	0.799	42.4	LOS C	34.5	251.2	0.96	0.89	43.9
All Vehicles		5343	3.6	0.854	32.9	LOS C	36.0	260.2	0.84	0.79	46.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	20	34.9	LOS D	0.1	0.1	0.72	0.72
P4	West Full Crossing	20	57.9	LOS E	0.1	0.1	0.93	0.93
All Pedestrians		40	46.4	LOS E			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [3. Hume Hwy x Cabramatta Rd E - AM - 2031 + PP + Precincts]

Intersection: Hume Hwy x Cabramatta Road East
Period: AM Peak
Scenario: Year 2031 + Planning Proposal + Precincts
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	1544	8.6	0.573	8.3	LOS A	22.4	168.3	0.49	0.45	62.6
6	R2	533	7.4	0.824	55.8	LOS D	21.9	162.7	0.92	0.86	33.9
Approach		2077	8.3	0.824	20.5	LOS B	22.4	168.3	0.60	0.56	52.5
North: Cabramatta Rd East											
7	L2	636	4.5	0.708	33.6	LOS C	32.1	233.5	0.84	0.85	40.3
9	R2	408	3.9	0.814	69.9	LOS E	13.9	100.7	1.00	0.91	37.9
Approach		1044	4.3	0.814	47.8	LOS D	32.1	233.5	0.90	0.88	39.0
West: Hume Hwy											
10	L2	151	7.2	0.819	44.2	LOS D	39.4	290.3	0.95	0.89	46.2
11	T1	1829	5.8	0.819	38.7	LOS C	39.4	290.3	0.96	0.89	45.0
Approach		1980	5.9	0.819	39.1	LOS C	39.4	290.3	0.96	0.89	45.1
All Vehicles		5101	6.5	0.824	33.3	LOS C	39.4	290.3	0.80	0.75	46.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	20	30.7	LOS D	0.1	0.1	0.67	0.67
P4	West Full Crossing	20	61.7	LOS F	0.1	0.1	0.96	0.96
All Pedestrians		40	46.2	LOS E			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [3. Hume Hwy x Cabramatta Rd E - PM - 2031 + PP + Precincts]

Intersection: Hume Hwy x Cabramatta Road East
Period: PM Peak
Scenario: Year 2031 + Planning Proposal + Precincts
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	1873	3.8	0.726	13.8	LOS A	37.6	271.5	0.68	0.63	58.6
6	R2	735	3.0	0.894	49.6	LOS D	18.3	131.2	1.00	0.96	35.7
Approach		2608	3.6	0.894	23.9	LOS B	37.6	271.5	0.77	0.72	50.5
North: Cabramatta Rd East											
7	L2	546	2.8	0.725	27.0	LOS B	23.1	165.9	0.71	0.80	43.2
9	R2	518	1.5	0.884	73.1	LOS F	18.5	131.3	0.97	0.97	37.2
Approach		1064	2.2	0.884	49.5	LOS D	23.1	165.9	0.84	0.89	39.4
West: Hume Hwy											
10	L2	227	3.7	0.807	48.0	LOS D	35.0	254.0	0.96	0.92	44.8
11	T1	1531	4.6	0.807	42.3	LOS C	35.3	256.6	0.97	0.89	43.5
Approach		1758	4.5	0.807	43.0	LOS D	35.3	256.6	0.97	0.90	43.7
All Vehicles		5430	3.6	0.894	35.1	LOS C	37.6	271.5	0.85	0.81	45.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	20	34.9	LOS D	0.1	0.1	0.72	0.72
P4	West Full Crossing	20	57.0	LOS E	0.1	0.1	0.92	0.92
All Pedestrians		40	45.9	LOS E			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [3. Hume Hwy x Cabramatta Rd E - AM - 2031 + PP Only]

Intersection: Hume Hwy x Cabramatta Road East
Period: AM Peak
Scenario: Year 2031 + Planning Proposal Only
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	1539	8.6	0.560	7.4	LOS A	21.0	157.7	0.46	0.43	63.4
6	R2	530	7.4	0.795	53.3	LOS D	20.9	155.9	0.91	0.85	34.6
Approach		2069	8.3	0.795	19.1	LOS B	21.0	157.7	0.58	0.54	53.3
North: Cabramatta Rd East											
7	L2	621	4.5	0.702	34.1	LOS C	31.4	228.5	0.84	0.85	40.1
9	R2	377	3.9	0.769	69.0	LOS E	13.2	95.5	1.00	0.88	38.0
Approach		998	4.3	0.769	47.3	LOS D	31.4	228.5	0.90	0.86	39.1
West: Hume Hwy											
10	L2	152	7.2	0.797	41.6	LOS C	37.4	275.5	0.94	0.86	47.1
11	T1	1809	5.8	0.797	36.1	LOS C	37.4	275.5	0.94	0.85	46.1
Approach		1961	5.9	0.797	36.5	LOS C	37.4	275.5	0.94	0.85	46.2
All Vehicles		5028	6.6	0.797	31.5	LOS C	37.4	275.5	0.78	0.72	46.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	20	30.0	LOS D	0.1	0.1	0.67	0.67
P4	West Full Crossing	20	61.7	LOS F	0.1	0.1	0.96	0.96
All Pedestrians		40	45.9	LOS E			0.81	0.81

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [3. Hume Hwy x Cabramatta Rd E - PM - 2031 + PP Only]

Intersection: Hume Hwy x Cabramatta Road East
Period: PM Peak
Scenario: Year 2031 + Planning Proposal Only
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Hume Hwy											
5	T1	1856	3.8	0.719	13.6	LOS A	36.9	266.6	0.67	0.63	58.6
6	R2	721	3.0	0.877	46.6	LOS D	17.1	122.7	1.00	0.94	36.7
Approach		2577	3.6	0.877	22.9	LOS B	36.9	266.6	0.76	0.71	51.0
North: Cabramatta Rd East											
7	L2	542	2.8	0.719	27.0	LOS B	22.9	164.2	0.70	0.80	43.2
9	R2	512	1.5	0.866	70.1	LOS E	17.8	126.1	0.97	0.95	37.9
Approach		1054	2.2	0.866	47.9	LOS D	22.9	164.2	0.83	0.87	39.9
West: Hume Hwy											
10	L2	224	3.7	0.804	48.0	LOS D	34.7	251.8	0.96	0.92	44.8
11	T1	1527	4.6	0.804	42.1	LOS C	35.0	254.5	0.96	0.89	43.6
Approach		1751	4.5	0.804	42.8	LOS D	35.0	254.5	0.96	0.89	43.8
All Vehicles		5382	3.6	0.877	34.3	LOS C	36.9	266.6	0.84	0.80	45.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P3	North Full Crossing	20	34.9	LOS D	0.1	0.1	0.72	0.72
P4	West Full Crossing	20	57.0	LOS E	0.1	0.1	0.92	0.92
All Pedestrians		40	45.9	LOS E			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PDC Consultants

Attachment 1d

Cabramatta Rd East / Cumberland St SIDRA Results

MOVEMENT SUMMARY

Site: 1 [4. Cabramatta Rd E x Cumberland St - AM - Yr 2016]

Intersection: Cabramatta Road East x Cumberland St
Period: AM Peak
Scenario: Year 2016
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland St											
1	L2	76	1.3	0.084	13.2	LOS A	1.3	9.5	0.55	0.64	33.9
2	T1	30	0.0	0.151	19.7	LOS B	1.8	12.5	0.77	0.66	25.5
3	R2	40	0.0	0.151	23.1	LOS B	1.8	12.5	0.77	0.66	32.4
Approach		146	0.7	0.151	17.2	LOS B	1.8	12.5	0.65	0.65	32.2
East: Cabramatta Rd East											
4	L2	18	0.0	0.437	25.9	LOS B	6.4	46.6	0.86	0.72	32.0
5	T1	435	5.3	0.437	22.5	LOS B	6.5	47.9	0.86	0.72	34.0
6	R2	48	4.2	0.165	24.5	LOS B	1.3	9.3	0.78	0.71	31.7
Approach		501	5.0	0.437	22.8	LOS B	6.5	47.9	0.86	0.72	33.7
North: Cumberland St											
7	L2	35	0.0	0.089	21.7	LOS B	1.3	8.8	0.74	0.64	32.8
8	T1	41	2.4	0.443	21.0	LOS B	5.2	37.8	0.81	0.72	24.7
9	R2	155	5.2	0.443	26.2	LOS B	5.2	37.8	0.86	0.77	30.0
Approach		231	3.9	0.443	24.6	LOS B	5.2	37.8	0.84	0.74	29.9
West: Cabramatta Rd East											
10	L2	104	1.0	0.577	18.0	LOS B	12.4	89.2	0.78	0.71	33.4
11	T1	853	4.0	0.577	13.9	LOS A	12.4	89.2	0.75	0.67	36.0
12	R2	84	3.6	0.194	16.1	LOS B	1.7	11.9	0.77	0.70	32.8
Approach		1041	3.7	0.577	14.5	LOS B	12.4	89.2	0.76	0.68	35.6
All Vehicles		1919	3.8	0.577	18.1	LOS B	12.4	89.2	0.78	0.69	34.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	150	25.9	LOS C	0.3	0.3	0.86	0.86
P2	East Full Crossing	150	24.2	LOS C	0.2	0.2	0.83	0.83
P3	North Full Crossing	150	15.2	LOS B	0.2	0.2	0.66	0.66
P4	West Full Crossing	150	24.2	LOS C	0.2	0.2	0.83	0.83
All Pedestrians		600	22.4	LOS C			0.80	0.80

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [4. Cabramatta Rd E x Cumberland St - PM - Yr 2016]

Intersection: Cabramatta Road East x Cumberland St
Period: PM Peak
Scenario: Year 2016
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland St											
1	L2	107	0.0	0.132	15.8	LOS B	2.2	15.1	0.62	0.67	32.9
2	T1	39	0.0	0.174	21.5	LOS B	2.1	14.4	0.80	0.67	24.9
3	R2	38	0.0	0.174	24.8	LOS B	2.1	14.4	0.80	0.67	32.0
Approach		184	0.0	0.174	18.9	LOS B	2.2	15.1	0.70	0.67	31.5
East: Cabramatta Rd East											
4	L2	14	0.0	0.488	21.9	LOS B	9.0	65.0	0.82	0.70	33.3
5	T1	660	3.9	0.488	18.4	LOS B	9.0	65.0	0.82	0.70	34.9
6	R2	53	1.9	0.158	15.4	LOS B	0.9	6.6	0.79	0.69	34.4
Approach		727	3.7	0.488	18.3	LOS B	9.0	65.0	0.82	0.70	34.9
North: Cumberland St											
7	L2	69	1.4	0.124	18.4	LOS B	1.8	13.2	0.68	0.66	33.7
8	T1	19	5.3	0.618	17.5	LOS B	7.2	51.5	0.74	0.70	26.0
9	R2	223	3.1	0.618	28.8	LOS C	7.2	51.5	0.93	0.82	29.1
Approach		311	2.9	0.618	25.8	LOS B	7.2	51.5	0.86	0.78	30.1
West: Cabramatta Rd East											
10	L2	131	0.8	0.645	23.3	LOS B	12.6	89.3	0.88	0.78	31.4
11	T1	717	1.7	0.645	19.6	LOS B	12.6	89.3	0.87	0.76	34.6
12	R2	72	0.0	0.183	14.3	LOS A	1.3	8.9	0.74	0.69	33.5
Approach		920	1.4	0.645	19.7	LOS B	12.6	89.3	0.86	0.76	34.2
All Vehicles		2142	2.3	0.645	20.0	LOS B	12.6	89.3	0.83	0.73	33.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	20.9	LOS C	0.1	0.1	0.77	0.77
P2	East Full Crossing	50	27.5	LOS C	0.1	0.1	0.89	0.89
P3	North Full Crossing	50	20.9	LOS C	0.1	0.1	0.77	0.77
P4	West Full Crossing	50	27.5	LOS C	0.1	0.1	0.89	0.89
All Pedestrians		200	24.2	LOS C			0.83	0.83

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [4. Cabramatta Rd E x Cumberland St - AM - 2031 Base]

Intersection: Cabramatta Road East x Cumberland St
Period: AM Peak
Scenario: Year 2031 Base
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland St											
1	L2	76	1.3	0.095	15.6	LOS B	1.5	10.7	0.61	0.66	33.0
2	T1	30	0.0	0.189	23.3	LOS B	2.0	13.7	0.83	0.69	24.0
3	R2	40	0.0	0.189	26.7	LOS B	2.0	13.7	0.83	0.69	31.4
Approach		146	0.7	0.189	20.2	LOS B	2.0	13.7	0.72	0.67	31.2
East: Cabramatta Rd East											
4	L2	18	0.0	0.507	22.7	LOS B	9.0	65.6	0.84	0.72	33.0
5	T1	644	5.3	0.507	19.3	LOS B	9.1	66.3	0.84	0.72	34.7
6	R2	48	4.2	0.146	20.5	LOS B	1.2	8.4	0.71	0.69	32.9
Approach		710	5.1	0.507	19.5	LOS B	9.1	66.3	0.83	0.71	34.6
North: Cumberland St											
7	L2	35	0.0	0.111	25.1	LOS B	1.4	9.8	0.80	0.67	31.9
8	T1	41	2.4	0.553	24.7	LOS B	5.7	41.2	0.87	0.74	23.2
9	R2	155	5.2	0.553	30.3	LOS C	5.7	41.2	0.93	0.80	28.8
Approach		231	3.9	0.553	28.5	LOS C	5.7	41.2	0.90	0.77	28.7
West: Cabramatta Rd East											
10	L2	104	1.0	0.555	14.7	LOS B	12.4	89.5	0.70	0.65	34.6
11	T1	961	4.0	0.555	10.7	LOS A	12.4	89.5	0.68	0.61	36.8
12	R2	84	3.6	0.197	13.7	LOS A	1.4	10.3	0.73	0.69	33.7
Approach		1149	3.7	0.555	11.3	LOS A	12.4	89.5	0.68	0.62	36.5
All Vehicles		2236	4.0	0.555	16.3	LOS B	12.4	89.5	0.75	0.67	35.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	150	21.7	LOS C	0.2	0.2	0.79	0.79
P2	East Full Crossing	150	28.5	LOS C	0.3	0.3	0.91	0.91
P3	North Full Crossing	150	12.1	LOS B	0.2	0.2	0.59	0.59
P4	West Full Crossing	150	28.5	LOS C	0.3	0.3	0.91	0.91
All Pedestrians		600	22.7	LOS C			0.80	0.80

