TRAFFIX
TRAFFIC AND TRANSPORT PLANNERS

TRAFFIC SIGNAL FEASIBILITY REPORT

Bunnings Tempe Traffic Signal Feasibility Report
Inner West Council

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Suite 2.08, 50 Holt St
Surry Hills, NSW 2010

t: (02) 8324 8700
w: www.traffix.com.au

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v03	24/08/2022	Shenara Wanigasekera, Hayden Dimitrovski	Thomas Yang, Ben Liddell	

EXECUTIVE SUMMARY

This traffic signal feasibility report has been prepared for Inner West Council in response to strong community feedback regarding the approved access arrangements for the Bunnings Tempe development at 750 Princes Highway, Tempe.

The approved development for the subject site consists of works for the construction of a Bunnings development being a hardware and building supplies store.

The applicant's traffic report undertook a SIDRA intersection analysis at the intersection of Princes Highway and the proposed access and Princes Highway and Smith Street. The study concluded that the results of the SIDRA assessment indicated satisfactory operational performance at the access and intersection, with both sites operating at a LOS A in the morning, evening and weekend scenarios with the development traffic incorporated.

The access arrangements as detailed within the traffic report describes the following:

- Smith Street access: Ingress and egress for the carpark and ingress for delivery/service vehicles.
- Princes Highway: Right turn ingress and left turn egress for the carpark and left turn egress for delivery/service vehicles.

Council has initiated this feasibility study in response to safety concerns raised by the community under the approved traffic arrangements. Residents have raised concerns on the forecasted vehicles travelling through Union Street, which acts as a link road to Unwins Bridge Road.

A signal warrant assessment has been undertaken as part of the study, and it is considered that traffic signals are warranted at the Bunnings Tempe Princes Highway access driveway.

A Concept Plan was subsequently developed for the purposes of this feasibility study to show a signalised intersection layout that could be physically accommodated within the existing driveway with minimal changes to the internal configuration of the Bunnings development. The Concept Plan depicts a signalised intersection layout that aims to contain all vehicle egress onto Princes Highway and making it difficult and undesirable for any vehicles travelling through Union Street.

A number of traffic engineering and transport planning factors has been considered, none of which would preclude the provision of traffic signals for the Bunnings Tempe access driveway altogether.

A separate, independent Road Safety Audit (RSA) has also been carried out for the concept design in accordance with the Road Safety's Guidelines for Road Safety Auditing Practices noting all safety findings can be addressed through subsequent detailed engineering design, and there are no safety items that has been raised in the RSA which would preclude the provision of traffic signals at this location altogether.

Furthermore, impacts to existing infrastructure within the road reserve, such as lighting, sewer, water, stormwater, electricity, gas etc. does not preclude the provision of traffic signals, and can be addressed through detailed engineering solutions/design and is a common component for brownfield projects.

SIDRA 9 network modelling has been undertaken for the Princes Highway corridor between Union Street / Smith Street and Ikea's Access Driveway, and the following is noteworthy:

- Under the approved scenario, SIDRA 9 modelling shows that for the PM peak period, vehicles would have to wait for up to 72.9 seconds to turn right into Bunnings from Princes Highway. This was modelled under the assumption that drivers would find small gaps in traffic acceptable, however if driver behaviours does not reflect this, extended delays may occur. This may pressure vehicles to find alternate routes into the site. As there are limited options for vehicles to turn back to the Bunnings site once already queuing for the right-turn, they may merge back in the through lane and head towards the next signalised intersection instead to turn right into the IKEA access and then turn around within the IKEA site to approach the Bunnings access southbound. Whilst this movement is banned there is little way to enforce this restriction. Drivers that remain queuing for the right turn may accept shorter and possibly unsafe gaps across the three-lane road.
- Under the proposed signalised scenario, SIDRA has identified that the Princes Highway and Ikea Access intersection will be negatively impacted during the PM peak period and is expected to deteriorate to a LoS F in the evening peak period. Noting that the access operates as a LoS A in the AM and PM peak hour scenarios and LoS B in the Saturday scenario for the approved arrangement, this is a significant impact on the operation of the IKEA access.

Overall, SIDRA modelling results has found that the current approved scenario would have less impact to the existing road network operation notwithstanding that the right-turn into Bunnings Tempe under priority control is expected to be underutilised due to potential delays and intimidate unconfident drivers.

In summary, the findings of the study have concluded that there are no reasons that would preclude the provision of traffic signals at the Tempe Bunning's access driveway altogether, and its feasibility is also dependent on many external factors other than traffic engineering or transport planning:

- Ikea will need to be consulted to traffic signals as their customers will experience greater delays when visiting or leaving the store during the PM peak hour, noting that the intersection operates at a LoS A in the approved PM scenario and a LoS F in the signalised concept scenario which is a significant impact on the operation of the IKEA access.
- Bunnings may need to submit a modification application, including potential amendments to their internal carpark layout in order to provide a signalised access off Princes Highway that is similar or an improvement to the concept scheme shown in this feasibility study. This concept design may be further altered with larger impacts to the proposed Bunnings building by providing for improved vehicle storage at the egress.
- The SIDRA 9 modelling of the approved Bunning access arrangement shows significant delays for vehicles turning right into Bunnings. Specifically, the PM scenario shows that vehicles would have to wait for up to 72.9 seconds to turn right into Bunnings from Princes Highway. If drivers do not take shorter and potentially unsafe gaps, extended delays may occur which may pressure vehicles to find alternate routes into the site.
- Impacts to existing infrastructure within the road reserve, such as lighting, sewer, water, stormwater, electricity, gas etc. will need to be addressed through detailed engineering solutions/design.
- Safety findings in the RSA will need to be addressed through detailed engineering solutions/design.
- Transport for NSW will need to provide concurrence to traffic signals noting a safer access for Bunnings customers under a signalised arrangement via Princes Highway can potentially negatively impact Princes Highway / Ikea's access driveway during the PM peak hour.

Having considered the findings in the feasibility study, the following is recommended:

- At least two (2) additional independent Road Safety Audits (RSA) should be undertaken for the currently approved priority controlled right-turn access into Bunnings via Princes Highway at the detailed design stage to ensure current conditions and opinions of different experts are adequately considered.
- TfNSW to explore signalising the right-turn entry into Bunnings site under the current approved arrangement to address potential safety concerns.
- Consideration to remove the right-turn access into Bunnings altogether if safe access to Bunnings via Princes Highway cannot be feasibility achieved.

CONTENTS

Appendices

1. INTRODUCTION

1.1 Purpose

TRAFFIX has been commissioned by Inner West Council to assess the feasibility of providing traffic signals for a vehicular access driveway off Princes Highway which is to provide access to the approved Bunnings Tempe Development at 750 Princes Highway, Tempe.

This report documents the findings of our investigations and should be read in the context of all documentations relating to the Bunnings Tempe DA approval, noting that installation of traffic signals will also need separate approval from Transport for New South Wales (TfNSW).

1.2 Scope of Work

The report is structured as follows:

- Section 2: Describes the site and its location
- Section 3: Documents existing traffic conditions
- Section 4: Describes the background information
- Section 5: Provides an analysis on traffic signals warrants
- Section 6: Discusses the feasibility of traffic signals
- Section 7: Discusses traffic modelling results
- Section 8: Presents the overall study conclusions

2. LOCATION AND SITE

The approved Bunnings Tempe site is located at 728-750 Princes Highway, Tempe (Lot 2 in DP 803493) and is located on the southern side of Princes Highway, at the south-eastern corner of the intersection with Smith Street. It is also located about 7.5 kilometres south-west of the Sydney CBD and approximately 2.4 kilometres northwest of Sydney Airport.

The site has a total site area of approximately 2.04 hectares and has street frontages of approximately 150 metres to Princes Highway and approximately 120 metres to Smith Street.

The site has two separate vehicular access driveways located off Smith Street and Princes Highway.

At the time of this report, construction has not commenced on site. Under the approved application DA2017/00185, vehicular access was to be provided onto Smith Street and a vehicular access onto Princes Highway. These accesses are approved with the following restrictions:

- No left turn entry into site at Princes Highway access.
- No right turn onto Princes Highway.
- No left turn exit from Smith Street access.

A Location Plan is presented in Figure 1, with a Site Plan presented in Figure 2.