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [4. Cabramatta Rd E x Cumberland St - PM - 2031 Base]

Intersection: Cabramatta Road East x Cumberland St
Period: PM Peak
Scenario: Year 2031 Base
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland St											
1	L2	107	0.0	0.141	17.2	LOS B	2.3	15.9	0.65	0.68	32.4
2	T1	39	0.0	0.195	23.3	LOS B	2.1	15.0	0.83	0.69	24.2
3	R2	38	0.0	0.195	26.7	LOS B	2.1	15.0	0.83	0.69	31.5
Approach		184	0.0	0.195	20.4	LOS B	2.3	15.9	0.73	0.68	30.9
East: Cabramatta Rd East											
4	L2	14	0.0	0.514	20.7	LOS B	10.0	72.4	0.81	0.70	33.6
5	T1	744	3.9	0.514	17.2	LOS B	10.0	72.4	0.80	0.70	35.2
6	R2	53	1.9	0.162	15.0	LOS B	0.9	6.1	0.79	0.70	34.5
Approach		811	3.7	0.514	17.2	LOS B	10.0	72.4	0.80	0.70	35.2
North: Cumberland St											
7	L2	69	1.4	0.137	19.9	LOS B	2.0	14.0	0.71	0.67	33.2
8	T1	19	5.3	0.684	18.7	LOS B	7.6	54.9	0.76	0.71	25.5
9	R2	223	3.1	0.684	31.9	LOS C	7.6	54.9	0.96	0.88	28.3
Approach		311	2.9	0.684	28.4	LOS B	7.6	54.9	0.89	0.82	29.3
West: Cabramatta Rd East											
10	L2	131	0.8	0.676	22.3	LOS B	14.2	100.7	0.88	0.79	31.8
11	T1	832	1.7	0.676	18.6	LOS B	14.2	100.7	0.86	0.76	34.8
12	R2	72	0.0	0.185	13.5	LOS A	1.2	8.3	0.72	0.69	33.8
Approach		1035	1.5	0.676	18.7	LOS B	14.2	100.7	0.86	0.76	34.5
All Vehicles		2341	2.3	0.684	19.6	LOS B	14.2	100.7	0.83	0.74	34.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	19.4	LOS B	0.1	0.1	0.74	0.74
P2	East Full Crossing	50	29.3	LOS C	0.1	0.1	0.92	0.92
P3	North Full Crossing	50	19.4	LOS B	0.1	0.1	0.74	0.74
P4	West Full Crossing	50	29.3	LOS C	0.1	0.1	0.92	0.92
All Pedestrians		200	24.3	LOS C			0.83	0.83

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [4. Cabramatta Rd E x Cumberland St - AM - 2031 + PP + Precincts]

Intersection: Cabramatta Road East x Cumberland St
Period: AM Peak
Scenario: Year 2031 + Planning Proposal + Precincts
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland St											
1	L2	90	1.3	0.116	16.4	LOS B	1.8	13.1	0.63	0.67	32.7
2	T1	67	0.0	0.311	23.3	LOS B	3.7	26.0	0.85	0.72	24.2
3	R2	64	0.0	0.311	26.6	LOS B	3.7	26.0	0.85	0.72	31.5
Approach		221	0.5	0.311	21.4	LOS B	3.7	26.0	0.76	0.70	30.4
East: Cabramatta Rd East											
4	L2	15	0.0	0.498	22.7	LOS B	8.8	64.4	0.83	0.71	33.0
5	T1	636	5.3	0.498	19.3	LOS B	8.9	64.9	0.83	0.71	34.7
6	R2	72	4.2	0.335	24.7	LOS B	2.0	14.7	0.81	0.74	31.7
Approach		723	5.1	0.498	19.9	LOS B	8.9	64.9	0.83	0.71	34.5
North: Cumberland St											
7	L2	44	0.0	0.115	24.3	LOS B	1.5	10.4	0.78	0.68	32.0
8	T1	47	2.4	0.574	24.8	LOS B	6.3	46.1	0.89	0.77	23.2
9	R2	167	5.2	0.574	29.6	LOS C	6.3	46.1	0.93	0.80	29.0
Approach		258	3.8	0.574	27.9	LOS B	6.3	46.1	0.90	0.77	28.9
West: Cabramatta Rd East											
10	L2	79	1.0	0.575	16.1	LOS B	13.0	93.7	0.74	0.67	34.2
11	T1	971	4.0	0.575	12.1	LOS A	13.0	93.7	0.72	0.64	36.5
12	R2	87	3.6	0.230	15.1	LOS B	1.6	11.6	0.76	0.70	33.2
Approach		1137	3.8	0.575	12.6	LOS A	13.0	93.7	0.72	0.65	36.2
All Vehicles		2339	3.9	0.575	17.4	LOS B	13.0	93.7	0.78	0.69	34.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	150	21.7	LOS C	0.2	0.2	0.79	0.79
P2	East Full Crossing	150	26.7	LOS C	0.3	0.3	0.88	0.88
P3	North Full Crossing	150	13.3	LOS B	0.2	0.2	0.62	0.62
P4	West Full Crossing	150	26.7	LOS C	0.3	0.3	0.88	0.88
All Pedestrians		600	22.1	LOS C			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [4. Cabramatta Rd E x Cumberland St - PM - 2031 + PP + Precincts]

Intersection: Cabramatta Road East x Cumberland St
Period: PM Peak
Scenario: Year 2031 + Planning Proposal + Precincts
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland St											
1	L2	107	0.0	0.132	15.8	LOS B	2.2	15.1	0.62	0.67	32.9
2	T1	61	0.0	0.247	21.2	LOS B	2.9	20.6	0.81	0.69	25.1
3	R2	48	0.0	0.247	24.6	LOS B	2.9	20.6	0.81	0.69	32.1
Approach		216	0.0	0.247	19.3	LOS B	2.9	20.6	0.72	0.68	31.1
East: Cabramatta Rd East											
4	L2	11	0.0	0.573	22.6	LOS B	11.0	79.6	0.85	0.74	33.0
5	T1	736	3.9	0.573	18.9	LOS B	11.0	79.6	0.84	0.72	34.8
6	R2	87	1.9	0.277	16.5	LOS B	1.6	11.1	0.84	0.73	34.1
Approach		834	3.6	0.573	18.7	LOS B	11.0	79.6	0.84	0.72	34.7
North: Cumberland St											
7	L2	86	1.4	0.145	17.9	LOS B	2.2	15.6	0.67	0.66	33.8
8	T1	34	5.3	0.723	22.9	LOS B	8.6	61.8	0.84	0.81	23.8
9	R2	229	3.1	0.723	32.4	LOS C	8.6	61.8	0.97	0.91	28.2
Approach		349	2.9	0.723	27.9	LOS B	8.6	61.8	0.88	0.84	29.4
West: Cabramatta Rd East											
10	L2	91	0.8	0.712	24.7	LOS B	14.9	105.7	0.91	0.83	31.1
11	T1	848	1.7	0.712	21.1	LOS B	14.9	105.7	0.90	0.81	34.3
12	R2	86	0.0	0.232	15.0	LOS B	1.5	10.7	0.78	0.71	33.2
Approach		1025	1.5	0.712	20.9	LOS B	14.9	105.7	0.89	0.81	34.0
All Vehicles		2424	2.3	0.723	21.0	LOS B	14.9	105.7	0.86	0.77	33.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	20.9	LOS C	0.1	0.1	0.77	0.77
P2	East Full Crossing	50	27.5	LOS C	0.1	0.1	0.89	0.89
P3	North Full Crossing	50	20.9	LOS C	0.1	0.1	0.77	0.77
P4	West Full Crossing	50	27.5	LOS C	0.1	0.1	0.89	0.89
All Pedestrians		200	24.2	LOS C			0.83	0.83

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [4. Cabramatta Rd E x Cumberland St - AM - 2031 + PP Only]

Intersection: Cabramatta Road East x Cumberland St
Period: AM Peak
Scenario: Year 2031 + Planning Proposal Only
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland St											
1	L2	72	1.3	0.096	16.9	LOS B	1.5	10.6	0.64	0.66	32.5
2	T1	44	0.0	0.202	22.5	LOS B	2.3	16.1	0.82	0.68	24.5
3	R2	40	0.0	0.202	25.9	LOS B	2.3	16.1	0.82	0.68	31.7
Approach		156	0.6	0.202	20.8	LOS B	2.3	16.1	0.74	0.67	30.7
East: Cabramatta Rd East											
4	L2	15	0.0	0.479	21.8	LOS B	8.6	63.0	0.81	0.70	33.3
5	T1	637	5.3	0.479	18.4	LOS B	8.7	63.4	0.81	0.70	34.9
6	R2	74	4.2	0.232	21.9	LOS B	1.9	13.7	0.75	0.72	32.5
Approach		726	5.1	0.479	18.8	LOS B	8.7	63.4	0.81	0.70	34.7
North: Cumberland St											
7	L2	38	0.0	0.110	25.1	LOS B	1.4	9.7	0.80	0.67	31.8
8	T1	42	2.4	0.550	24.6	LOS B	5.9	43.1	0.88	0.75	23.2
9	R2	161	5.2	0.550	29.5	LOS C	5.9	43.1	0.92	0.79	29.0
Approach		241	3.9	0.550	27.9	LOS B	5.9	43.1	0.90	0.77	28.9
West: Cabramatta Rd East											
10	L2	80	1.0	0.559	15.4	LOS B	12.6	90.7	0.72	0.66	34.5
11	T1	969	4.0	0.559	11.4	LOS A	12.6	90.7	0.69	0.62	36.7
12	R2	85	3.6	0.218	14.5	LOS A	1.5	11.0	0.75	0.70	33.4
Approach		1134	3.8	0.559	11.9	LOS A	12.6	90.7	0.70	0.63	36.4
All Vehicles		2257	4.0	0.559	16.4	LOS B	12.6	90.7	0.76	0.67	34.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	150	21.0	LOS C	0.2	0.2	0.78	0.78
P2	East Full Crossing	150	27.6	LOS C	0.3	0.3	0.89	0.89
P3	North Full Crossing	150	12.7	LOS B	0.2	0.2	0.60	0.60
P4	West Full Crossing	150	27.6	LOS C	0.3	0.3	0.89	0.89
All Pedestrians		600	22.2	LOS C			0.79	0.79

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [4. Cabramatta Rd E x Cumberland St - PM - 2031 + PP Only]

Intersection: Cabramatta Road East x Cumberland St
Period: PM Peak
Scenario: Year 2031 + Planning Proposal Only
Signals - Fixed Time Isolated Cycle Time = 70 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland St											
1	L2	103	0.0	0.127	15.8	LOS B	2.1	14.5	0.62	0.67	32.9
2	T1	57	0.0	0.209	20.9	LOS B	2.5	17.7	0.80	0.67	25.2
3	R2	38	0.0	0.209	24.3	LOS B	2.5	17.7	0.80	0.67	32.2
Approach		198	0.0	0.209	18.9	LOS B	2.5	17.7	0.71	0.67	31.2
East: Cabramatta Rd East											
4	L2	9	0.0	0.569	22.6	LOS B	10.9	78.9	0.85	0.74	33.1
5	T1	736	3.9	0.569	18.9	LOS B	10.9	78.9	0.84	0.72	34.8
6	R2	87	1.9	0.274	16.5	LOS B	1.6	11.1	0.84	0.73	34.1
Approach		832	3.6	0.569	18.7	LOS B	10.9	78.9	0.84	0.72	34.7
North: Cumberland St											
7	L2	72	1.4	0.135	19.2	LOS B	2.0	14.6	0.69	0.66	33.5
8	T1	19	5.3	0.677	16.5	LOS B	7.7	55.4	0.71	0.68	26.5
9	R2	230	3.1	0.677	31.0	LOS C	7.7	55.4	0.95	0.87	28.5
Approach		321	2.8	0.677	27.5	LOS B	7.7	55.4	0.88	0.81	29.6
West: Cabramatta Rd East											
10	L2	86	0.8	0.699	24.3	LOS B	14.5	102.5	0.91	0.82	31.2
11	T1	842	1.7	0.699	20.7	LOS B	14.5	102.5	0.89	0.80	34.3
12	R2	75	0.0	0.202	14.9	LOS B	1.3	9.3	0.77	0.70	33.2
Approach		1003	1.5	0.699	20.6	LOS B	14.5	102.5	0.89	0.80	34.1
All Vehicles		2354	2.3	0.699	20.7	LOS B	14.5	102.5	0.85	0.76	33.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	20.9	LOS C	0.1	0.1	0.77	0.77
P2	East Full Crossing	50	27.5	LOS C	0.1	0.1	0.89	0.89
P3	North Full Crossing	50	20.9	LOS C	0.1	0.1	0.77	0.77
P4	West Full Crossing	50	27.5	LOS C	0.1	0.1	0.89	0.89
All Pedestrians		200	24.2	LOS C			0.83	0.83