TRAFFIX

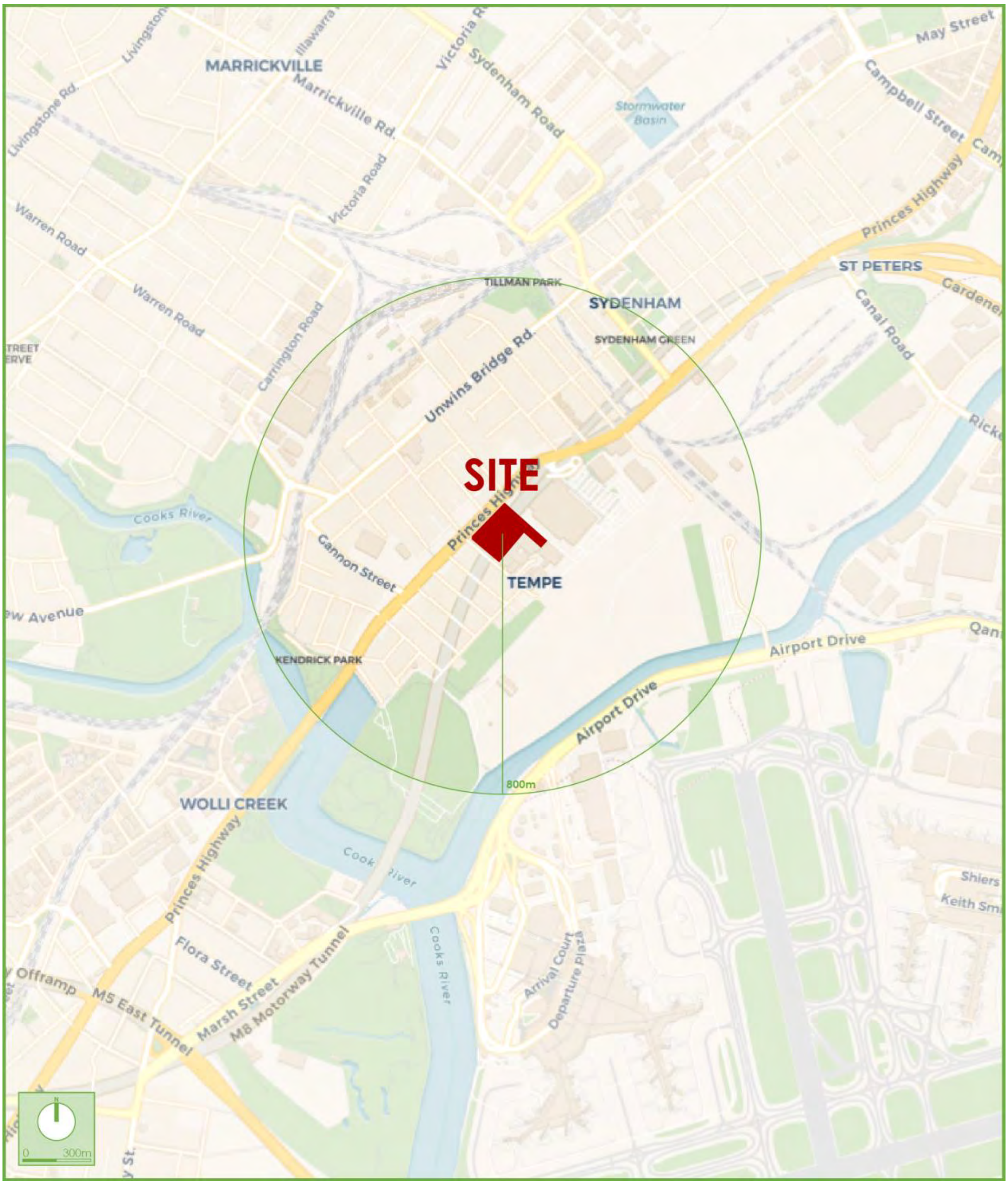


Figure 1: Location Plan

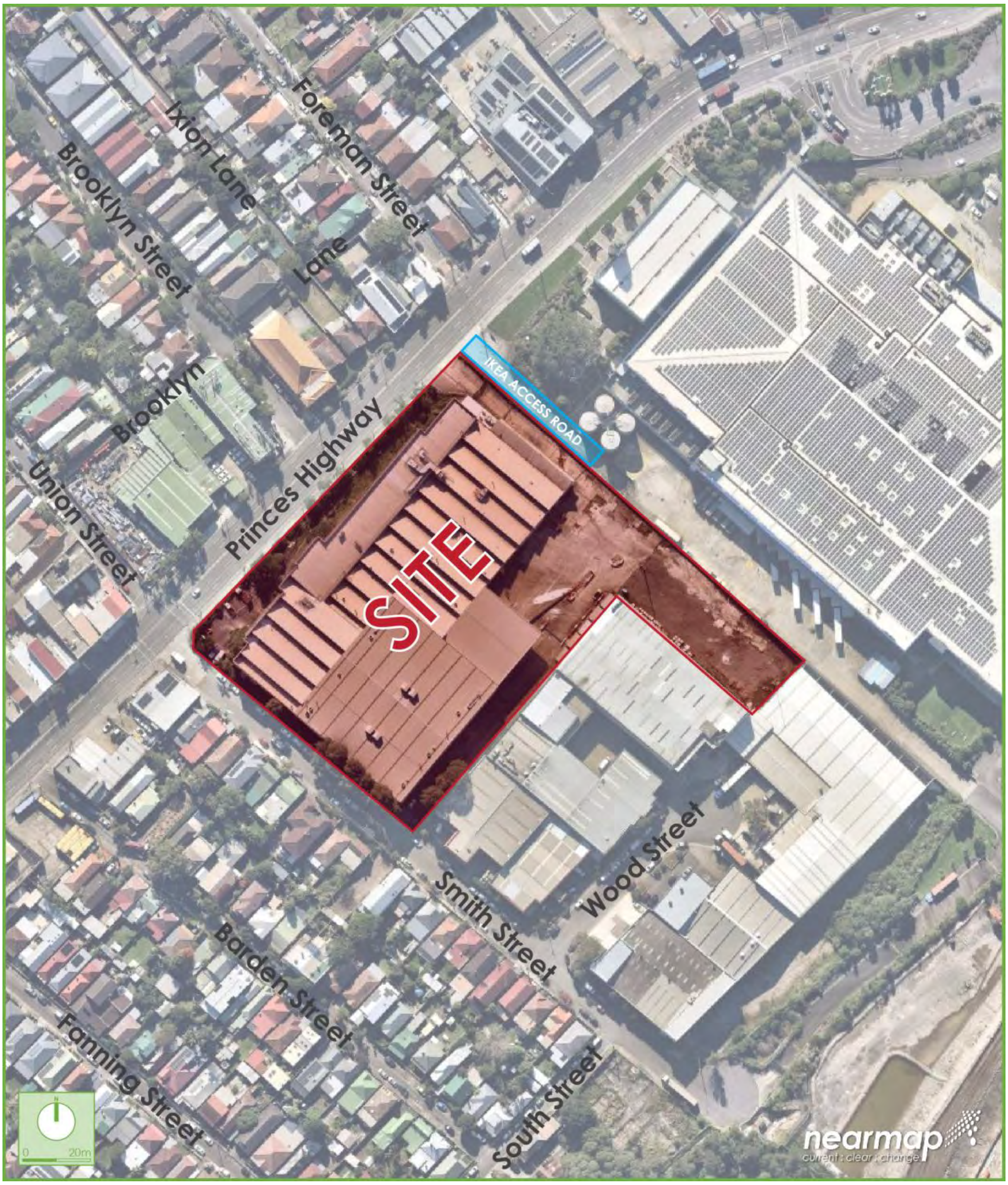


Figure 2: Site Plan

3. EXISTING TRAFFIC CONDITIONS

3.1 Road Network

The road hierarchy in the vicinity of the site is shown in Figure 3 with the following roads of particular interest:

- Princes Highway: a TfNSW Main Road (MR 1) that generally runs in a northeast to southwest direction between Broadway in the northeast and the Victorian border in the southwest. In the vicinity of the site, Princes Highway carries three (3) lanes of traffic and is subject to a speed zoning of 60km/h. The southern kerbside lane is subject to a clearway restriction between 3:00pm-7:00pm Monday to Friday and the northern kerbside lane is subject to a clearway restriction between 6:00am-10:00am Monday to Friday. Kerbside parking is permitted along limited sections of the highway, subject to various restrictions.
- Smith Street: a local road that traverses northwest to southeast between Princes Highway in the northwest and a cul-de-sac in the southeast. Smith Street is subject to a local speed zoning of 50km/h and carries a single lane of traffic in either direction. Unrestricted kerbside parking is permitted along either side of the road.
- Union Street: a one-way local road that generally traverses in a north-south direction between Unwins Bridge Road in the north and Princes Highway in the south. Union Street is subject to a local speed zone of 50km/h and accommodates a single lane of northbound traffic. Tempe Public School is located on Union Street and sections of the road are subject to a 40km/h school zone restriction between 8:00am-9:30am and 2:30-4:00pm on school days. Unrestricted kerbside parking is permitted along either side of the road.

- Brooklyn Street: a local road that generally traverses in a north-south direction between School Lane in the north and Princes Highway in the south. Brooklyn Street is subject to a local speed zone of 50km/h and accommodates a single lane of traffic in each direction. Unrestricted kerbside parking is permitted along either side of the road.
- Foreman Street: a one-way local road that generally traverses in a north-south direction between Unwins Bridge Road in the north and Princes Highway in the south. Foreman Street is subject to a local speed zone of 50km/h and accommodates a single lane of southbound traffic. Unrestricted kerbside parking is permitted along either side of the road.

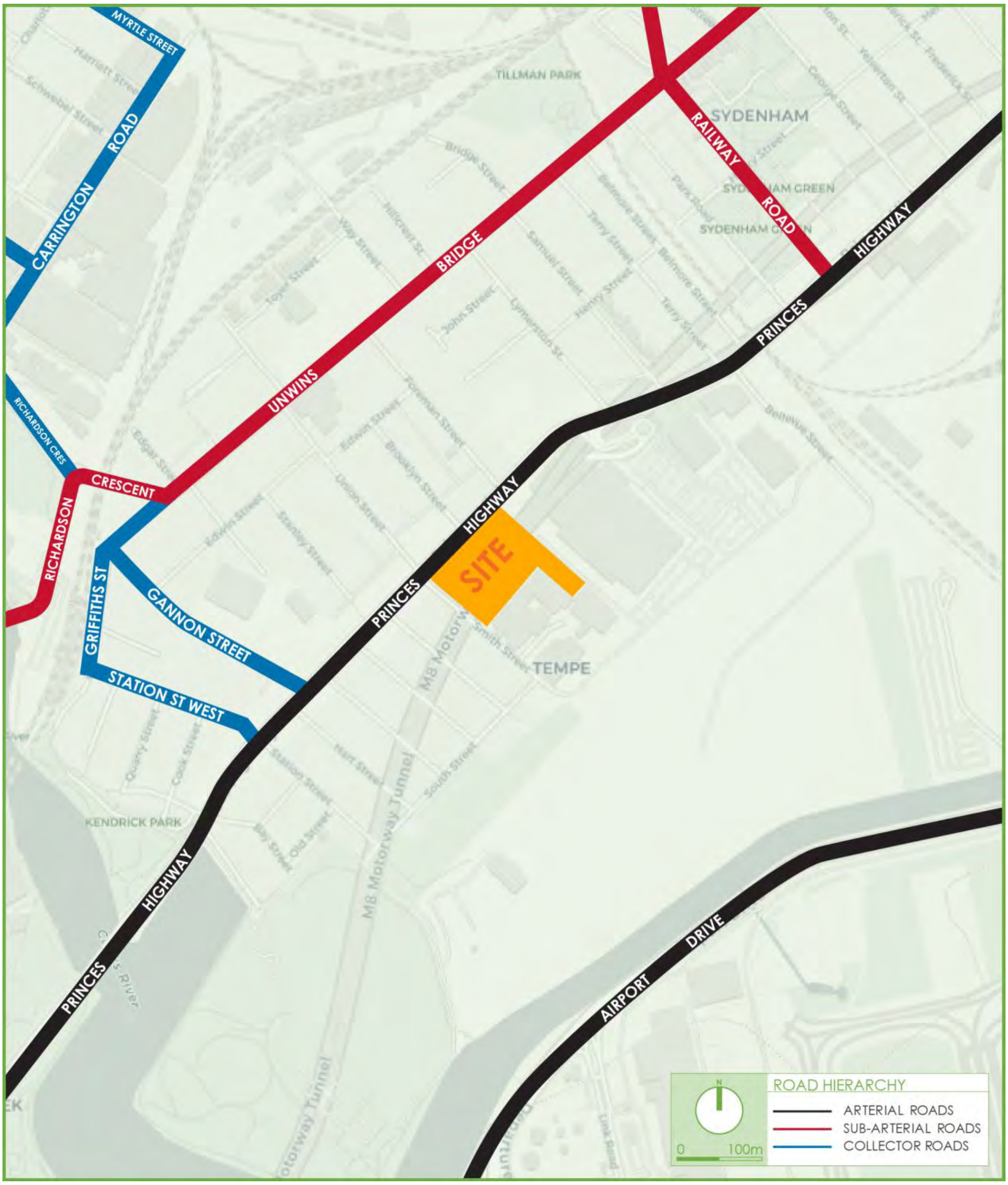


Figure 3: Road Hierarchy

3.2 Key Intersections

The key intersections in the vicinity of the site are shown below and provide an understanding of the existing road geometry and alignment in the locality.

3.2.1 Intersection of Princes Highway, Union Street and Smith Street

Figure 4: Intersection of Princes Highway and Union Street

It can be seen from Figure 4 that the intersection of Princes Highway and Union Street is a four-legged signalised intersection. The main attributes of each approach are outlined below:

- Princes Highway (northeast and southwest legs):
  - The north bound approach provides three (3) through lanes. This allows for both left turns onto Union Street and right turns onto Smith Street.
  - The south bound approach provides three (3) through lanes. This allows for left turns onto Smith Street, however, right turns onto Union Street are not permitted.

- Smith Street (southeast leg):
  - The north bound approach provides one (1) through lane and one (1) short left turn lane.
- Union Street (northwest leg):
  - This is a one-way road in a northbound direction and therefore provides no approach lanes, instead providing a single exit lane.

3.2.2 Intersection of Princes Highway and Brooklyn Street

Figure 5: Intersection of Princes Highway and Brooklyn Street

It can be seen from Figure 5 that the intersection of Brooklyn Street and Princes Highway is a three-legged priority intersection. The main attributes of each approach are outlined below.

- Princes Highway (northeast and southwest legs):
  - The north bound approach provides three (3) through lanes from which left turns are permitted from the kerbside lane onto Brooklyn Street.
  - The south bound approach provides three (3) through lanes. A median extends across the intersection and restricts any right turns.

- Brooklyn Street (northwest legs)
  - The south bound approach provides a single through lane which permits left turns only onto Princes Highway.

3.2.3 Intersection of Princes Highway and Proposed Bunning Access/Ikea Servicing Access

Figure 6: Intersection of Princes Highway and Proposed Bunnings Access/Ikea Access

It can be seen from Figure 6 that the intersection of Princes Highway and the future Bunnings Access/Ikeas Servicing Access is a three-legged priority intersection. This intersection is to be upgraded for the construction of the Bunnings development. The main attributes of the existing and future layout are outlined below.

- Princes Highway (northeast and southwest legs):

  Existing Layout

  - The north bound approach provides three (3) through lanes. A median currently extends across the intersection, preventing right turns into the Bunnings site.
  - The south bound approach provides three (3) through lanes. The kerbside lane allows for left turns into the Bunnings site but restricted to deliveries only.

Future Layout

- The north bound approach provides three (3) through lanes. A short right turn lane will be constructed in the future to enable right turns into the Bunnings access.
- The south bound approach provides three (3) through lanes. Left turns will not be permitted into the Bunnings Access.

- Bunnings Access (southeast leg)

Existing Layout

- The north bound approach provides a single through lane which permits left turns only onto Princes Highway.

Future Layout

- The north bound approach provides a single through lane which permits left turns only onto Princes Highway.

3.2.4 Intersection of Princes Highway and Foreman Street

Figure 7: Intersection of Princes Highway and Foreman Street

It can be seen from Figure 7 that the intersection of Princes Highway and Foreman Street is a three-legged priority intersection. The main attributes of each approach are outlined below.

- Princes Highway (northeast and southwest legs):
  - The north bound approach provides three (3) through lanes. Left turns are not permitted onto Forman Street as this road is one-way.
  - The south bound approach provides three (3) through lanes. No right turns are permitted at this intersection as Forman Street is restricted to one-way traffic.
- Foreman Street (northwest leg)

  Existing Layout
  - The south bound approach provides a single through lane from which left and right turns onto Princes Highway are permitted.

  Future Layout
  - Under the approved design for the Bunnings development, the concrete median on Princes Highway will be closed, prohibiting right turns out of Foreman Street.

3.2.5 Intersection of Princes Highway and IKEA Access

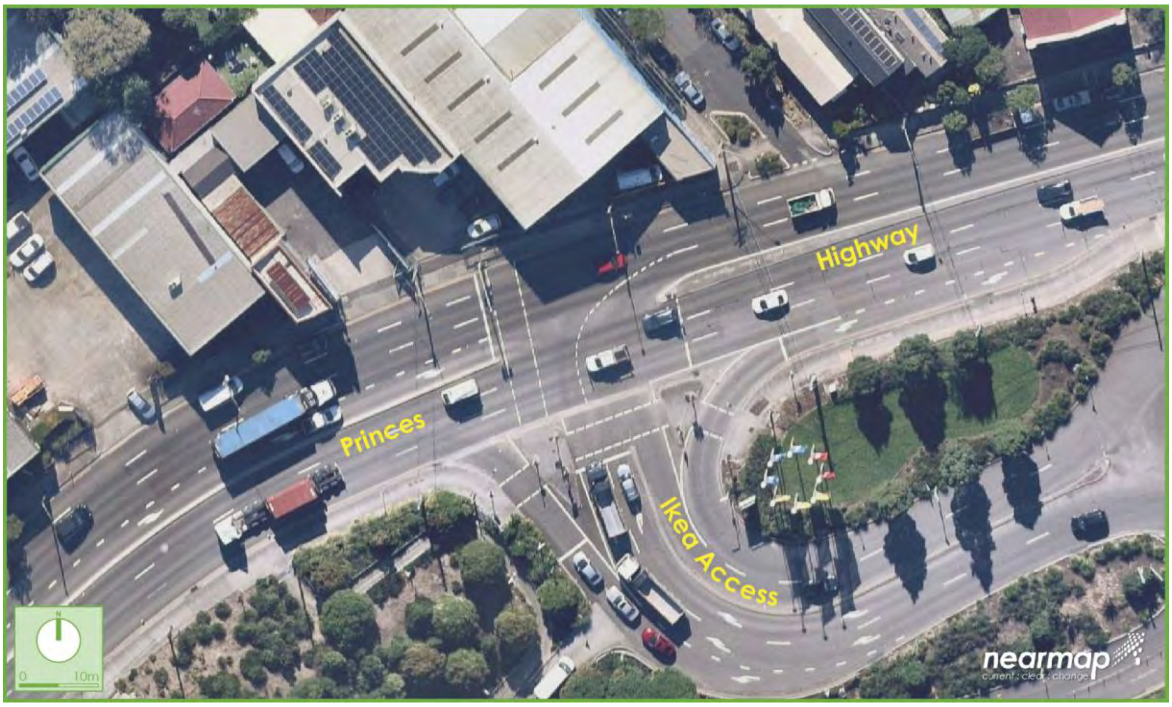


Figure 8: Intersection of Princes Highway and IKEA Access Road

It can be seen from Figure 8 that the intersection of Princes Highway and the IKEA Access Road is a three-legged signalised intersection. The main attributes of each approach are outlined below.