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

PDC Consultants

Attachment 1e

Hume Hwy / Hollywood Dr / Chadderton St Upgrade Option SIDRA Results

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - AM - Yr 2016 w/ Upgrade]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: AM Peak
Scenario: Year 2016 with Upgrade
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	61	5.0	0.157	47.6	LOS D	3.5	25.4	0.82	0.73	29.6
2	T1	33	5.0	0.787	61.0	LOS E	12.2	88.8	0.97	0.89	23.5
3	R2	150	5.0	0.787	69.9	LOS E	12.2	88.8	1.00	0.92	16.6
Approach		244	5.0	0.787	63.1	LOS E	12.2	88.8	0.95	0.87	20.8
East: Hume Hwy											
4	L2	42	5.0	0.464	19.3	LOS B	17.8	132.7	0.55	0.52	38.2
5	T1	1548	8.0	0.464	12.7	LOS A	17.8	133.4	0.54	0.50	51.7
6	R2	53	5.0	0.184	59.5	LOS E	3.0	22.2	0.90	0.75	23.5
Approach		1643	7.8	0.464	14.4	LOS A	17.8	133.4	0.55	0.50	49.5
North: Chadderton St											
7	L2	36	5.0	0.052	32.0	LOS C	1.5	10.6	0.66	0.68	30.5
8	T1	33	5.0	0.220	53.6	LOS D	3.3	24.1	0.91	0.72	25.5
9	R2	24	5.0	0.220	58.1	LOS E	3.3	24.1	0.91	0.72	30.4
Approach		93	5.0	0.220	46.4	LOS D	3.3	24.1	0.81	0.70	28.5
West: Hume Hwy											
10	L2	28	5.0	0.785	33.9	LOS C	36.1	264.7	0.87	0.80	40.5
11	T1	1997	5.5	0.785	27.1	LOS B	36.2	265.3	0.86	0.79	40.0
12	R2	48	5.0	0.612	80.7	LOS F	3.4	24.6	1.00	0.77	22.9
Approach		2073	5.5	0.785	28.5	LOS B	36.2	265.3	0.87	0.79	39.2
All Vehicles		4053	6.4	0.787	25.2	LOS B	36.2	265.3	0.74	0.68	40.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	12.5	LOS B	0.0	0.0	0.43	0.43
P4	West Full Crossing	20	61.7	LOS F	0.1	0.1	0.96	0.96
All Pedestrians		40	37.1	LOS D			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - PM - Yr 2016 w/ Upgrade]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: PM Peak
Scenario: Year 2016 with Upgrade
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	68	7.4	0.131	39.4	LOS C	3.3	24.5	0.75	0.72	31.9
2	T1	40	5.0	0.653	51.8	LOS D	12.1	87.1	0.95	0.82	25.5
3	R2	160	3.1	0.653	57.7	LOS E	12.1	87.1	0.97	0.83	19.0
Approach		268	4.5	0.653	52.2	LOS D	12.1	87.1	0.91	0.80	23.4
East: Hume Hwy											
4	L2	24	4.2	0.666	26.5	LOS B	32.0	231.4	0.74	0.68	33.0
5	T1	2111	3.9	0.666	19.8	LOS B	32.1	231.9	0.73	0.67	45.2
6	R2	61	4.9	0.259	64.1	LOS E	3.7	26.8	0.94	0.76	22.6
Approach		2196	3.9	0.666	21.1	LOS B	32.1	231.9	0.73	0.67	43.9
North: Chadderton St											
7	L2	49	4.1	0.066	30.3	LOS C	1.9	13.9	0.64	0.68	31.2
8	T1	27	11.1	0.166	46.7	LOS D	2.9	21.3	0.85	0.70	27.1
9	R2	26	3.8	0.166	51.3	LOS D	2.9	21.3	0.85	0.70	32.2
Approach		102	5.9	0.166	40.0	LOS C	2.9	21.3	0.75	0.69	30.3
West: Hume Hwy											
10	L2	30	3.3	0.644	32.5	LOS C	28.8	208.7	0.79	0.72	41.1
11	T1	1737	4.0	0.644	25.8	LOS B	28.9	209.2	0.78	0.71	40.9
12	R2	55	5.5	0.603	79.2	LOS F	3.8	28.0	1.00	0.77	23.2
Approach		1822	4.0	0.644	27.5	LOS B	28.9	209.2	0.79	0.71	39.8
All Vehicles		4388	4.1	0.666	26.1	LOS B	32.1	231.9	0.77	0.69	39.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	16.1	LOS B	0.0	0.0	0.49	0.49
P4	West Full Crossing	20	55.2	LOS E	0.1	0.1	0.90	0.90
All Pedestrians		40	35.7	LOS D			0.70	0.70

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - AM - 2031 Base w/ Upgrade]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: AM Peak
Scenario: Year 2031 Base with Upgrade
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	74	5.0	0.171	45.3	LOS D	4.1	29.6	0.81	0.73	30.2
2	T1	33	5.0	0.857	65.2	LOS E	13.9	101.8	0.96	0.95	22.7
3	R2	164	5.0	0.857	76.0	LOS F	13.9	101.8	1.00	1.00	15.7
Approach		271	5.0	0.857	66.3	LOS E	13.9	101.8	0.94	0.92	20.3
East: Hume Hwy											
4	L2	42	5.0	0.569	22.2	LOS B	24.4	181.9	0.63	0.59	35.9
5	T1	1851	8.0	0.569	15.6	LOS B	24.4	182.7	0.63	0.57	48.9
6	R2	53	5.0	0.184	59.5	LOS E	3.0	22.2	0.90	0.75	23.5
Approach		1946	7.9	0.569	16.9	LOS B	24.4	182.7	0.63	0.58	47.3
North: Chadderton St											
7	L2	36	5.0	0.049	30.0	LOS C	1.4	10.2	0.63	0.67	31.3
8	T1	33	5.0	0.246	53.9	LOS D	3.6	26.4	0.91	0.73	25.4
9	R2	29	5.0	0.246	58.5	LOS E	3.6	26.4	0.91	0.73	30.3
Approach		98	5.0	0.246	46.5	LOS D	3.6	26.4	0.81	0.71	28.8
West: Hume Hwy											
10	L2	28	5.0	0.894	50.7	LOS D	51.5	377.7	0.98	0.99	34.2
11	T1	2184	5.5	0.894	44.2	LOS D	51.6	378.3	0.97	0.99	31.5
12	R2	48	5.0	0.612	80.7	LOS F	3.4	24.6	1.00	0.77	22.9
Approach		2260	5.5	0.894	45.0	LOS D	51.6	378.3	0.97	0.98	31.3
All Vehicles		4575	6.5	0.894	34.4	LOS C	51.6	378.3	0.82	0.80	35.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	13.8	LOS B	0.0	0.0	0.45	0.45
P4	West Full Crossing	20	58.8	LOS E	0.1	0.1	0.93	0.93
All Pedestrians		40	36.3	LOS D			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - PM - 2031 Base w/ Upgrade]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: PM Peak
Scenario: Year 2031 Base with Upgrade
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	74	7.4	0.151	40.5	LOS C	3.8	28.0	0.76	0.72	31.6
2	T1	43	5.0	0.753	54.1	LOS D	14.2	102.2	0.96	0.87	24.9
3	R2	181	3.1	0.753	61.7	LOS E	14.2	102.2	0.99	0.89	18.1
Approach		298	4.4	0.753	55.3	LOS D	14.2	102.2	0.93	0.85	22.5
East: Hume Hwy											
4	L2	26	4.2	0.715	27.5	LOS B	36.1	261.3	0.77	0.72	32.3
5	T1	2268	3.9	0.715	20.8	LOS B	36.2	261.8	0.76	0.70	44.5
6	R2	66	4.9	0.297	65.5	LOS E	4.0	29.4	0.95	0.76	22.3
Approach		2360	3.9	0.715	22.1	LOS B	36.2	261.8	0.77	0.70	43.2
North: Chadderton St											
7	L2	49	4.1	0.066	30.3	LOS C	1.9	13.9	0.64	0.68	31.2
8	T1	29	11.1	0.178	46.9	LOS D	3.1	23.0	0.85	0.70	27.0
9	R2	28	3.8	0.178	51.4	LOS D	3.1	23.0	0.85	0.70	32.2
Approach		106	5.9	0.178	40.4	LOS C	3.1	23.0	0.75	0.69	30.2
West: Hume Hwy											
10	L2	32	3.3	0.745	34.6	LOS C	36.1	261.4	0.86	0.79	40.1
11	T1	2017	4.0	0.745	27.8	LOS B	36.2	262.0	0.85	0.77	39.6
12	R2	59	5.5	0.755	83.0	LOS F	4.2	31.1	1.00	0.84	22.5
Approach		2108	4.0	0.755	29.5	LOS C	36.2	262.0	0.85	0.77	38.6
All Vehicles		4872	4.0	0.755	27.7	LOS B	36.2	262.0	0.81	0.74	38.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	16.1	LOS B	0.0	0.0	0.49	0.49
P4	West Full Crossing	20	54.3	LOS E	0.1	0.1	0.90	0.90
All Pedestrians		40	35.2	LOS D			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - AM - 2031 + PP + Precincts w/ Upgrade]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: AM Peak
Scenario: Year 2031 + Planning Proposal + Precincts with Upgrade
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	74	5.0	0.179	46.2	LOS D	4.1	30.3	0.82	0.74	30.0
2	T1	33	5.0	0.896	69.9	LOS E	14.6	106.9	0.96	1.00	21.9
3	R2	164	5.0	0.896	82.7	LOS F	14.6	106.9	1.00	1.07	14.8
Approach		271	5.0	0.896	71.2	LOS F	14.6	106.9	0.94	0.97	19.4
East: Hume Hwy											
4	L2	42	5.0	0.568	21.6	LOS B	24.2	181.0	0.62	0.59	36.3
5	T1	1870	8.0	0.568	15.0	LOS B	24.3	181.8	0.62	0.57	49.4
6	R2	53	5.0	0.184	59.5	LOS E	3.0	22.2	0.90	0.75	23.5
Approach		1965	7.9	0.568	16.4	LOS B	24.3	181.8	0.62	0.57	47.7
North: Chadderton St											
7	L2	36	5.0	0.051	32.7	LOS C	1.5	11.0	0.66	0.68	30.3
8	T1	33	5.0	0.254	54.4	LOS D	3.6	26.4	0.91	0.73	25.3
9	R2	29	5.0	0.254	59.5	LOS E	3.6	26.4	0.92	0.73	30.0
Approach		98	5.0	0.254	47.9	LOS D	3.6	26.4	0.82	0.71	28.4
West: Hume Hwy											
10	L2	28	5.0	0.912	55.3	LOS D	56.6	414.6	0.99	1.04	32.8
11	T1	2263	5.5	0.912	48.9	LOS D	56.7	415.3	0.98	1.03	29.8
12	R2	48	5.0	0.612	80.7	LOS F	3.4	24.6	1.00	0.77	22.9
Approach		2339	5.5	0.912	49.6	LOS D	56.7	415.3	0.98	1.03	29.6
All Vehicles		4673	6.4	0.912	36.8	LOS C	56.7	415.3	0.83	0.83	34.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	13.3	LOS B	0.0	0.0	0.44	0.44
P4	West Full Crossing	20	59.8	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		40	36.6	LOS D			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - PM - 2031 + PP + Precincts w/ Upgrade]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: PM Peak
Scenario: Year 2031 + Planning Proposal + Precincts with Upgrade
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	74	3.1	0.150	41.1	LOS C	3.8	27.7	0.77	0.72	31.8
2	T1	43	5.0	0.748	53.6	LOS D	14.1	101.6	0.95	0.86	25.0
3	R2	181	3.1	0.748	61.5	LOS E	14.1	101.6	0.99	0.89	18.2
Approach		298	3.4	0.748	55.3	LOS D	14.1	101.6	0.93	0.84	22.6
East: Hume Hwy											
4	L2	26	4.2	0.730	27.9	LOS B	37.4	270.4	0.79	0.73	32.1
5	T1	2315	3.9	0.730	21.1	LOS B	37.5	270.9	0.77	0.71	44.2
6	R2	66	4.9	0.297	65.5	LOS E	4.0	29.4	0.95	0.76	22.3
Approach		2407	3.9	0.730	22.4	LOS B	37.5	270.9	0.78	0.71	43.0
North: Chadderton St											
7	L2	49	4.1	0.066	30.3	LOS C	1.9	13.9	0.64	0.68	31.2
8	T1	29	11.1	0.178	46.9	LOS D	3.1	23.0	0.85	0.70	27.0
9	R2	28	3.8	0.178	51.4	LOS D	3.1	23.0	0.85	0.70	32.2
Approach		106	5.9	0.178	40.4	LOS C	3.1	23.0	0.75	0.69	30.2
West: Hume Hwy											
10	L2	32	3.3	0.755	34.9	LOS C	36.9	267.4	0.87	0.79	40.0
11	T1	2047	4.0	0.755	28.1	LOS B	37.0	268.1	0.85	0.78	39.4
12	R2	59	5.5	0.755	83.0	LOS F	4.2	31.1	1.00	0.84	22.5
Approach		2138	4.0	0.755	29.7	LOS C	37.0	268.1	0.86	0.78	38.5
All Vehicles		4949	4.0	0.755	27.9	LOS B	37.5	270.9	0.82	0.75	38.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	16.1	LOS B	0.0	0.0	0.49	0.49
P4	West Full Crossing	20	54.3	LOS E	0.1	0.1	0.90	0.90
All Pedestrians		40	35.2	LOS D			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - AM - 2031 + PP Only w/ Upgrade]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: AM Peak
Scenario: Year 2031 + Planning Proposal Only with Upgrade
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	95% Back of Queue Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	74	5.0	0.179	46.2	LOS D	4.1	30.3	0.82	0.74	30.0
2	T1	33	5.0	0.896	69.9	LOS E	14.6	106.9	0.96	1.00	21.9
3	R2	164	5.0	0.896	82.7	LOS F	14.6	106.9	1.00	1.07	14.8
Approach		271	5.0	0.896	71.2	LOS F	14.6	106.9	0.94	0.97	19.4
East: Hume Hwy											
4	L2	42	5.0	0.566	21.6	LOS B	24.1	179.9	0.62	0.58	36.3
5	T1	1862	8.0	0.566	15.0	LOS B	24.1	180.6	0.62	0.57	49.4
6	R2	53	5.0	0.184	59.5	LOS E	3.0	22.2	0.90	0.75	23.5
Approach		1957	7.9	0.566	16.3	LOS B	24.1	180.6	0.62	0.57	47.8
North: Chadderton St											
7	L2	36	5.0	0.051	32.7	LOS C	1.5	11.0	0.66	0.68	30.3
8	T1	33	5.0	0.254	54.4	LOS D	3.6	26.4	0.91	0.73	25.3
9	R2	29	5.0	0.254	59.5	LOS E	3.6	26.4	0.92	0.73	30.0
Approach		98	5.0	0.254	47.9	LOS D	3.6	26.4	0.82	0.71	28.4
West: Hume Hwy											
10	L2	28	5.0	0.889	48.7	LOS D	50.9	373.2	0.97	0.98	34.9
11	T1	2204	5.5	0.889	42.2	LOS C	51.0	373.8	0.96	0.97	32.4
12	R2	48	5.0	0.612	80.7	LOS F	3.4	24.6	1.00	0.77	22.9
Approach		2280	5.5	0.889	43.1	LOS D	51.0	373.8	0.96	0.96	32.1
All Vehicles		4606	6.5	0.896	33.5	LOS C	51.0	373.8	0.81	0.79	35.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Average Back of Queue Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	13.3	LOS B	0.0	0.0	0.44	0.44
P4	West Full Crossing	20	59.8	LOS E	0.1	0.1	0.94	0.94
All Pedestrians		40	36.6	LOS D			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