- Princes Highway (east and west legs):
  - The east bound approach provides three (3) through lanes and a short right turn lane.
  - The west bound approach provides three (3) through lanes and short left turn lane.
- IKEA Access Road (south leg)
  - The north bound approach provides two (2) right turn lanes and a short-left turn lane.

3.3 Existing Traffic Volumes

The existing daily throughputs for the key intersections located in the vicinity of the site and can be summarised as follows:

- Intersection of Princes Highway, Smith Street and Union Street
  - Weekday morning peak hour throughput of 3,755 vehicles
  - Weekday evening peak hour throughput of 3,998 vehicles
  - Weekend peak hour throughput of 3,483 vehicles
- Intersection of Princes Highway and Brooklyn Street
  - Weekday morning peak hour throughput of 3,716 vehicles
  - Weekday evening peak hour throughput of 3,930 vehicles
  - Weekend peak hour throughput of 3,422 vehicles
- Intersection of Princes Highway and Bunnings Access/IKEA Servicing Access
  - Weekday morning peak hour throughput of 3,676 vehicles
  - Weekday evening peak hour throughput of 3,911 vehicles
  - Weekend peak hour throughput of 3,408 vehicles
- Intersection of Princes Highway and Foreman Street
  - Weekday morning peak hour throughput of 3,705 vehicles
  - Weekday evening peak hour throughput of 3,931 vehicles
  - Weekend peak hour throughput of 3,458 vehicles
- Intersection of Princes Highway and IKEA Access Road
  - Weekday morning peak hour throughput of 3,722 vehicles

- Weekday evening peak hour throughput of 4,220 vehicles
- Weekend peak hour throughput of 4,128 vehicles

4. BACKGROUND INFORMATION

4.1 Approved Development and Traffic Report

The approved development for the subject site consists of works for the construction of a Bunnings development being a hardware and building supplies store. A traffic report was prepared for the development application prepared by Transport and Traffic Planning Associates (Ref: 17053, dated October 2017, Rev E).

The traffic report undertook a SIDRA intersection analysis at the intersection of Princes Highway and the proposed access and Princes Highway and Smith Street. The study concluded that the results of the SIDRA assessment indicated satisfactory operational performance at the access and intersection, with both sites operating at a LOS A in the morning, evening and weekend scenarios with the development traffic incorporated.

4.2 Access Arrangements

The access arrangements as detailed within the traffic report prepared for DA describes the following:

- Smith Street access: Ingress and egress for the carpark and ingress for delivery/service vehicles.
- Princes Highway: Right turn ingress and left turn egress for the carpark and left turn egress for delivery/service vehicles.

4.3 Parking Arrangements

The DA traffic report details that a total of 424 parking spaces will be provided within the basement carpark for Bunnings including accessible and trailer spaces.

4.4 Council's Response to Community Concerns

Council has received concerns from Tempe residents regarding the approved traffic arrangements, and safety concerns. On this matter Transport for NSW has advised residents that they "would support further risk assessment being undertaken by either Bunnings or Council of the Princes Highway access and a feasibility review of the traffic lights to determine if the safety and network impacts could be effectively mitigated".

5. WARRANT FOR TRAFFIC SIGNALS

5.1 Signal Warrant Assessment

The TfNSW Traffic Signal Design Guide Section 2 describes the general warrants for the installation of a signalised intersection. The following is the assessment criteria to determine if the intersection meets the warrants for a signalised intersection. As construction has not commences at the time of this report, development traffic generation has been used in lieu of traffic data for the minor legs being for the Bunnings access.

Traffic for a TCS warrant assessment is presented in Table 1 below:

Table 1: Traffic Data for TfNSW Warrants

Time	Traffic - Vehicles/hour		
	Princes Highway Eastbound	Princes Highway Westbound	Approved Bunning Tempe Development Volumes in One Direction
Weekday			
Hourly AM Average	2731	836	60 veh/hour in the AM peak
Hourly PM Average	1187	2571	186 veh/hour in the PM peak
Saturday			
Hourly SAT Average	1624	1422	445 veh/hour

A signalised intersection may be considered if one of five warrants is met (as per the Traffic Signal Design Manual – Section 2 Warrants). The relevant warrants are summarised below.

a) Traffic Demand:

For each of four one-hour periods of an average day:

I. The major road flow exceeds 600 vehicles/hour in each direction; and
II. The minor road flow exceeds 200 vehicles/hour in one direction.

WARRANT MET:

Traffic survey data collected as part of this feasibility study shows average hourly volume on Princes Highway well exceeding the 600 vehicles/hour threshold in each direction during both the weekday AM and PM peak period as well as the weekend peak period.

The approved traffic report also estimated Bunnings Tempe is expected to generate up to 445 vehicles/hour on the weekend and is expected to satisfy the minor road flow requirements of 200 vehicles/hour requirement.

Accordingly, traffic demand-based signal warrant is considered to be met on weekends.

OR

b) Continuous Traffic:

For each of four one-hour periods of an average day:

I. The major road flow exceeds 900 vehicles/hour in each direction; and
II. The minor road flow exceeds 100 vehicles/hour in one direction; and
III. The speed of traffic on the major road or limited sight distance from the minor road causes undue delay or hazard to the minor road vehicles; and
IV. There is no other nearby traffic signal site easily accessible to the minor road vehicles.

WARRANT TENTATIVELY MET:

Item (ii) and (iii) are subjective and can be argued that it is unsafe for vehicles to turn across three (3) lanes of traffic carrying over 2,600 veh/hr in the PM peak hour, and that the existing signalised intersection at Princes Highway / Union Street / Smith Street is not an appropriate alternative, especially for large trucks.

Accordingly, the continuous traffic based signal warrant is considered to be tentatively met.

OR

c) Pedestrian Safety:

For each of four one-hour periods of an average day:

I. The pedestrian flow crossing the major road exceeds 150 pedestrian/hour; and

II. The major road exceeds 600vehicles/hour in each direction or, where there is a central median of at least 1.2m wide, 1000 vehicles /hour in each direction.

WARRANT NOT MET:

The pedestrian volumes at this intersection do not meet the warrants.

OR

d) Pedestrian Safety – high speed road:

For each of four one-hour periods of an average day:

I. The pedestrian flow crossing the major road exceeds 150 pedestrian/hour; and
II. The major road exceeds 450vehicles/hour in each direction or, where there is a central median of at least 1.2m wide, 750 vehicles /hour in each direction; and
III. The 85^{th} percentile speed on the major road exceeds 75 km/hour.

WARRANT NOT MET:

The pedestrian volumes at this intersection do not meet the warrants.

OR

e) Crashes:

I. The intersection has been the site of an average of three or more reported tow-away or casualty traffic accidents per year over a three year period, where the traffic accidents could have been prevented by traffic signals; and
II. The traffic flows are at least 80% of the appropriate flow warrants.

WARRANT NOT MET:

Not applicable to a new intersection.

5.2 Assessment Outcome

Based on the signal warrant assessment presented in Section 5.1, it is considered that traffic signals are warranted at the Bunnings Tempe Princes Highway access driveway.

6. FEASIBILITY OF TRAFFIC SIGNALS

6.1 Concept Design to include Traffic Signals

On the basis that traffic signals are warranted at the approved Bunnings Tempe Princes Highway access driveway; a Concept Plan has been developed to show a signalised intersection layout that could be physically accommodated within the existing driveway with minimal changes to the internal configuration of the Bunnings development.

The Concept Plan depicts a signalised intersection layout that aims to contain all vehicle egress onto Princes Highway and making it difficult and undesirable for any vehicles travelling through Union Street.

It is also pertinent to note that the currently approved access driveway does not permit vehicles to turn left into Bunnings via Princes Highway and the approved driveway has been slightly angled to deter this particular vehicular movement. This has been retained in the Concept Plan.

Accordingly, a Concept Plan has been developed using "Proposed Road Layout General Arrangement Plan – Option 2" as a base plan prepared by at&l (reproduced in Appendix A) which is understood to be the currently approved access layout for the Bunnings Tempe development.

It is also noted that swept path analysis has been undertaken to ensure a 20m Articulated Vehicle (AV) can turn into and out of the site satisfactorily, and are shown on the concept drawings.