Site: 1 [2. Hume Hwy x Hollywood Dr x Chadderton St - PM - 2031 + PP Only w/ Upgrade]

Intersection: Hume Hwy x Hollywood Dr x Chadderton St
Period: PM Peak
Scenario: Year 2031 + Planning Proposal Only with Upgrade
Signals - Fixed Time Isolated Cycle Time = 135 seconds (Optimum Cycle Time - Minimum Delay)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Hollywood Dr											
1	L2	74	7.4	0.151	40.5	LOS C	3.8	28.0	0.76	0.72	31.6
2	T1	43	5.0	0.753	54.1	LOS D	14.2	102.2	0.96	0.87	24.9
3	R2	181	3.1	0.753	61.7	LOS E	14.2	102.2	0.99	0.89	18.1
Approach		298	4.4	0.753	55.3	LOS D	14.2	102.2	0.93	0.85	22.5
East: Hume Hwy											
4	L2	26	4.2	0.720	27.6	LOS B	36.5	264.1	0.78	0.72	32.3
5	T1	2283	3.9	0.720	20.9	LOS B	36.6	264.7	0.77	0.70	44.4
6	R2	66	4.9	0.297	65.5	LOS E	4.0	29.4	0.95	0.76	22.3
Approach		2375	3.9	0.720	22.2	LOS B	36.6	264.7	0.77	0.71	43.1
North: Chadderton St											
7	L2	49	4.1	0.066	30.3	LOS C	1.9	13.9	0.64	0.68	31.2
8	T1	29	11.1	0.178	46.9	LOS D	3.1	23.0	0.85	0.70	27.0
9	R2	28	3.8	0.178	51.4	LOS D	3.1	23.0	0.85	0.70	32.2
Approach		106	5.9	0.178	40.4	LOS C	3.1	23.0	0.75	0.69	30.2
West: Hume Hwy											
10	L2	32	3.3	0.751	34.8	LOS C	36.6	265.2	0.86	0.79	40.1
11	T1	2036	4.0	0.751	28.0	LOS B	36.7	265.8	0.85	0.78	39.5
12	R2	59	5.5	0.755	83.0	LOS F	4.2	31.1	1.00	0.84	22.5
Approach		2127	4.0	0.755	29.6	LOS C	36.7	265.8	0.86	0.78	38.6
All Vehicles		4906	4.0	0.755	27.8	LOS B	36.7	265.8	0.82	0.75	38.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	20	16.1	LOS B	0.0	0.0	0.49	0.49
P4	West Full Crossing	20	54.3	LOS E	0.1	0.1	0.90	0.90
All Pedestrians		40	35.2	LOS D			0.69	0.69

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Cabramatta East Planning Proposal

Traffic & Transport Assessment

Appendix B2 SIDRA Reports Minor Intersections

Prepared for

Moon Investments Pty Ltd

Prepare by

ARC Traffic + Transport & PDC Consulting

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1 Cumberland Street & Longfield Street

Table 1.1 Cumberland Street & Longfield Street AM 2016

MOVEMENT SUMMARY

Site: 101 [CS & LS AM 2016]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland Street											
1	L2	33	2.0	0.054	19.3	LOS B	0.7	4.7	0.71	0.68	39.2
2	T1	45	2.0	0.197	15.7	LOS B	2.2	16.0	0.75	0.68	40.0
3	R2	60	2.0	0.197	20.3	LOS B	2.2	16.0	0.75	0.68	39.6
Approach		138	2.0	0.197	18.6	LOS B	2.2	16.0	0.74	0.68	39.7
East: Longfield Street											
4	L2	165	2.0	0.193	14.7	LOS B	2.8	20.3	0.62	0.71	41.3
5	T1	130	2.0	0.160	10.0	LOS A	2.4	16.8	0.61	0.51	43.8
6	R2	9	2.0	0.160	14.6	LOS B	2.4	16.8	0.61	0.51	43.4
Approach		304	2.0	0.193	12.7	LOS A	2.8	20.3	0.61	0.62	42.4
North: Cumberland Street											
7	L2	5	2.0	0.011	18.9	LOS B	0.1	0.9	0.69	0.59	39.9
8	T1	31	2.0	0.053	14.7	LOS B	0.6	4.6	0.70	0.54	41.4
9	R2	3	2.0	0.053	19.3	LOS B	0.6	4.6	0.71	0.54	41.1
Approach		39	2.0	0.053	15.6	LOS B	0.6	4.6	0.70	0.55	41.1
West: Longfield Street											
10	L2	3	2.0	0.029	13.8	LOS A	0.4	2.9	0.56	0.44	43.7
11	T1	70	2.0	0.136	10.1	LOS A	1.5	10.9	0.60	0.54	43.1
12	R2	41	2.0	0.136	15.1	LOS B	1.5	10.9	0.62	0.59	42.2
Approach		114	2.0	0.136	12.0	LOS A	1.5	10.9	0.60	0.55	42.8
All Vehicles		595	2.0	0.197	14.1	LOS A	2.8	20.3	0.65	0.61	41.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	14.7	LOS B	0.1	0.1	0.70	0.70
P2	East Full Crossing	50	20.9	LOS C	0.1	0.1	0.84	0.84
P3	North Full Crossing	50	14.7	LOS B	0.1	0.1	0.70	0.70
P4	West Full Crossing	50	20.9	LOS C	0.1	0.1	0.84	0.84
All Pedestrians		200	17.8	LOS B			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Table 1.2 Cumberland Street & Longfield Street PM 2016

MOVEMENT SUMMARY

Site: 101 [CS & LS PM 2016]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland Street											
1	L2	62	2.0	0.092	18.1	LOS B	1.2	8.5	0.69	0.69	39.8
2	T1	70	2.0	0.257	14.6	LOS B	3.1	22.1	0.74	0.68	40.6
3	R2	78	2.0	0.257	19.2	LOS B	3.1	22.1	0.74	0.68	40.2
Approach		210	2.0	0.257	17.4	LOS B	3.1	22.1	0.72	0.68	40.2
East: Longfield Street											
4	L2	150	2.0	0.189	16.0	LOS B	2.7	19.5	0.65	0.72	40.7
5	T1	128	2.0	0.182	11.4	LOS A	2.6	18.5	0.65	0.55	43.0
6	R2	15	2.0	0.182	15.9	LOS B	2.6	18.5	0.65	0.55	42.6
Approach		293	2.0	0.189	14.0	LOS A	2.7	19.5	0.65	0.63	41.8
North: Cumberland Street											
7	L2	19	2.0	0.028	17.7	LOS B	0.4	2.5	0.66	0.65	39.9
8	T1	50	2.0	0.087	13.5	LOS A	1.1	7.8	0.68	0.55	41.9
9	R2	7	2.0	0.087	18.1	LOS B	1.1	7.8	0.68	0.55	41.6
Approach		76	2.0	0.087	15.0	LOS B	1.1	7.8	0.68	0.57	41.4
West: Longfield Street											
10	L2	1	2.0	0.054	15.2	LOS B	0.8	5.4	0.61	0.46	43.2
11	T1	109	2.0	0.251	11.8	LOS A	2.8	20.2	0.65	0.58	42.3
12	R2	80	2.0	0.251	17.2	LOS B	2.8	20.2	0.69	0.66	41.1
Approach		190	2.0	0.251	14.1	LOS A	2.8	20.2	0.67	0.61	41.8
All Vehicles		769	2.0	0.257	15.0	LOS B	3.1	22.1	0.68	0.64	41.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	16.2	LOS B	0.1	0.1	0.73	0.73
P2	East Full Crossing	50	19.2	LOS B	0.1	0.1	0.80	0.80
P3	North Full Crossing	50	16.2	LOS B	0.1	0.1	0.73	0.73
P4	West Full Crossing	50	19.2	LOS B	0.1	0.1	0.80	0.80
All Pedestrians		200	17.7	LOS B			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Table 1.3 Cumberland Street & Longfield Street AM 2031

MOVEMENT SUMMARY

Site: 101 [CS & LS AM 2031]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland Street											
1	L2	33	2.0	0.054	19.3	LOS B	0.7	4.7	0.71	0.68	39.2
2	T1	45	2.0	0.197	15.7	LOS B	2.2	16.0	0.75	0.68	40.0
3	R2	60	2.0	0.197	20.3	LOS B	2.2	16.0	0.75	0.68	39.6
Approach		138	2.0	0.197	18.6	LOS B	2.2	16.0	0.74	0.68	39.7
East: Longfield Street											
4	L2	173	2.0	0.202	14.8	LOS B	3.0	21.4	0.62	0.71	41.2
5	T1	136	2.0	0.167	10.0	LOS A	2.5	17.6	0.61	0.51	43.8
6	R2	9	2.0	0.167	14.6	LOS B	2.5	17.6	0.61	0.51	43.4
Approach		318	2.0	0.202	12.7	LOS A	3.0	21.4	0.62	0.62	42.4
North: Cumberland Street											
7	L2	5	2.0	0.011	18.9	LOS B	0.1	0.9	0.69	0.59	39.9
8	T1	31	2.0	0.053	14.7	LOS B	0.6	4.6	0.70	0.54	41.4
9	R2	3	2.0	0.053	19.3	LOS B	0.6	4.6	0.71	0.54	41.1
Approach		39	2.0	0.053	15.6	LOS B	0.6	4.6	0.70	0.55	41.1
West: Longfield Street											
10	L2	3	2.0	0.034	13.8	LOS A	0.5	3.5	0.56	0.44	43.7
11	T1	81	2.0	0.160	10.2	LOS A	1.8	12.7	0.60	0.54	43.1
12	R2	48	2.0	0.160	15.3	LOS B	1.8	12.7	0.62	0.60	42.1
Approach		132	2.0	0.160	12.1	LOS A	1.8	12.7	0.61	0.56	42.7
All Vehicles		627	2.0	0.202	14.1	LOS A	3.0	21.4	0.65	0.62	41.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	14.7	LOS B	0.1	0.1	0.70	0.70
P2	East Full Crossing	50	20.9	LOS C	0.1	0.1	0.84	0.84
P3	North Full Crossing	50	14.7	LOS B	0.1	0.1	0.70	0.70
P4	West Full Crossing	50	20.9	LOS C	0.1	0.1	0.84	0.84
All Pedestrians		200	17.8	LOS B			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Table 1.4 Cumberland Street & Longfield Street PM 2031

MOVEMENT SUMMARY

Site: 101 [CS & LS PM 2031]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland Street											
1	L2	62	2.0	0.102	19.6	LOS B	1.3	9.0	0.72	0.70	39.1
2	T1	70	2.0	0.283	16.3	LOS B	3.3	23.4	0.78	0.70	39.8
3	R2	78	2.0	0.283	20.9	LOS B	3.3	23.4	0.78	0.70	39.5
Approach		210	2.0	0.283	19.0	LOS B	3.3	23.4	0.76	0.70	39.5
East: Longfield Street											
4	L2	150	2.0	0.176	14.6	LOS B	2.6	18.3	0.61	0.70	41.3
5	T1	128	2.0	0.170	10.0	LOS A	2.4	17.4	0.61	0.52	43.7
6	R2	15	2.0	0.170	14.6	LOS B	2.4	17.4	0.61	0.52	43.3
Approach		293	2.0	0.176	12.6	LOS A	2.6	18.3	0.61	0.61	42.4
North: Cumberland Street											
7	L2	19	2.0	0.031	19.1	LOS B	0.4	2.7	0.70	0.66	39.3
8	T1	50	2.0	0.095	15.0	LOS B	1.2	8.3	0.72	0.57	41.2
9	R2	7	2.0	0.095	19.6	LOS B	1.2	8.3	0.72	0.57	40.9
Approach		76	2.0	0.095	16.5	LOS B	1.2	8.3	0.71	0.59	40.7
West: Longfield Street											
10	L2	1	2.0	0.063	14.0	LOS A	0.9	6.4	0.57	0.45	43.8
11	T1	136	2.0	0.290	10.7	LOS A	3.4	24.4	0.63	0.57	42.9
12	R2	100	2.0	0.290	16.1	LOS B	3.4	24.4	0.67	0.66	41.6
Approach		237	2.0	0.290	13.0	LOS A	3.4	24.4	0.65	0.61	42.3
All Vehicles		816	2.0	0.290	14.7	LOS B	3.4	24.4	0.67	0.63	41.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	14.7	LOS B	0.1	0.1	0.70	0.70
P2	East Full Crossing	50	20.9	LOS C	0.1	0.1	0.84	0.84
P3	North Full Crossing	50	14.7	LOS B	0.1	0.1	0.70	0.70
P4	West Full Crossing	50	20.9	LOS C	0.1	0.1	0.84	0.84
All Pedestrians		200	17.8	LOS B			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Table 1.5 Cumberland Street & Longfield Street AM 2031 + Planning Proposal