The Concept Plan prepared for the purposes of this feasibility study is provided in Figure 9 and reproduced at full scale in Appendix B.

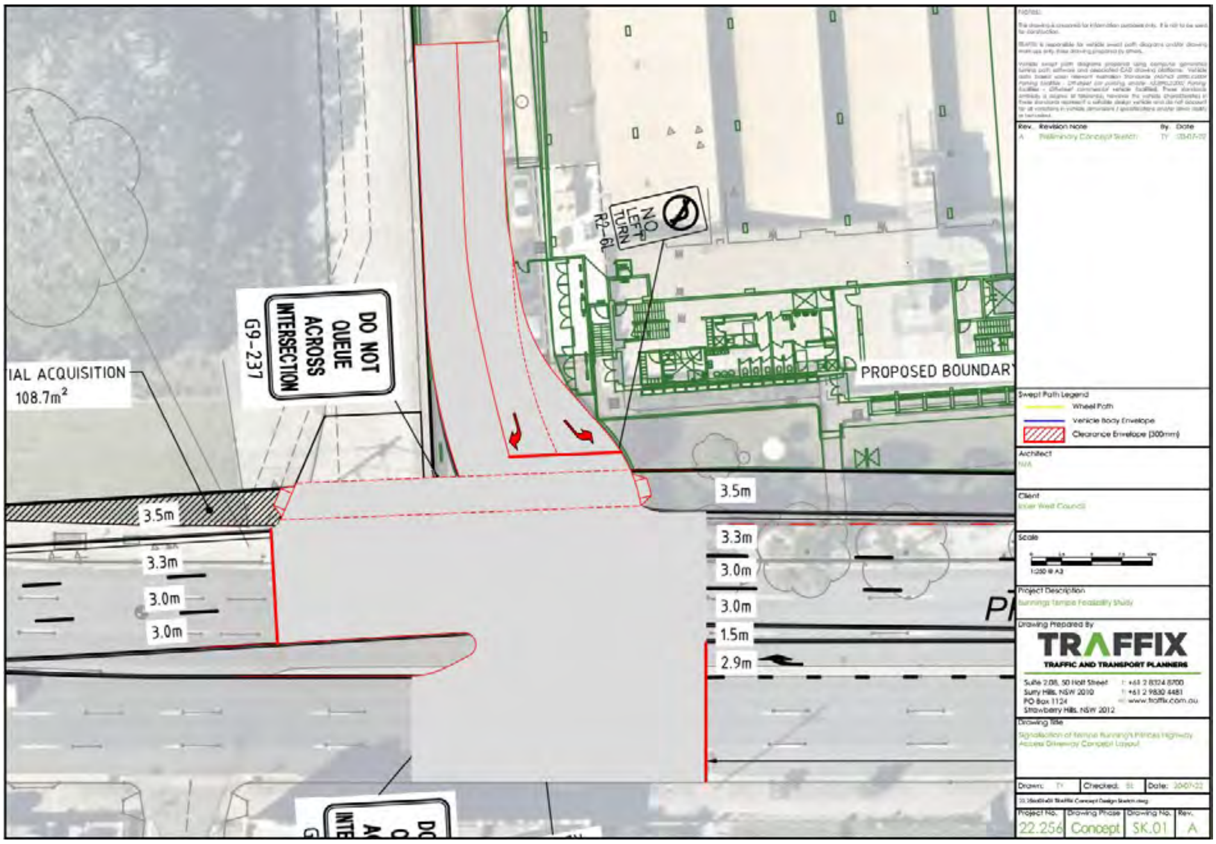


Figure 9: Concept Plan for Bunnings Tempe Signalised Princes Highway Access Driveway

6.2 Community and Resident Impacts

The Concept Design shows there are unlikely to be any additional impacts to local community and residents when compared to the currently approved access arrangement.

Furthermore, removing vehicle egress on Smith Street and allowing vehicles to turn right onto Princes Highway addresses local community concerns, making it difficult and undesirable for Bunnings traffic to travel through Union Street.

6.3 Public Transport

The Concept Design does not have an impact on any existing public transport infrastructure.

6.4 Accessibility for Bunnings Customers

The Concept Plan shows a signalised turn off Princes Highway can potentially achieve improved access for Bunnings' customers, as they will be able to utilise the right-turn lane to access Bunnings under a safer, green phase instead of trying to find a safe gap to cross three (3) lanes of traffic on an arterial road which carries a significant volume of traffic (up to 2,683 vehicles in the southbound direction during the PM peak hour) and a bicycle route.

This will also likely reduce the number of northbound right turn vehicles occupying the rightmost through lane at the Princes Highway / Smith Street / Union Street intersection to access Bunnings via Smith Street, negatively impacting the through lane capacity.

All egress vehicles will also have convenient access directly onto the arterial road network, being Princes Highway and is potentially an improvement over the currently approved egress arrangements.

Google Maps also show similar travel times for those customers situated northwest of the railway line travelling through Railway Road when turning right onto Princes Highway instead of travelling through Union Street as currently approved. Marrickville Station has been used as a reference point and the PM peak hour travel times are provided in Figure 10 and Figure 11.

Notwithstanding the above, Bunnings' customer may still choose to turn left onto Princes Highway, then left onto Smith Street to perform a U-turn at the cul-de-sac to access Union Street. In any event, the delays resulting from traversing three sets of traffic signals will likely deter motorists from taking this route. In any event, the revised access / egress arrangement will result in significantly less traffic accessing Union Street compared to the currently approved vehicular access arrangement.

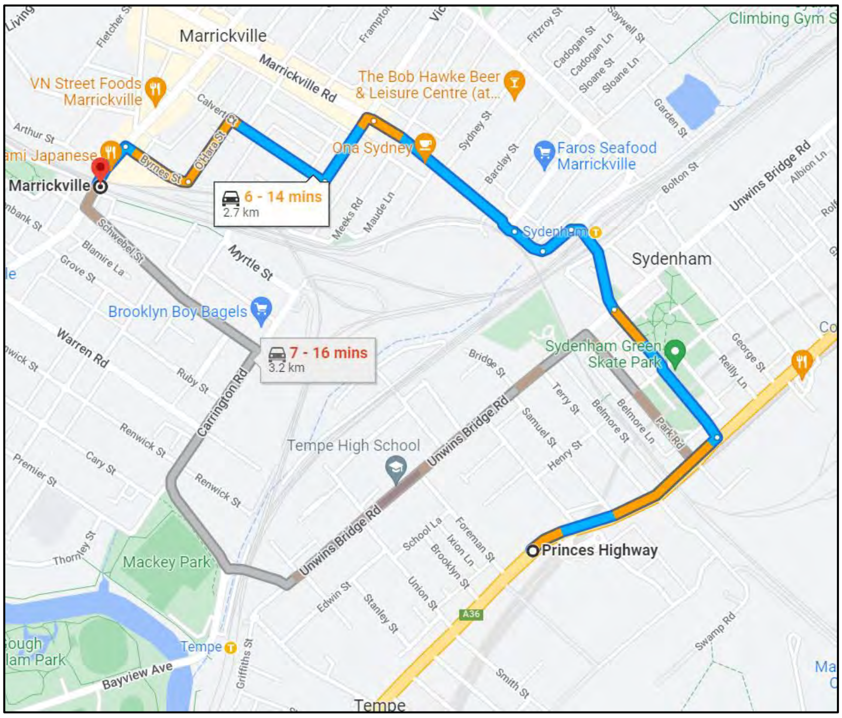


Figure 10: Norwest Customers Travel Time Through Railway Road

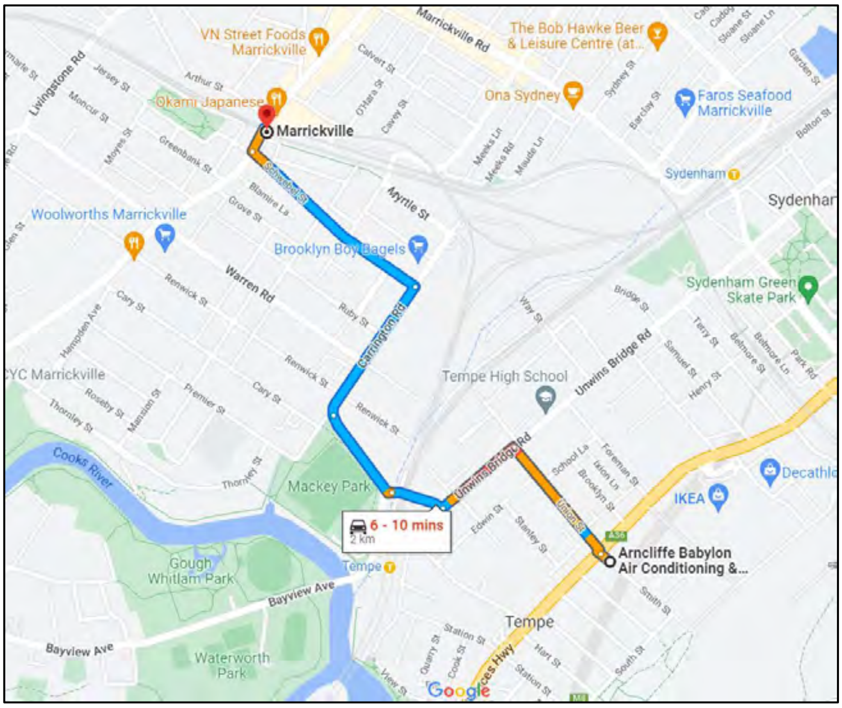


Figure 11: Norwest Customers Travel Time Through Union Street

6.5 Impacts on existing Trees and Street Furniture

The Concept Plan shows a signalised intersection can potentially be accommodated entirely within the existing design without affecting trees and street furniture as currently approved.