MOVEMENT SUMMARY

Site: 101 [CS & LS AM 2031 + PP]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland Street											
1	L2	25	2.0	0.049	18.5	LOS B	0.6	4.4	0.69	0.64	40.0
2	T1	45	2.0	0.241	15.1	LOS B	2.8	19.9	0.74	0.69	40.0
3	R2	93	2.0	0.241	19.9	LOS B	2.8	19.9	0.75	0.70	39.6
Approach		163	2.0	0.241	18.3	LOS B	2.8	19.9	0.74	0.69	39.7
East: Longfield Street											
4	L2	193	2.0	0.234	15.6	LOS B	3.5	25.0	0.65	0.72	40.9
5	T1	118	2.0	0.152	10.5	LOS A	2.2	15.7	0.62	0.52	43.5
6	R2	9	2.0	0.152	15.1	LOS B	2.2	15.7	0.62	0.52	43.1
Approach		320	2.0	0.234	13.7	LOS A	3.5	25.0	0.64	0.64	41.9
North: Cumberland Street											
7	L2	5	2.0	0.010	18.2	LOS B	0.1	0.9	0.67	0.58	40.2
8	T1	31	2.0	0.050	13.9	LOS A	0.6	4.5	0.69	0.53	41.7
9	R2	3	2.0	0.050	18.5	LOS B	0.6	4.5	0.69	0.53	41.4
Approach		39	2.0	0.050	14.8	LOS B	0.6	4.5	0.69	0.54	41.5
West: Longfield Street											
10	L2	3	2.0	0.031	14.4	LOS A	0.4	3.1	0.58	0.45	43.4
11	T1	70	2.0	0.144	10.8	LOS A	1.6	11.2	0.62	0.55	42.8
12	R2	41	2.0	0.144	15.8	LOS B	1.6	11.2	0.64	0.60	41.9
Approach		114	2.0	0.144	12.7	LOS A	1.6	11.2	0.62	0.56	42.5
All Vehicles		636	2.0	0.241	14.8	LOS B	3.5	25.0	0.66	0.63	41.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	15.4	LOS B	0.1	0.1	0.72	0.72
P2	East Full Crossing	50	20.1	LOS C	0.1	0.1	0.82	0.82
P3	North Full Crossing	50	15.4	LOS B	0.1	0.1	0.72	0.72
P4	West Full Crossing	50	20.1	LOS C	0.1	0.1	0.82	0.82
All Pedestrians		200	17.7	LOS B			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Table 1.6 Cumberland Street & Longfield Street PM 2031 + Planning Proposal

MOVEMENT SUMMARY

Site: 101 [CS & LS PM 2031 + PP]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland Street											
1	L2	46	2.0	0.060	15.9	LOS B	0.8	5.8	0.62	0.67	40.7
2	T1	70	2.0	0.298	12.8	LOS A	3.8	26.9	0.70	0.69	41.2
3	R2	120	2.0	0.298	17.4	LOS B	3.8	26.9	0.70	0.69	40.8
Approach		236	2.0	0.298	15.7	LOS B	3.8	26.9	0.69	0.68	40.9
East: Longfield Street											
4	L2	185	2.0	0.264	18.5	LOS B	3.8	26.9	0.72	0.74	39.6
5	T1	115	2.0	0.190	13.4	LOS A	2.6	18.3	0.70	0.58	42.0
6	R2	15	2.0	0.190	18.0	LOS B	2.6	18.3	0.70	0.58	41.6
Approach		315	2.0	0.264	16.6	LOS B	3.8	26.9	0.71	0.68	40.5
North: Cumberland Street											
7	L2	19	2.0	0.025	15.6	LOS B	0.3	2.3	0.61	0.65	40.9
8	T1	50	2.0	0.076	11.4	LOS A	1.0	7.2	0.63	0.51	43.0
9	R2	7	2.0	0.076	16.0	LOS B	1.0	7.2	0.63	0.51	42.6
Approach		76	2.0	0.076	12.9	LOS A	1.0	7.2	0.62	0.54	42.4
West: Longfield Street											
10	L2	1	2.0	0.064	17.2	LOS B	0.9	6.2	0.66	0.50	42.2
11	T1	109	2.0	0.295	14.4	LOS A	3.1	22.3	0.72	0.62	41.1
12	R2	80	2.0	0.295	20.3	LOS B	3.1	22.3	0.76	0.70	39.7
Approach		190	2.0	0.295	16.9	LOS B	3.1	22.3	0.74	0.65	40.5
All Vehicles		817	2.0	0.298	16.1	LOS B	3.8	26.9	0.70	0.66	40.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	18.4	LOS B	0.1	0.1	0.78	0.78
P2	East Full Crossing	50	16.9	LOS B	0.1	0.1	0.75	0.75
P3	North Full Crossing	50	18.4	LOS B	0.1	0.1	0.78	0.78
P4	West Full Crossing	50	16.9	LOS B	0.1	0.1	0.75	0.75
All Pedestrians		200	17.7	LOS B			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Table 1.7 Cumberland Street & Longfield Street AM 2031 + Planning Proposal + All Precincts

MOVEMENT SUMMARY

Site: 101 [CS & LS AM 2031 + ALL]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland Street											
1	L2	33	2.0	0.054	17.8	LOS B	0.7	4.9	0.67	0.66	40.0
2	T1	45	2.0	0.266	14.6	LOS B	3.2	22.4	0.74	0.70	40.1
3	R2	108	2.0	0.266	19.3	LOS B	3.2	22.4	0.74	0.71	39.8
Approach		186	2.0	0.266	17.9	LOS B	3.2	22.4	0.73	0.70	39.9
East: Longfield Street											
4	L2	205	2.0	0.258	16.4	LOS B	3.9	27.6	0.68	0.73	40.5
5	T1	125	2.0	0.185	11.4	LOS A	2.6	18.5	0.65	0.55	43.0
6	R2	18	2.0	0.185	16.0	LOS B	2.6	18.5	0.65	0.55	42.6
Approach		348	2.0	0.258	14.6	LOS B	3.9	27.6	0.66	0.66	41.5
North: Cumberland Street											
7	L2	11	2.0	0.016	17.6	LOS B	0.2	1.5	0.66	0.64	40.0
8	T1	35	2.0	0.056	13.3	LOS A	0.7	5.1	0.67	0.52	42.1
9	R2	3	2.0	0.056	17.9	LOS B	0.7	5.1	0.67	0.52	41.8
Approach		49	2.0	0.056	14.5	LOS B	0.7	5.1	0.67	0.54	41.6
West: Longfield Street											
10	L2	3	2.0	0.043	15.1	LOS B	0.6	4.3	0.60	0.47	43.1
11	T1	89	2.0	0.200	12.0	LOS A	2.2	15.6	0.66	0.58	42.2
12	R2	56	2.0	0.200	17.5	LOS B	2.2	15.6	0.69	0.64	41.0
Approach		148	2.0	0.200	14.2	LOS A	2.2	15.6	0.67	0.60	41.7
All Vehicles		731	2.0	0.266	15.3	LOS B	3.9	27.6	0.68	0.65	41.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	16.2	LOS B	0.1	0.1	0.73	0.73
P2	East Full Crossing	50	19.2	LOS B	0.1	0.1	0.80	0.80
P3	North Full Crossing	50	16.2	LOS B	0.1	0.1	0.73	0.73
P4	West Full Crossing	50	19.2	LOS B	0.1	0.1	0.80	0.80
All Pedestrians		200	17.7	LOS B			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Table 1.8 Cumberland Street & Longfield Street PM 2031 + Planning Proposal + All Precincts

MOVEMENT SUMMARY

Site: 101 [CS & LS PM 2031 + ALL]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Cumberland Street											
1	L2	49	2.0	0.073	18.0	LOS B	0.9	6.7	0.68	0.69	39.8
2	T1	75	2.0	0.353	15.2	LOS B	4.2	30.1	0.77	0.71	40.1
3	R2	119	2.0	0.353	19.8	LOS B	4.2	30.1	0.77	0.71	39.8
Approach		243	2.0	0.353	18.0	LOS B	4.2	30.1	0.75	0.71	39.9
East: Longfield Street											
4	L2	203	2.0	0.256	16.4	LOS B	3.8	27.3	0.67	0.73	40.5
5	T1	118	2.0	0.178	11.3	LOS A	2.5	17.6	0.65	0.55	43.0
6	R2	18	2.0	0.178	15.9	LOS B	2.5	17.6	0.65	0.55	42.6
Approach		339	2.0	0.256	14.6	LOS B	3.8	27.3	0.66	0.66	41.4
North: Cumberland Street											
7	L2	20	2.0	0.030	17.7	LOS B	0.4	2.7	0.66	0.66	39.9
8	T1	51	2.0	0.088	13.5	LOS A	1.1	8.0	0.68	0.55	41.9
9	R2	7	2.0	0.088	18.1	LOS B	1.1	8.0	0.68	0.55	41.6
Approach		78	2.0	0.088	15.0	LOS B	1.1	8.0	0.68	0.57	41.4
West: Longfield Street											
10	L2	1	2.0	0.077	15.3	LOS B	1.1	7.9	0.61	0.48	43.2
11	T1	137	2.0	0.358	12.5	LOS A	4.0	28.4	0.68	0.60	42.0
12	R2	115	2.0	0.358	18.6	LOS B	4.0	28.4	0.74	0.71	40.3
Approach		253	2.0	0.358	15.3	LOS B	4.0	28.4	0.71	0.65	41.2
All Vehicles		913	2.0	0.358	15.7	LOS B	4.2	30.1	0.70	0.66	40.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	16.2	LOS B	0.1	0.1	0.73	0.73
P2	East Full Crossing	50	19.2	LOS B	0.1	0.1	0.80	0.80
P3	North Full Crossing	50	16.2	LOS B	0.1	0.1	0.73	0.73
P4	West Full Crossing	50	19.2	LOS B	0.1	0.1	0.80	0.80
All Pedestrians		200	17.7	LOS B			0.77	0.77

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

2 Cabramatta Road East & Broomfield Street

Table 2.1 Cabramatta Road East & Broomfield Street AM 2016

MOVEMENT SUMMARY

Site: [CRE & BS AM 2016]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	92	2.0	0.084	6.3	LOS A	1.2	8.7	0.48	0.38	54.3
3	R2	9	2.0	0.014	13.5	LOS A	0.1	0.9	0.60	0.65	47.7
Approach		101	2.0	0.084	7.0	LOS A	1.2	8.7	0.49	0.40	53.7
East: Cabramatta Road East											
4	L2	56	2.0	0.071	16.3	LOS B	1.0	6.8	0.61	0.69	46.3
6	R2	89	2.0	0.208	26.1	LOS B	2.2	15.4	0.84	0.75	40.8
Approach		145	2.0	0.208	22.3	LOS B	2.2	15.4	0.75	0.73	42.8
North: Broomfield Street											
7	L2	74	2.0	0.215	19.8	LOS B	3.0	21.4	0.72	0.67	45.9
8	T1	74	2.0	0.215	14.2	LOS A	3.0	21.4	0.72	0.67	46.9
Approach		148	2.0	0.215	17.0	LOS B	3.0	21.4	0.72	0.67	46.4
All Vehicles		394	2.0	0.215	16.4	LOS B	3.0	21.4	0.67	0.62	46.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	23.5	LOS C	0.1	0.1	0.89	0.89
P2	East Full Crossing	50	16.9	LOS B	0.1	0.1	0.75	0.75
All Pedestrians		100	20.2	LOS C			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Table 2.2 Cabramatta Road East & Broomfield Street PM 2016

MOVEMENT SUMMARY

Site: [CRE & BS PM 2016]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	86	2.0	0.077	5.8	LOS A	1.1	7.8	0.46	0.36	54.8
3	R2	25	2.0	0.040	13.2	LOS A	0.4	2.5	0.60	0.67	47.9
Approach		111	2.0	0.077	7.5	LOS A	1.1	7.8	0.49	0.43	53.0
East: Cabramatta Road East											
4	L2	43	2.0	0.056	16.8	LOS B	0.8	5.4	0.62	0.69	46.0
6	R2	98	2.0	0.247	27.2	LOS B	2.5	17.5	0.87	0.76	40.3
Approach		141	2.0	0.247	24.0	LOS B	2.5	17.5	0.79	0.74	41.9
North: Broomfield Street											
7	L2	103	2.0	0.265	19.3	LOS B	3.8	27.4	0.72	0.68	46.0
8	T1	87	2.0	0.265	13.8	LOS A	3.8	27.4	0.72	0.68	47.0
Approach		190	2.0	0.265	16.8	LOS B	3.8	27.4	0.72	0.68	46.4
All Vehicles		442	2.0	0.265	16.8	LOS B	3.8	27.4	0.69	0.64	46.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	24.4	LOS C	0.1	0.1	0.90	0.90
P2	East Full Crossing	50	16.2	LOS B	0.1	0.1	0.73	0.73
All Pedestrians		100	20.3	LOS C			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Table 2.3 Cabramatta Road East & Broomfield Street AM 2031

MOVEMENT SUMMARY

Site: [CRE & BS AM 2031]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	107	2.0	0.098	6.4	LOS A	1.4	10.2	0.48	0.39	54.3
3	R2	9	2.0	0.015	13.6	LOS A	0.1	0.9	0.60	0.65	47.7
Approach		116	2.0	0.098	6.9	LOS A	1.4	10.2	0.49	0.41	53.7
East: Cabramatta Road East											
4	L2	56	2.0	0.071	16.3	LOS B	1.0	6.8	0.61	0.69	46.3
6	R2	103	2.0	0.241	26.3	LOS B	2.5	18.0	0.85	0.76	40.7
Approach		159	2.0	0.241	22.7	LOS B	2.5	18.0	0.77	0.74	42.5
North: Broomfield Street											
7	L2	93	2.0	0.243	19.9	LOS B	3.4	24.4	0.73	0.69	45.6
8	T1	74	2.0	0.243	14.4	LOS A	3.4	24.4	0.73	0.69	46.6
Approach		167	2.0	0.243	17.5	LOS B	3.4	24.4	0.73	0.69	46.0
All Vehicles		442	2.0	0.243	16.6	LOS B	3.4	24.4	0.68	0.63	46.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	23.5	LOS C	0.1	0.1	0.89	0.89
P2	East Full Crossing	50	16.9	LOS B	0.1	0.1	0.75	0.75
All Pedestrians		100	20.2	LOS C			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Table 2.4 Cabramatta Road East & Broomfield Street PM 2031

MOVEMENT SUMMARY

Site: [CRE & BS PM 2031]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	100	2.0	0.094	6.9	LOS A	1.4	9.8	0.50	0.40	53.9
3	R2	25	2.0	0.043	14.9	LOS B	0.4	2.8	0.65	0.68	46.9
Approach		125	2.0	0.094	8.5	LOS A	1.4	9.8	0.53	0.45	52.3
East: Cabramatta Road East											
4	L2	43	2.0	0.052	15.5	LOS B	0.7	5.0	0.59	0.68	46.7
6	R2	123	2.0	0.284	25.6	LOS B	3.0	21.3	0.84	0.77	41.0
Approach		166	2.0	0.284	23.0	LOS B	3.0	21.3	0.78	0.74	42.4
North: Broomfield Street											
7	L2	103	2.0	0.290	20.9	LOS B	4.1	29.0	0.76	0.70	45.1
8	T1	87	2.0	0.290	15.4	LOS B	4.1	29.0	0.76	0.70	46.1
Approach		190	2.0	0.290	18.4	LOS B	4.1	29.0	0.76	0.70	45.5
All Vehicles		481	2.0	0.290	17.4	LOS B	4.1	29.0	0.71	0.65	45.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	22.6	LOS C	0.1	0.1	0.87	0.87
P2	East Full Crossing	50	17.7	LOS B	0.1	0.1	0.77	0.77
All Pedestrians		100	20.1	LOS C			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Table 2.5 Cabramatta Road East & Broomfield Street AM 2031 + Planning Proposal

MOVEMENT SUMMARY

Site: [CRE & BS AM 2031 + PP]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	108	2.0	0.099	6.4	LOS A	1.4	10.3	0.48	0.39	54.3
3	R2	9	2.0	0.015	13.6	LOS A	0.1	0.9	0.61	0.65	47.7
Approach		117	2.0	0.099	6.9	LOS A	1.4	10.3	0.49	0.41	53.7
East: Cabramatta Road East											
4	L2	56	2.0	0.071	16.3	LOS B	1.0	6.8	0.61	0.69	46.3
6	R2	112	2.0	0.275	26.4	LOS B	2.8	19.7	0.86	0.76	40.7
Approach		168	2.0	0.275	23.0	LOS B	2.8	19.7	0.77	0.74	42.4
North: Broomfield Street											
7	L2	106	2.0	0.270	20.1	LOS B	3.8	27.4	0.74	0.70	45.4
8	T1	79	2.0	0.270	14.5	LOS B	3.8	27.4	0.74	0.70	46.5
Approach		185	2.0	0.270	17.7	LOS B	3.8	27.4	0.74	0.70	45.9
All Vehicles		470	2.0	0.275	16.9	LOS B	3.8	27.4	0.69	0.64	46.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	23.5	LOS C	0.1	0.1	0.89	0.89
P2	East Full Crossing	50	16.9	LOS B	0.1	0.1	0.75	0.75
All Pedestrians		100	20.2	LOS C			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Table 2.6 Cabramatta Road East & Broomfield Street PM 2031 + Planning Proposal

MOVEMENT SUMMARY

Site: [CRE & BS PM 2031 + PP]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	101	2.0	0.095	6.9	LOS A	1.4	9.9	0.50	0.40	53.9
3	R2	25	2.0	0.045	14.9	LOS B	0.4	2.8	0.65	0.68	46.8
Approach		126	2.0	0.095	8.5	LOS A	1.4	9.9	0.53	0.45	52.3
East: Cabramatta Road East											
4	L2	43	2.0	0.052	15.5	LOS B	0.7	5.0	0.59	0.68	46.7
6	R2	137	2.0	0.323	25.7	LOS B	3.4	23.9	0.85	0.77	40.9
Approach		180	2.0	0.323	23.3	LOS B	3.4	23.9	0.79	0.75	42.2
North: Broomfield Street											
7	L2	124	2.0	0.336	21.2	LOS B	4.8	34.2	0.77	0.72	44.8
8	T1	96	2.0	0.336	15.6	LOS B	4.8	34.2	0.77	0.72	45.9
Approach		220	2.0	0.336	18.8	LOS B	4.8	34.2	0.77	0.72	45.3
All Vehicles		526	2.0	0.336	17.9	LOS B	4.8	34.2	0.72	0.67	45.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	22.6	LOS C	0.1	0.1	0.87	0.87
P2	East Full Crossing	50	17.7	LOS B	0.1	0.1	0.77	0.77
All Pedestrians		100	20.1	LOS C			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Table 2.7 Cabramatta Road East & Broomfield Street AM 2031 + Planning Proposal + All Precincts

MOVEMENT SUMMARY

Site: [CRE & BS AM 2031 + ALL]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	131	2.0	0.120	6.5	LOS A	1.8	12.6	0.49	0.40	54.2
3	R2	9	2.0	0.015	14.1	LOS A	0.1	1.0	0.62	0.65	47.3
Approach		140	2.0	0.120	7.0	LOS A	1.8	12.6	0.50	0.41	53.7
East: Cabramatta Road East											
4	L2	59	2.0	0.074	16.3	LOS B	1.0	7.2	0.61	0.70	46.3
6	R2	112	2.0	0.276	26.4	LOS B	2.8	19.7	0.86	0.76	40.7
Approach		171	2.0	0.276	22.9	LOS B	2.8	19.7	0.77	0.74	42.4
North: Broomfield Street											
7	L2	106	2.0	0.277	20.1	LOS B	4.0	28.2	0.74	0.70	45.5
8	T1	84	2.0	0.277	14.6	LOS B	4.0	28.2	0.74	0.70	46.5
Approach		190	2.0	0.277	17.7	LOS B	4.0	28.2	0.74	0.70	45.9
All Vehicles		501	2.0	0.277	16.5	LOS B	4.0	28.2	0.68	0.63	46.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	23.5	LOS C	0.1	0.1	0.89	0.89
P2	East Full Crossing	50	16.9	LOS B	0.1	0.1	0.75	0.75
All Pedestrians		100	20.2	LOS C			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

Table 2.8 Cabramatta Road East & Broomfield Street PM 2031 + Planning Proposal + All Precincts

MOVEMENT SUMMARY

Site: [CRE & BS PM 2031 + ALL]

New Site
Signals - Fixed Time Isolated Cycle Time = 60 seconds (User-Given Cycle Time)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	108	2.0	0.099	6.4	LOS A	1.4	10.3	0.48	0.39	54.3
3	R2	26	2.0	0.047	14.9	LOS B	0.4	2.9	0.65	0.68	46.8
Approach		134	2.0	0.099	8.0	LOS A	1.4	10.3	0.52	0.44	52.7
East: Cabramatta Road East											
4	L2	52	2.0	0.066	16.2	LOS B	0.9	6.3	0.61	0.69	46.3
6	R2	137	2.0	0.353	26.7	LOS B	3.4	24.5	0.87	0.77	40.5
Approach		189	2.0	0.353	23.8	LOS B	3.4	24.5	0.80	0.75	41.9
North: Broomfield Street											
7	L2	124	2.0	0.350	20.6	LOS B	5.2	36.9	0.77	0.71	45.3
8	T1	117	2.0	0.350	15.0	LOS B	5.2	36.9	0.77	0.71	46.4
Approach		241	2.0	0.350	17.9	LOS B	5.2	36.9	0.77	0.71	45.8
All Vehicles		564	2.0	0.353	17.5	LOS B	5.2	36.9	0.72	0.66	45.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Movement Performance - Pedestrians

Mov ID	Description	Demand Flow ped/h	Average Delay sec	Level of Service	Average Back of Queue Pedestrian ped	Distance m	Prop. Queued	Effective Stop Rate per ped
P1	South Full Crossing	50	23.5	LOS C	0.1	0.1	0.89	0.89
P2	East Full Crossing	50	16.9	LOS B	0.1	0.1	0.75	0.75
All Pedestrians		100	20.2	LOS C			0.82	0.82

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

3 Cabramatta Road East & Cabramatta Road East

Table 3.1 Cabramatta Road East & Cabramatta Road East AM 2016

MOVEMENT SUMMARY

▽Site: [CRE & CRE AM 2016]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Cabramatta Road East											
5	T1	632	5.0	0.167	0.0	LOS A	0.0	0.0	0.00	0.00	60.0
6a	R1	33	1.0	0.088	13.3	LOS A	0.3	2.1	0.76	0.88	48.5
Approach		665	4.8	0.167	0.7	NA	0.3	2.1	0.04	0.04	59.3
NorthWest: Cabramatta Road East											
27a	L1	36	1.0	0.042	6.5	LOS A	0.1	1.0	0.43	0.63	52.9
29b	R3	40	1.0	0.252	30.4	LOS C	0.8	5.9	0.87	0.98	39.1
Approach		76	1.0	0.252	19.1	LOS B	0.8	5.9	0.66	0.81	44.6
West: Cabramatta Road East											
10b	L3	117	1.0	0.290	6.5	LOS A	0.0	0.0	0.00	0.15	57.3
11	T1	963	4.0	0.290	0.0	LOS A	0.0	0.0	0.00	0.06	59.3
Approach		1080	3.7	0.290	0.7	NA	0.0	0.0	0.00	0.07	59.1
All Vehicles		1821	4.0	0.290	1.5	NA	0.8	5.9	0.04	0.09	58.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 3.2 Cabramatta Road East & Cabramatta Road East PM 2016

MOVEMENT SUMMARY

Site: [CRE & CRE PM 2016]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Cabramatta Road East											
5	T1	945	3.0	0.247	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
6a	R1	46	1.0	0.090	10.4	LOS A	0.3	2.3	0.67	0.83	50.5
Approach		991	2.9	0.247	0.5	NA	0.3	2.3	0.03	0.04	59.4
NorthWest: Cabramatta Road East											
27a	L1	77	1.0	0.082	6.1	LOS A	0.3	2.1	0.40	0.62	53.2
29b	R3	48	1.0	0.207	21.3	LOS B	0.7	5.0	0.79	0.94	43.3
Approach		125	1.0	0.207	12.0	LOS A	0.7	5.0	0.55	0.74	48.9
West: Cabramatta Road East											
10b	L3	96	1.0	0.236	6.5	LOS A	0.0	0.0	0.00	0.15	57.4
11	T1	784	4.0	0.236	0.0	LOS A	0.0	0.0	0.00	0.06	59.3
Approach		880	3.7	0.236	0.7	NA	0.0	0.0	0.00	0.07	59.1
All Vehicles		1996	3.1	0.247	1.3	NA	0.7	5.0	0.05	0.10	58.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 3.3 Cabramatta Road East & Cabramatta Road East AM 2031

MOVEMENT SUMMARY

Site: [CRE & CRE AM 2031]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Cabramatta Road East											
5	T1	909	5.0	0.241	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
6a	R1	47	1.0	0.160	16.4	LOS B	0.5	3.8	0.82	0.91	46.6
Approach		956	4.8	0.241	0.8	NA	0.5	3.8	0.04	0.04	59.1
NorthWest: Cabramatta Road East											
27a	L1	36	1.0	0.045	6.9	LOS A	0.2	1.1	0.46	0.66	52.7
29b	R3	40	1.0	0.347	43.2	LOS D	1.1	8.1	0.92	1.01	34.4
Approach		76	1.0	0.347	26.0	LOS B	1.1	8.1	0.70	0.84	41.1
West: Cabramatta Road East											
10b	L3	132	1.0	0.326	6.5	LOS A	0.0	0.0	0.00	0.15	57.3
11	T1	1085	4.0	0.326	0.0	LOS A	0.0	0.0	0.00	0.06	59.3
Approach		1217	3.7	0.326	0.7	NA	0.0	0.0	0.00	0.07	59.1
All Vehicles		2249	4.1	0.347	1.6	NA	1.1	8.1	0.04	0.09	58.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 3.4 Cabramatta Road East & Cabramatta Road East PM 2031

MOVEMENT SUMMARY

Site: [CRE & CRE PM 2031]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Cabramatta Road East											
5	T1	1018	3.0	0.266	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
6a	R1	50	1.0	0.122	12.5	LOS A	0.4	3.0	0.74	0.87	49.1
Approach		1068	2.9	0.266	0.6	NA	0.4	3.0	0.03	0.04	59.3
NorthWest: Cabramatta Road East											
27a	L1	77	1.0	0.087	6.4	LOS A	0.3	2.2	0.43	0.65	53.0
29b	R3	48	1.0	0.275	28.6	LOS C	0.9	6.6	0.86	0.98	39.9
Approach		125	1.0	0.275	15.0	LOS B	0.9	6.6	0.60	0.77	47.0
West: Cabramatta Road East											
10b	L3	111	1.0	0.274	6.5	LOS A	0.0	0.0	0.00	0.15	57.3
11	T1	910	4.0	0.274	0.0	LOS A	0.0	0.0	0.00	0.06	59.3
Approach		1021	3.7	0.274	0.7	NA	0.0	0.0	0.00	0.07	59.1
All Vehicles		2214	3.2	0.275	1.5	NA	0.9	6.6	0.05	0.10	58.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 3.5 Cabramatta Road East & Cabramatta Road East AM 2031 + Planning Proposal