6.6 Pedestrian and Active Transport Movement Desire Lines

The Concept Plan shows a signalised intersection can potentially be accommodated entirely within the existing design without affecting pedestrian and active transport movement desire lines as currently approved.

It is envisaged that pedestrian movements on the southern side of Princes Highway will be substantially improved and better protected under a signalised access arrangement compared the currently approved access arrangement where they will need to travel almost 30 metres across the two driveways, and being vulnerable to vehicles turning right into the site that are likely to be more focused on finding a suitable gap across three lanes of busy traffic and not able to sufficiently observe pedestrians.

6.7 Impacts on Nearby Driveways and Intersections

The Concept Plan shows a signalised intersection can potentially be accommodated entirely within the existing design without affecting nearby driveways and intersections as currently approved.

6.8 Road Alignment

The Concept Plan shows the centreline of Prince Highway and Tempe Bunning's driveway generally intersect close to 90°. An inspection of existing site conditions also identified a large vertical curve (crest) located south of the proposed intersection on Princes Highway. No concerns are raised in regard to the existing vertical alignment, which appears to provide sufficient sight distance for the northbound and southbound approaches.

Furthermore, it is considered that all approaches are generally straight, and drivers are expected to have clear view of traffic signals, if implemented.

6.9 Sight Distance

It is noted Approach Sight Distance (ASD), Minimum Gap Sight Distance (MGSD) and Safe Intersection Sight Distance (SISD) are desirable at signalised intersections but not a mandatory requirement as per Austroads Guide to Road Design Part 4A 2021 (AGRD Part 4A, 2021).

Accordingly, it is reasonable to conclude these parameters do not influence the feasibility of providing traffic signals at this location.

In addition, it should be noted that the concept plan would result in slight widening of Princes Highway at the point of the proposed intersection which will result in a change to the existing alignment of the roadway, causing a minor bend in the path of travel for vehicles. As per Section 6.8, all approaches are generally straight, and drivers are expected to have a clear view of traffic signals if implemented. Therefore, this arrangement is not expected to have any impact on the intersection sight distance.

6.10 Spacing between Signalised Intersections

AGRD Part 4 specifies that it is desirable that intersections should be separated by at least five (5) seconds of travel time at the design speed to provide time for drivers to process information relating to traffic, the road layout and traffic signs.

Accordingly, it is desirable that intersections along Princes Highway within the vicinity of the site with a design speed limit of 70km/h (sign-posted speed limit of 60km/h) are spaced at least some 97 metres apart.

Notwithstanding, the introduction of traffic signals at the Tempe Bunning's Princes Highway access driveway does not change the spacing to its nearby intersections as currently approved.

6.11 See-Through Effects

See through effect refers to a driver approaching along the major road focuses on green lights at the second intersection rather than red lights at the first intersection.

This is unlikely a concern for southbound drivers approaching the signalised Ikea access driveway, which is located approximately 200 metres north and southbound drivers do not have a direct line of sight to the proposed signals due to the existing horizontal road alignment. No concerns are raised for vehicles approaching the proposed intersection from the south, noting the substantial distance to the Ikea intersection, which exceeds Austroads recommendations.

This is also unlikely to be a concern for northbound drivers approaching the signalised Princes Highway / Union Street / Smith Street intersection as it will be spaced approximately 150 metres apart, meeting minimum AGRD Part 4 requirements. Likewise, vehicles approaching the proposed intersection from the north will benefit from the 150 metres intersection spacing with no concerns raised by see through effects.

Furthermore, it is noted that the spacing between Princes Highway / Union Street / Smith Street signals and the signalised pedestrian crossing in front of 725-727 Princes Highway is some 110 metres apart, and there are no existing concerns with see through effects.

6.12 Road Safety Audit

An independent Road Safety Audit (RSA) has been carried out for the concept design in accordance with the Road Safety's Guidelines for Road Safety Auditing Practices, including a completed checklist as sourced from the Austroads Guide to Road Safety Part 6A – Implementing Road Safety Audits.

The RSA is reproduced in full in Appendix C noting all safety findings can be addressed through subsequent detailed engineering design and there are no safety items that would preclude the provision of traffic signals at this location altogether.

6.13 Changes to Adjacent Land

The concept design proposed above would involve the following spatial changes in relation to IKEA's property:

- Potential acquisition of 108.7m^2 of area along Princes Highway to allow for the signalised intersection arrangement.

- The above would result in the re-alignment of the IKEA property boundary on the north western frontage to Princes Highway.

6.14 Other Impacts

There may be other impacts that can affect the feasibility of providing traffic signals at this location and will need to be separately reviewed by consultants in those respective fields, some of these include:

- Environmental impacts;
- Socio-economic impacts;
- Heritage impacts;
- Street lighting requirements;
- Pavement impacts; and
- Stormwater and drainage impacts.

Generally, impacts to existing infrastructure within the road reserve, such as lighting, sewer, water, stormwater, electricity, gas etc. can be addressed through detailed engineering solutions/design and is a common component for brownfield projects.

7. TRAFFIC MODELLING

7.1 Methodology

A SIDRA 9 Network model has been developed for the Princes Highway corridor between Union Street / Smith Street and Ikea's Access Driveway to determine the road capacity implications if the approved Tempe Bunning's Princes Highway access driveway were signalised as discussed in Section 6.

7.1.1 Surveys

Traffic surveys were undertaken at the key intersections described in Section 3.2, which are considered to be most critical in relation to the site. These counts were undertaken during a weekday morning peak between 7:00am-9:00am and an evening peak between 4:00pm-6:00pm on the 29th of June 2022. In addition, surveys were also conducted on a typical Saturday peak period between 11:00am-200pm on 23 July 2022.

The individual peak hour volumes for each intersection have been used within the SIDRA 9 modelling which is presented in Section 7.2 as a worst-case assessment. The relevant peak periods for each intersection are listed below for reference.

- Intersection of Princes Highway, Smith Street and Union Street
  - AM Peak: 7:45am - 8:45am; and
  - PM Peak: 5:00pm - 6:00pm.
  - SAT Peak: 12:45pm - 1:45pm.
- Intersection of Princes Highway and Brooklyn Street
  - AM Peak: 7:45am - 8:45am; and
  - PM Peak: 4:45pm - 5:45pm.
  - SAT Peak: 12:45pm - 1:45pm.
- Intersection of Princes Highway and Bunnings Access/IKEA Servicing Access
  - AM Peak: 7:45am - 8:45am; and
  - PM Peak: 4:45pm - 5:45pm.
  - SAT Peak: 12:45pm - 1:45pm.

- Intersection of Princes Highway and Foreman Street
  - AM Peak: 7:45am - 8:45am; and
  - PM Peak: 4:45pm - 5:45pm.
  - SAT Peak: 12:30pm - 1:30pm.
- Intersection of Princes Highway and IKEA Access Road
  - AM Peak: 7:45am - 8:45am; and
  - PM Peak: 5:00pm - 6:00pm.
  - SAT Peak: 12:30pm - 1:30pm.

7.1.2 Intersection Performance Measures

The survey data forms the base case volumes for software modelling undertaken to assess intersection performance characteristics under existing traffic conditions. The SIDRA Intersection 9 model produces a range of outputs, the most useful of which are the Degree of Saturation (DoS) and Average Vehicle Delay per vehicle (AVD). The AVD is in turn related to a level of service (LoS) criteria. These performance measures can be interpreted using the following explanations:

DoS - the DoS is a measure of the operational performance of individual intersections. As both queue length and delay increase rapidly as DoS approaches 1, it is usual to attempt to keep DoS to less than 0.9. When DoS exceeds 0.9 residual queues can be anticipated, as occurs at many major intersections throughout the metropolitan area during peak periods. In this regard, a practical limit at 1.1 can be assumed. For intersections controlled by roundabout or give way/stop control, satisfactory intersection operation is generally indicated by a DoS of 0.8 or less.

AVD - the AVD for individual intersections provides a measure of the operational performance of an intersection. In general, levels of acceptability of AVD for individual intersections depend on the time of day (motorists generally accept higher delays during peak commuter periods) and the road system being modelled (motorists are more likely to accept longer delays on side streets than on the main road system).

LoS - this is a comparative measure which provides an indication of the operating performance of an intersection.

7.2 Peak Period Intersection Performance

In order to compare the traffic implications of potential signals at the Bunnings Tempe Princes Highway access driveway, the following scenarios has been assessed:

- Existing Road Corridor (2022 Traffic Surveys);
- Approved Priority Controlled Access (2022 Traffic Surveys + Bunnings' Traffic under Approved Arrangements); and
- Signals at the Bunnings Princes Highway access driveway (2022 Traffic Surveys + Bunning's Rerouted Traffic under the Signalised Access Arrangements).

7.2.1 Trip Distribution under Signalised Scenario

The traffic report prepared by Transport and Traffic Planning Associates (Ref: 17053, dated October 2017, Rev E) details the assumptions regarding traffic distribution. The SIDRA 9 traffic modelling conducted as part of this feasibility study adopts the same traffic distribution assumptions to assign the traffic generated by the Bunnings Tempe development onto the adjacent road network for the signalised scenario.

On the above basis, the traffic distribution adopted in the modelling of the signalised scenario are shown in Figures 10, 11 and 12.

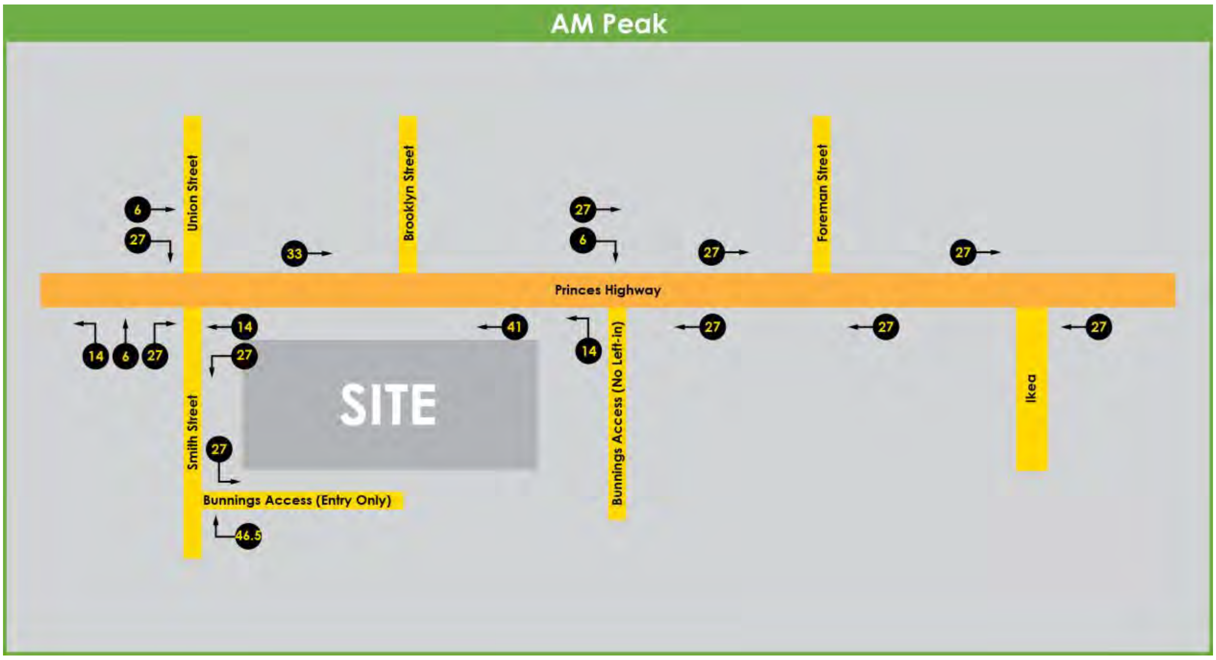


Figure 10: AM Traffic Distribution (veh/hr)

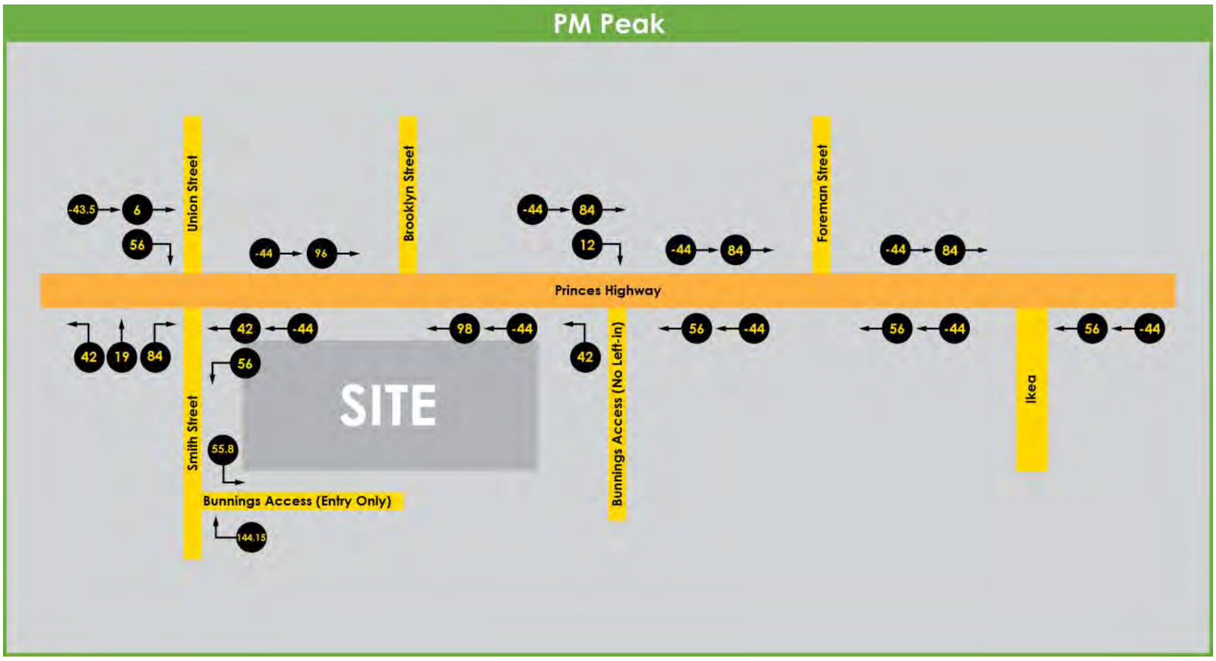


Figure 11: PM Traffic Distribution (veh/hr)

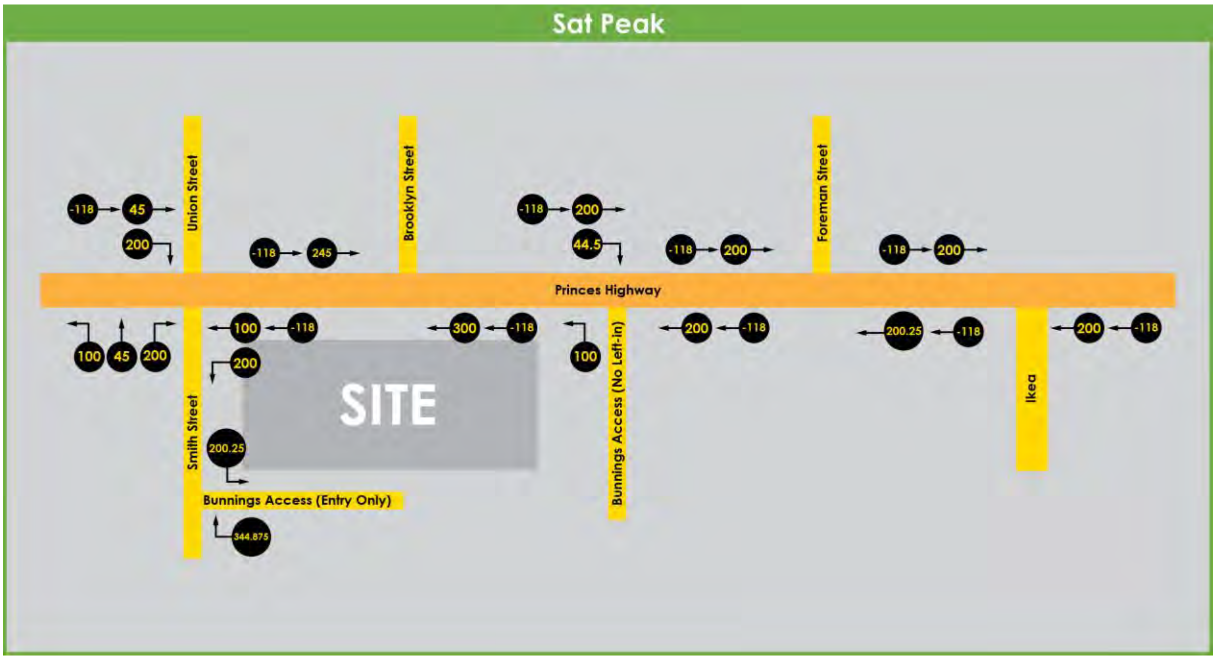


Figure 12: Saturday Traffic Distribution (veh/hr)

7.2.2 Existing Scenario

The Princes Highway corridor between Union Street / Smith Street and Ikea's Access Driveway adopted for the existing scenario is shown in Figure 13.