MOVEMENT SUMMARY

Site: [CRE & CRE AM 2031 + PP]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Cabramatta Road East											
5	T1	914	5.0	0.242	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
6a	R1	37	1.0	0.130	16.8	LOS B	0.4	3.0	0.82	0.91	46.4
Approach		951	4.8	0.242	0.7	NA	0.4	3.0	0.03	0.04	59.3
NorthWest: Cabramatta Road East											
27a	L1	36	1.0	0.044	6.8	LOS A	0.2	1.1	0.46	0.65	52.7
29b	R3	54	1.0	0.474	48.7	LOS D	1.7	11.8	0.93	1.04	32.7
Approach		90	1.0	0.474	31.9	LOS C	1.7	11.8	0.74	0.89	38.5
West: Cabramatta Road East											
10b	L3	152	1.0	0.333	6.5	LOS A	0.0	0.0	0.00	0.17	57.2
11	T1	1085	4.0	0.333	0.0	LOS A	0.0	0.0	0.00	0.07	59.2
Approach		1237	3.6	0.333	0.8	NA	0.0	0.0	0.00	0.08	59.0
All Vehicles		2278	4.0	0.474	2.0	NA	1.7	11.8	0.04	0.09	57.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 3.6 Cabramatta Road East & Cabramatta Road East PM 2031 + Planning Proposal

MOVEMENT SUMMARY

Site: [CRE & CRE PM 2031 + PP]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Cabramatta Road East											
5	T1	1025	3.0	0.268	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
6a	R1	38	1.0	0.097	12.8	LOS A	0.3	2.3	0.75	0.87	48.9
Approach		1063	2.9	0.268	0.5	NA	0.3	2.3	0.03	0.03	59.5
NorthWest: Cabramatta Road East											
27a	L1	77	1.0	0.086	6.3	LOS A	0.3	2.2	0.42	0.64	53.1
29b	R3	69	1.0	0.400	32.0	LOS C	1.5	10.5	0.88	1.02	38.4
Approach		146	1.0	0.400	18.5	LOS B	1.5	10.5	0.64	0.82	45.0
West: Cabramatta Road East											
10b	L3	138	1.0	0.282	6.5	LOS A	0.0	0.0	0.00	0.18	57.1
11	T1	910	4.0	0.282	0.0	LOS A	0.0	0.0	0.00	0.07	59.2
Approach		1048	3.6	0.282	0.9	NA	0.0	0.0	0.00	0.09	58.9
All Vehicles		2257	3.1	0.400	1.8	NA	1.5	10.5	0.05	0.11	58.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 3.7 Cabramatta Road East & Cabramatta Road East AM 2031 + Planning Proposal + All Precincts

MOVEMENT SUMMARY

Site: [CRE & CRE AM 2031 + ALL]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Cabramatta Road East											
5	T1	939	5.0	0.249	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
6a	R1	36	1.0	0.128	16.9	LOS B	0.4	3.0	0.83	0.91	46.3
Approach		975	4.9	0.249	0.7	NA	0.4	3.0	0.03	0.03	59.3
NorthWest: Cabramatta Road East											
27a	L1	36	1.0	0.044	6.8	LOS A	0.2	1.1	0.46	0.65	52.7
29b	R3	53	1.0	0.471	49.1	LOS D	1.6	11.6	0.93	1.04	32.6
Approach		89	1.0	0.471	32.0	LOS C	1.6	11.6	0.74	0.88	38.5
West: Cabramatta Road East											
10b	L3	155	1.0	0.334	6.5	LOS A	0.0	0.0	0.00	0.17	57.1
11	T1	1089	4.0	0.334	0.0	LOS A	0.0	0.0	0.00	0.07	59.2
Approach		1244	3.6	0.334	0.9	NA	0.0	0.0	0.00	0.08	59.0
All Vehicles		2308	4.0	0.471	2.0	NA	1.6	11.6	0.04	0.09	57.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 3.8 Cabramatta Road East & Cabramatta Road East PM 2031 + Planning Proposal + All Precincts

MOVEMENT SUMMARY

Site: [CRE & CRE PM 2031 + ALL]

New Site
Giveway / Yield (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
East: Cabramatta Road East											
5	T1	1028	3.0	0.269	0.0	LOS A	0.0	0.0	0.00	0.00	59.9
6a	R1	38	1.0	0.101	13.3	LOS A	0.3	2.4	0.76	0.88	48.5
Approach		1066	2.9	0.269	0.5	NA	0.3	2.4	0.03	0.03	59.4
NorthWest: Cabramatta Road East											
27a	L1	77	1.0	0.086	6.4	LOS A	0.3	2.2	0.43	0.64	53.0
29b	R3	69	1.0	0.423	34.2	LOS C	1.6	11.1	0.89	1.03	37.6
Approach		146	1.0	0.423	19.5	LOS B	1.6	11.1	0.65	0.82	44.4
West: Cabramatta Road East											
10b	L3	146	1.0	0.290	6.5	LOS A	0.0	0.0	0.00	0.19	57.0
11	T1	931	4.0	0.290	0.0	LOS A	0.0	0.0	0.00	0.08	59.2
Approach		1077	3.6	0.290	0.9	NA	0.0	0.0	0.00	0.09	58.9
All Vehicles		2289	3.1	0.423	1.9	NA	1.6	11.1	0.05	0.11	57.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

4 Broomfield Street & Longfield Street

Table 4.1 Broomfield Street & Longfield Street AM 2016

MOVEMENT SUMMARY

Site: [BS & LS AM 2016]

New Site
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	150	2.0	0.094	0.1	LOS A	0.2	1.2	0.08	0.08	49.3
3	R2	24	2.0	0.094	5.0	LOS A	0.2	1.2	0.08	0.08	48.4
Approach		174	2.0	0.094	0.8	NA	0.2	1.2	0.08	0.08	49.2
East: Longfield Street											
4	L2	59	2.0	0.219	8.1	LOS A	0.9	6.6	0.40	0.91	44.2
6	R2	117	2.0	0.219	10.5	LOS A	0.9	6.6	0.40	0.91	44.0
Approach		176	2.0	0.219	9.7	LOS A	0.9	6.6	0.40	0.91	44.1
North: Broomfield Street											
7	L2	98	2.0	0.062	4.6	LOS A	0.3	1.8	0.08	0.47	47.0
8	T1	136	2.0	0.071	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		234	2.0	0.071	1.9	LOS A	0.3	1.8	0.03	0.20	48.7
All Vehicles		584	2.0	0.219	3.9	NA	0.9	6.6	0.16	0.38	47.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 4.2 Broomfield Street & Longfield Street PM 2016

MOVEMENT SUMMARY

Site: [BS & LS PM 2016]

New Site
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	136	2.0	0.089	0.1	LOS A	0.2	1.3	0.10	0.09	49.2
3	R2	27	2.0	0.089	5.1	LOS A	0.2	1.3	0.10	0.09	48.2
Approach		163	2.0	0.089	0.9	NA	0.2	1.3	0.10	0.09	49.0
East: Longfield Street											
4	L2	47	2.0	0.271	8.2	LOS A	1.2	8.4	0.46	0.93	43.9
6	R2	150	2.0	0.271	11.1	LOS A	1.2	8.4	0.46	0.93	43.7
Approach		197	2.0	0.271	10.4	LOS A	1.2	8.4	0.46	0.93	43.7
North: Broomfield Street											
7	L2	171	2.0	0.108	4.6	LOS A	0.5	3.3	0.09	0.47	47.0
8	T1	152	2.0	0.079	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		323	2.0	0.108	2.4	LOS A	0.5	3.3	0.05	0.25	48.3
All Vehicles		683	2.0	0.271	4.4	NA	1.2	8.4	0.18	0.41	47.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 4.3 Broomfield Street & Longfield Street AM 2031

MOVEMENT SUMMARY

Site: [BS & LS AM 2031]

New Site
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	174	2.0	0.106	0.1	LOS A	0.2	1.2	0.08	0.07	49.4
3	R2	24	2.0	0.106	5.1	LOS A	0.2	1.2	0.08	0.07	48.4
Approach		198	2.0	0.106	0.7	NA	0.2	1.2	0.08	0.07	49.3
East: Longfield Street											
4	L2	59	2.0	0.240	8.2	LOS A	1.0	7.3	0.43	0.92	44.0
6	R2	122	2.0	0.240	11.1	LOS A	1.0	7.3	0.43	0.92	43.8
Approach		181	2.0	0.240	10.2	LOS A	1.0	7.3	0.43	0.92	43.9
North: Broomfield Street											
7	L2	114	2.0	0.072	4.6	LOS A	0.3	2.1	0.08	0.47	47.0
8	T1	153	2.0	0.079	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		267	2.0	0.079	2.0	LOS A	0.3	2.1	0.04	0.20	48.7
All Vehicles		646	2.0	0.240	3.9	NA	1.0	7.3	0.16	0.36	47.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 4.4 Broomfield Street & Longfield Street PM 2031

MOVEMENT SUMMARY

Site: [BS & LS PM 2031]

New Site
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	170	2.0	0.106	0.1	LOS A	0.2	1.3	0.09	0.08	49.3
3	R2	27	2.0	0.106	5.1	LOS A	0.2	1.3	0.09	0.08	48.3
Approach		197	2.0	0.106	0.8	NA	0.2	1.3	0.09	0.08	49.2
East: Longfield Street											
4	L2	47	2.0	0.290	8.4	LOS A	1.3	9.3	0.49	0.96	43.5
6	R2	150	2.0	0.290	12.0	LOS A	1.3	9.3	0.49	0.96	43.4
Approach		197	2.0	0.290	11.1	LOS A	1.3	9.3	0.49	0.96	43.4
North: Broomfield Street											
7	L2	214	2.0	0.135	4.6	LOS A	0.6	4.3	0.10	0.47	47.0
8	T1	152	2.0	0.079	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		366	2.0	0.135	2.7	LOS A	0.6	4.3	0.06	0.28	48.2
All Vehicles		760	2.0	0.290	4.4	NA	1.3	9.3	0.18	0.40	47.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 4.5 Broomfield Street & Longfield Street AM 2031 + Planning Proposal

MOVEMENT SUMMARY

Site: [BS & LS AM 2031 + PP]

New Site
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	206	2.0	0.123	0.1	LOS A	0.2	1.3	0.07	0.06	49.5
3	R2	24	2.0	0.123	5.2	LOS A	0.2	1.3	0.07	0.06	48.5
Approach		230	2.0	0.123	0.6	NA	0.2	1.3	0.07	0.06	49.4
East: Longfield Street											
4	L2	47	2.0	0.234	8.3	LOS A	1.0	6.9	0.47	0.94	43.7
6	R2	114	2.0	0.234	11.8	LOS A	1.0	6.9	0.47	0.94	43.5
Approach		161	2.0	0.234	10.8	LOS A	1.0	6.9	0.47	0.94	43.6
North: Broomfield Street											
7	L2	114	2.0	0.072	4.6	LOS A	0.3	2.1	0.08	0.47	47.0
8	T1	176	2.0	0.091	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		290	2.0	0.091	1.8	LOS A	0.3	2.1	0.03	0.19	48.8
All Vehicles		681	2.0	0.234	3.5	NA	1.0	6.9	0.15	0.32	47.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 4.6 Broomfield Street & Longfield Street PM 2031 + Planning Proposal

MOVEMENT SUMMARY

Site: [BS & LS PM 2031 + PP]

New Site
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	217	2.0	0.131	0.1	LOS A	0.2	1.4	0.08	0.06	49.4
3	R2	27	2.0	0.131	5.2	LOS A	0.2	1.4	0.08	0.06	48.4
Approach		244	2.0	0.131	0.7	NA	0.2	1.4	0.08	0.06	49.3
East: Longfield Street											
4	L2	34	2.0	0.282	8.6	LOS A	1.2	8.9	0.54	0.98	43.0
6	R2	134	2.0	0.282	13.1	LOS A	1.2	8.9	0.54	0.98	42.9
Approach		168	2.0	0.282	12.2	LOS A	1.2	8.9	0.54	0.98	42.9
North: Broomfield Street											
7	L2	214	2.0	0.135	4.6	LOS A	0.6	4.3	0.10	0.47	47.0
8	T1	184	2.0	0.096	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		398	2.0	0.135	2.5	LOS A	0.6	4.3	0.05	0.25	48.3
All Vehicles		810	2.0	0.282	4.0	NA	1.2	8.9	0.16	0.35	47.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 4.7 Broomfield Street & Longfield Street AM 2031 + Planning Proposal + All Precincts

MOVEMENT SUMMARY

Site: [BS & LS AM 2031 + ALL]

New Site
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	229	2.0	0.136	0.1	LOS A	0.2	1.3	0.07	0.06	49.5
3	R2	25	2.0	0.136	5.2	LOS A	0.2	1.3	0.07	0.06	48.5
Approach		254	2.0	0.136	0.6	NA	0.2	1.3	0.07	0.06	49.4
East: Longfield Street											
4	L2	47	2.0	0.266	8.4	LOS A	1.1	8.0	0.50	0.96	43.5
6	R2	127	2.0	0.266	12.3	LOS A	1.1	8.0	0.50	0.96	43.3
Approach		174	2.0	0.266	11.3	LOS A	1.1	8.0	0.50	0.96	43.3
North: Broomfield Street											
7	L2	119	2.0	0.075	4.6	LOS A	0.3	2.2	0.09	0.47	47.0
8	T1	179	2.0	0.093	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		298	2.0	0.093	1.8	LOS A	0.3	2.2	0.03	0.19	48.7
All Vehicles		726	2.0	0.266	3.7	NA	1.1	8.0	0.16	0.33	47.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 4.8 Broomfield Street & Longfield Street PM 2031 + Planning Proposal + All Precincts

MOVEMENT SUMMARY

Site: [BS & LS PM 2031 + ALL]

New Site
Stop (Two-Way)

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
2	T1	223	2.0	0.135	0.1	LOS A	0.2	1.5	0.08	0.06	49.4
3	R2	27	2.0	0.135	5.3	LOS A	0.2	1.5	0.08	0.06	48.4
Approach		250	2.0	0.135	0.7	NA	0.2	1.5	0.08	0.06	49.3
East: Longfield Street											
4	L2	34	2.0	0.296	8.9	LOS A	1.3	9.5	0.56	0.99	42.8
6	R2	134	2.0	0.296	13.8	LOS A	1.3	9.5	0.56	0.99	42.6
Approach		168	2.0	0.296	12.8	LOS A	1.3	9.5	0.56	0.99	42.6
North: Broomfield Street											
7	L2	231	2.0	0.146	4.6	LOS A	0.7	4.6	0.10	0.47	47.0
8	T1	204	2.0	0.106	0.0	LOS A	0.0	0.0	0.00	0.00	50.0
Approach		435	2.0	0.146	2.4	LOS A	0.7	4.6	0.05	0.25	48.3
All Vehicles		853	2.0	0.296	4.0	NA	1.3	9.5	0.16	0.34	47.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA: Intersection LOS and Major Road Approach LOS values are Not Applicable for two-way sign control since the average delay is not a good LOS measure due to zero delays associated with major road movements.

SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.

Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

5 Broomfield Street & Bareena Avenue

Table 5.1 Broomfield Street & Bareena Avenue AM 2016

MOVEMENT SUMMARY

Site: 101 [BS + BA AM 2016]

New Site
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
1	L2	298	1.0	0.385	7.3	LOS A	2.5	17.7	0.73	0.78	44.9
3	R2	9	1.0	0.385	10.8	LOS A	2.5	17.7	0.73	0.78	45.6
3u	U	1	1.0	0.385	12.4	LOS A	2.5	17.7	0.73	0.78	46.1
Approach		308	1.0	0.385	7.4	LOS A	2.5	17.7	0.73	0.78	44.9
East: Bareena Avenue											
4	L2	18	1.0	0.393	6.9	LOS A	2.4	17.4	0.66	0.71	45.2
5	T1	324	3.0	0.393	6.9	LOS A	2.4	17.4	0.66	0.71	46.0
6u	U	1	1.0	0.393	12.0	LOS A	2.4	17.4	0.66	0.71	46.4
Approach		343	2.9	0.393	7.0	LOS A	2.4	17.4	0.66	0.71	45.9
West: Bareena Avenue											
11	T1	342	3.0	0.202	3.5	LOS A	1.4	9.8	0.08	0.38	47.8
12	R2	264	1.0	0.270	7.0	LOS A	2.0	14.0	0.09	0.62	45.4
12u	U	200	1.0	0.270	8.5	LOS A	2.0	14.0	0.09	0.62	45.9
Approach		806	1.8	0.270	5.9	LOS A	2.0	14.0	0.09	0.52	46.5
All Vehicles		1457	1.9	0.393	6.5	LOS A	2.5	17.7	0.36	0.62	46.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 5.2 Broomfield Street & Bareena Avenue PM 2016

MOVEMENT SUMMARY

Site: 101 [BS + BA PM 2016]

New Site
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
1	L2	352	1.0	0.504	9.3	LOS A	4.1	28.9	0.84	0.92	43.8
3	R2	12	1.0	0.504	12.8	LOS A	4.1	28.9	0.84	0.92	44.5
3u	U	1	1.0	0.504	14.4	LOS A	4.1	28.9	0.84	0.92	45.0
Approach		365	1.0	0.504	9.4	LOS A	4.1	28.9	0.84	0.92	43.9
East: Bareena Avenue											
4	L2	15	1.0	0.570	8.5	LOS A	4.8	34.7	0.75	0.83	44.4
5	T1	490	3.0	0.570	8.5	LOS A	4.8	34.7	0.75	0.83	45.1
6u	U	1	1.0	0.570	13.5	LOS A	4.8	34.7	0.75	0.83	45.5
Approach		506	2.9	0.570	8.5	LOS A	4.8	34.7	0.75	0.83	45.1
West: Bareena Avenue											
11	T1	491	3.0	0.290	3.5	LOS A	2.3	16.2	0.11	0.38	47.8
12	R2	344	1.0	0.259	7.0	LOS A	1.9	13.7	0.11	0.60	45.5
12u	U	95	1.0	0.259	8.5	LOS A	1.9	13.7	0.11	0.60	46.1
Approach		930	2.1	0.290	5.3	LOS A	2.3	16.2	0.11	0.49	46.7
All Vehicles		1801	2.1	0.570	7.0	LOS A	4.8	34.7	0.44	0.67	45.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 5.3 Broomfield Street & Bareena Avenue AM 2031

MOVEMENT SUMMARY

Site: 101 [BS + BA AM 2031]

New Site
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
1	L2	351	1.0	0.498	9.7	LOS A	4.0	28.0	0.83	0.93	43.6
3	R2	10	1.0	0.498	13.2	LOS A	4.0	28.0	0.83	0.93	44.3
3u	U	1	1.0	0.498	14.7	LOS B	4.0	28.0	0.83	0.93	44.8
Approach		362	1.0	0.498	9.8	LOS A	4.0	28.0	0.83	0.93	43.7
East: Bareena Avenue											
4	L2	21	1.0	0.483	8.2	LOS A	3.5	25.0	0.73	0.81	44.5
5	T1	382	3.0	0.483	8.3	LOS A	3.5	25.0	0.73	0.81	45.2
6u	U	1	1.0	0.483	13.3	LOS A	3.5	25.0	0.73	0.81	45.7
Approach		404	2.9	0.483	8.3	LOS A	3.5	25.0	0.73	0.81	45.2
West: Bareena Avenue											
11	T1	363	3.0	0.215	3.5	LOS A	1.5	11.0	0.09	0.38	47.8
12	R2	280	1.0	0.301	7.0	LOS A	2.4	16.7	0.10	0.61	45.3
12u	U	236	1.0	0.301	8.5	LOS A	2.4	16.7	0.10	0.61	45.9
Approach		879	1.8	0.301	5.9	LOS A	2.4	16.7	0.10	0.52	46.5
All Vehicles		1645	1.9	0.498	7.4	LOS A	4.0	28.0	0.41	0.68	45.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 5.4 Broomfield Street & Bareena Avenue PM 2031

MOVEMENT SUMMARY

Site: 101 [BS + BA PM 2031]

New Site
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
1	L2	409	1.0	0.644	13.4	LOS A	6.7	47.0	0.95	1.11	41.8
3	R2	13	1.0	0.644	16.9	LOS B	6.7	47.0	0.95	1.11	42.3
3u	U	1	1.0	0.644	18.4	LOS B	6.7	47.0	0.95	1.11	42.8
Approach		423	1.0	0.644	13.5	LOS A	6.7	47.0	0.95	1.11	41.8
East: Bareena Avenue											
4	L2	17	1.0	0.665	10.9	LOS A	7.0	50.2	0.84	0.97	43.1
5	T1	552	3.0	0.665	11.0	LOS A	7.0	50.2	0.84	0.97	43.8
6u	U	1	1.0	0.665	15.9	LOS B	7.0	50.2	0.84	0.97	44.2
Approach		570	2.9	0.665	11.0	LOS A	7.0	50.2	0.84	0.97	43.8
West: Bareena Avenue											
11	T1	537	3.0	0.318	3.5	LOS A	2.6	18.9	0.12	0.38	47.7
12	R2	376	1.0	0.285	7.0	LOS A	2.3	16.1	0.12	0.60	45.5
12u	U	107	1.0	0.285	8.6	LOS A	2.3	16.1	0.12	0.60	46.0
Approach		1020	2.1	0.318	5.3	LOS A	2.6	18.9	0.12	0.48	46.7
All Vehicles		2013	2.1	0.665	8.6	LOS A	7.0	50.2	0.50	0.75	44.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 5.5 Broomfield Street & Bareena Avenue AM 2031 + Planning Proposal

MOVEMENT SUMMARY

Site: 101 [BS + BA AM 2031 + PP]

New Site
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
1	L2	374	1.0	0.531	10.3	LOS A	4.5	31.5	0.85	0.96	43.4
3	R2	10	1.0	0.531	13.7	LOS A	4.5	31.5	0.85	0.96	44.0
3u	U	1	1.0	0.531	15.3	LOS B	4.5	31.5	0.85	0.96	44.5
Approach		385	1.0	0.531	10.4	LOS A	4.5	31.5	0.85	0.96	43.4
East: Bareena Avenue											
4	L2	22	1.0	0.493	8.7	LOS A	3.6	26.2	0.75	0.83	44.3
5	T1	382	3.0	0.493	8.7	LOS A	3.6	26.2	0.75	0.83	45.0
6u	U	1	1.0	0.493	13.7	LOS A	3.6	26.2	0.75	0.83	45.4
Approach		405	2.9	0.493	8.7	LOS A	3.6	26.2	0.75	0.83	45.0
West: Bareena Avenue											
11	T1	363	3.0	0.215	3.5	LOS A	1.5	11.0	0.09	0.38	47.8
12	R2	303	1.0	0.314	7.0	LOS A	2.5	17.7	0.10	0.61	45.4
12u	U	236	1.0	0.314	8.5	LOS A	2.5	17.7	0.10	0.61	45.9
Approach		902	1.8	0.314	6.0	LOS A	2.5	17.7	0.10	0.52	46.5
All Vehicles		1692	1.9	0.531	7.6	LOS A	4.5	31.5	0.42	0.69	45.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 5.6 Broomfield Street & Bareena Avenue PM 2031 + Planning Proposal

MOVEMENT SUMMARY

Site: 101 [BS + BA PM 2031 + PP]

New Site
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
1	L2	440	1.0	0.695	15.0	LOS B	7.9	55.7	0.98	1.17	41.0
3	R2	13	1.0	0.695	18.5	LOS B	7.9	55.7	0.98	1.17	41.6
3u	U	1	1.0	0.695	20.0	LOS B	7.9	55.7	0.98	1.17	42.0
Approach		454	1.0	0.695	15.1	LOS B	7.9	55.7	0.98	1.17	41.0
East: Bareena Avenue											
4	L2	19	1.0	0.685	11.9	LOS A	7.6	54.2	0.86	1.02	42.6
5	T1	552	3.0	0.685	12.0	LOS A	7.6	54.2	0.86	1.02	43.3
6u	U	1	1.0	0.685	17.0	LOS B	7.6	54.2	0.86	1.02	43.7
Approach		572	2.9	0.685	12.0	LOS A	7.6	54.2	0.86	1.02	43.2
West: Bareena Avenue											
11	T1	537	3.0	0.318	3.5	LOS A	2.7	19.1	0.12	0.38	47.7
12	R2	407	1.0	0.303	7.0	LOS A	2.5	17.6	0.12	0.60	45.5
12u	U	107	1.0	0.303	8.6	LOS A	2.5	17.6	0.12	0.60	46.0
Approach		1051	2.0	0.318	5.4	LOS A	2.7	19.1	0.12	0.49	46.7
All Vehicles		2077	2.0	0.695	9.3	LOS A	7.9	55.7	0.51	0.78	44.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 5.7 Broomfield Street & Bareena Avenue AM 2031 + Planning Proposal + All Precincts

MOVEMENT SUMMARY

Site: 101 [BS + BA AM 2031 + ALL]

New Site
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
1	L2	424	1.0	0.601	11.6	LOS A	5.7	40.2	0.89	1.02	42.7
3	R2	10	1.0	0.601	15.1	LOS B	5.7	40.2	0.89	1.02	43.3
3u	U	1	1.0	0.601	16.7	LOS B	5.7	40.2	0.89	1.02	43.7
Approach		435	1.0	0.601	11.7	LOS A	5.7	40.2	0.89	1.02	42.7
East: Bareena Avenue											
4	L2	22	1.0	0.497	8.8	LOS A	3.7	26.7	0.76	0.84	44.2
5	T1	382	3.0	0.497	8.9	LOS A	3.7	26.7	0.76	0.84	44.9
6u	U	1	1.0	0.497	13.9	LOS A	3.7	26.7	0.76	0.84	45.3
Approach		405	2.9	0.497	8.9	LOS A	3.7	26.7	0.76	0.84	44.9
West: Bareena Avenue											
11	T1	363	3.0	0.215	3.5	LOS A	1.6	11.1	0.09	0.38	47.8
12	R2	313	1.0	0.319	7.0	LOS A	2.6	18.4	0.11	0.61	45.4
12u	U	236	1.0	0.319	8.5	LOS A	2.6	18.4	0.11	0.61	45.9
Approach		912	1.8	0.319	6.0	LOS A	2.6	18.4	0.10	0.52	46.4
All Vehicles		1752	1.9	0.601	8.1	LOS A	5.7	40.2	0.45	0.72	45.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Table 5.8 Broomfield Street & Bareena Avenue PM 2031 + Planning Proposal + All Precincts

MOVEMENT SUMMARY

Site: 101 [BS + BA PM 2031 + ALL]

New Site
Roundabout

Movement Performance - Vehicles

Mov ID	OD Mov	Demand Flows Total veh/h	HV %	Deg. Satn v/c	Average Delay sec	Level of Service	95% Back of Queue Vehicles veh	Distance m	Prop. Queued	Effective Stop Rate per veh	Average Speed km/h
South: Broomfield Street											
1	L2	448	1.0	0.713	15.7	LOS B	8.4	59.3	0.99	1.20	40.7
3	R2	14	1.0	0.713	19.2	LOS B	8.4	59.3	0.99	1.20	41.3
3u	U	1	1.0	0.713	20.7	LOS B	8.4	59.3	0.99	1.20	41.7
Approach		463	1.0	0.713	15.8	LOS B	8.4	59.3	0.99	1.20	40.7
East: Bareena Avenue											
4	L2	19	1.0	0.708	13.4	LOS A	8.3	59.4	0.89	1.09	41.9
5	T1	552	3.0	0.708	13.4	LOS A	8.3	59.4	0.89	1.09	42.5
6u	U	1	1.0	0.708	18.4	LOS B	8.3	59.4	0.89	1.09	42.9
Approach		572	2.9	0.708	13.4	LOS A	8.3	59.4	0.89	1.09	42.5
West: Bareena Avenue											
11	T1	537	3.0	0.319	3.5	LOS A	2.7	19.2	0.13	0.38	47.7
12	R2	448	1.0	0.327	7.0	LOS A	2.8	19.6	0.13	0.59	45.5
12u	U	107	1.0	0.327	8.6	LOS A	2.8	19.6	0.13	0.59	46.0
Approach		1092	2.0	0.327	5.4	LOS A	2.8	19.6	0.13	0.49	46.6
All Vehicles		2127	2.0	0.713	9.8	LOS A	8.4	59.4	0.52	0.80	44.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
SIDRA Standard Delay Model is used. Control Delay includes Geometric Delay.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.