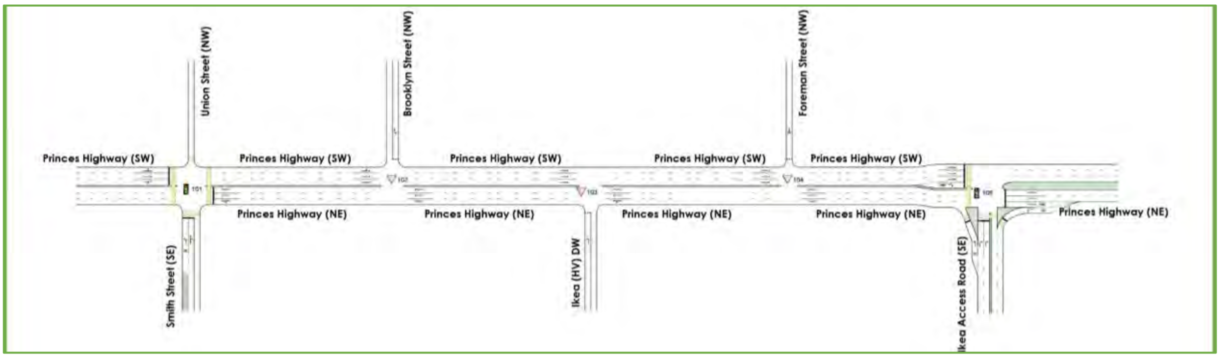


Figure 13: Existing Scenario Road Network Layout

A summary of the modelled results for the existing scenario are provided below in Table 2. Reference should also be made to the SIDRA outputs provided in Appendix D which provide detailed results for individual lanes and approaches.

Table 2: Existing Scenario Intersection Performance

Intersection	Control	Scenario	Period	DoS	AVD	LoS
Princes Highway, Union Street and Smith Street	Signal	Existing	AM	0.674	15.5	B
			PM	0.681	10.2	A
			SAT	0.426	5.8	A
Princes Highway and Brooklyn Street	Priority*	Existing	AM	0.525	13.3	A
			PM	0.492	6.4	A
			SAT	0.425	7.7	A
Princes Highway and Ikea Servicing Access	Priority*	Existing	AM	0.522	2.3	A
			PM	0.494	8.9	A
			SAT	0.317	4.0	A
Princes Highway and Foreman Street	Priority*	Existing	AM	0.935	849.6	F
			PM	1.090	818.2	F
			SAT	0.325	260.3	F
Princes Highway and IKEA Access	Signal	Existing	AM	0.603	3.8	A
			PM	0.645	9.2	A
			SAT	0.649	17.9	B

* LoS for priority intersections based on the worst performing movement in accordance with TfNSW Guide to Traffic Generating Development.

It can be seen from Table 2 that:

- Princes Highway, Union Street and Smith Street intersection currently operates satisfactorily during all peak periods at either LoS A or B;
- Princes Highway and Brooklyn Street intersection currently operates satisfactorily during all peak periods at LoS A;
- Princes Highway and Ikea Servicing Access intersection currently operates satisfactorily during all peak periods at LoS A;

- Princes Highway and Foreman Street intersection currently operates at LoS F during all peak periods, this is primarily due to vehicles turning right out of Foreman Street experiencing substantial delays when they need to identify a safe gap between six (6) lanes of busy traffic, and the modelling results reflects the difficulty of this movement; and
- Princes Highway and Ikea Access intersection currently operates satisfactorily during all peak periods at either LoS A or B.

7.2.3 Approved Scenario

The Princes Highway corridor between Union Street / Smith Street and Ikea's Access Driveway adopted for the approved scenario is shown in Figure 14.

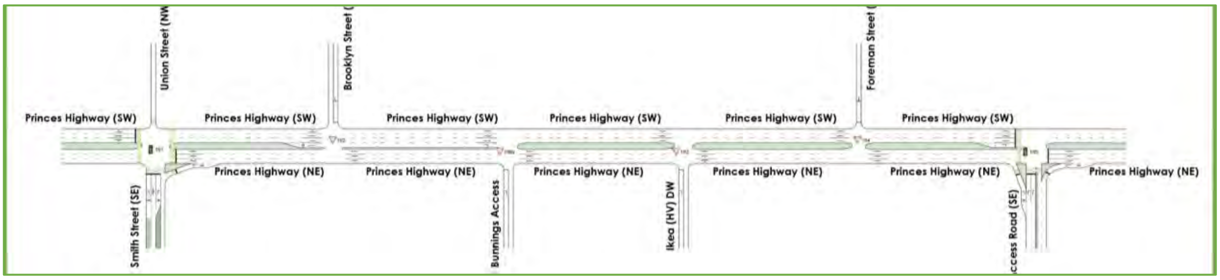


Figure 14: Approved Scenario Road Network Layout

A summary of the modelled results for the approved scenario are provided below in Table 3. Reference should also be made to the SIDRA outputs provided in Appendix D which provide detailed results for individual lanes and approaches.

Table 3: Approved Scenario Intersection Performance

Intersection	Control	Scenario	Period	DoS	AVD	LoS
Princes Highway, Union Street and Smith Street	Signal	Approved	AM	0.754	17.8	B
			PM	0.840	20.8	B
			SAT	0.863	27.0	B
Princes Highway and Brooklyn Street	Priority*	Approved	AM	0.399	8.4	A
			PM	0.502	5.8	A

Intersection	Control	Scenario	Period	DoS	AVD	LoS
			SAT	0.340	6.5	A
Princes Highway and Ikea Servicing Access	Priority*	Approved	AM	0.527	2.2	A
			PM	0.496	6.6	A
			SAT	0.332	3.7	A
Princes Highway and Foreman Street	Priority*	Approved	AM	0.527	11.8	A
			PM	0.495	6.4	A
			SAT	0.339	7.9	A
Princes Highway and IKEA Access	Signal	Approved	AM	0.617	3.9	A
			PM	0.772	9.8	A
			SAT	0.686	17.8	B
Princes Highway and Bunnings Tempe Access	Priority*	Approved	AM	0.527	9.8	A
			PM	0.496	72.9	F
			SAT	0.353	31.5	C

* LoS for priority intersections based on the worst performing movement in accordance with TfNSW Guide to Traffic Generating Development.

It can be seen from Table 3 that:

- Princes Highway, Union Street and Smith Street intersection is expected to operate satisfactorily under the approved scenario during all peak periods at LoS B;
- Princes Highway and Brooklyn Street intersection is expected to operate satisfactorily under the approved scenario during all peak periods at LoS B;
- Princes Highway and Ikea Servicing Access intersection is expected to operate satisfactorily under the approved scenario during all peak periods at LoS A;
- Princes Highway and Foreman Street intersection is expected to continue to operate at LoS A under the approved scenario during all peak periods.
- Princes Highway and Ikea Access intersection is expected to operate satisfactorily under the approved scenario during all peak periods at either LoS A or B; and

- The approved Princes Highway and Tempe Bunning Access is expected to operate satisfactorily during the AM peak period at LoS A but will however operate at LoS F during both the PM and Saturday peak periods due to:
  - During the PM peak hour, 13 vehicles turning right into Bunnings via Princes Highway will experience delays in order to identify a safe gap between 2,837 through vehicle movements. The modelling showed that the right turns into Bunnings under this scenario experienced an average delay of 72.9 seconds. It should also be noted that the network model takes into account the bunching caused by the upstream signalised intersection. Within the SIDRA model, gap acceptance parameter for this right turn movement has been set as "high", however even with drivers choosing smaller gaps which could potentially be dangerous, the intersection operates at a LoS F; and
  - During the Saturday peak hour, 47 vehicles turning right into Bunnings via Princes Highway will experience substantial delays in order to identify a safe gap between 1,839 through vehicle movements. The modelling showed that the right turns into Bunnings under this scenario experienced an average delay of 31.5 seconds. As above, the effect of bunching is also incorporated from the upstream signal due to the intersection being modelled as part of a network.

The SIDRA modelling of the approved intersection layout shows that significant delays are expected under this scenario. This is expected to result in safety concerns at the intersection as driver anxiety over the increasing delay will cause them to accept risks associated with selecting smaller gaps .

Notwithstanding, it is noted that if drivers do not choose short gaps as modelled, vehicles are unlikely to wait for extended periods to turn right into Bunnings via Princes Highway and may instead find another route. With limited opportunity to turn around once at the point of the short right turn lane of the approved scenario, vehicles may merge back into the through lane to proceed to the next signalised intersection and use the IKEA access and roundabout within the site to turn around and approach the site from a southbound direction. Whilst the approved Bunnings development does not permit left turns into the site this will be difficult to enforce and with consideration of the delays that are expected from the SIDRA modelling of the approved scenario, vehicles may still attempt to turn left into the site.

In addition, it should be noted that Princes Highway is a bicycle route and pedestrians walking along the frontage of the site are required to cross both the IKEA access driveway and the approved Bunnings access without any refuge point between the two accesses. Drivers will be required to seek gaps in a high volume three-lane road and also look for pedestrians crossing along the frontage of the site at the access which may be missed by drivers that are concentrating on finding a sufficient gap to avoid long delays. Therefore, there are some significant risks associated with both road and pedestrian users for the approved access arrangements.

7.2.4 Signalised Scenario

The Princes Highway corridor between Union Street / Smith Street and Ikea's Access Driveway adopted for the approved scenario is shown in Figure 15.

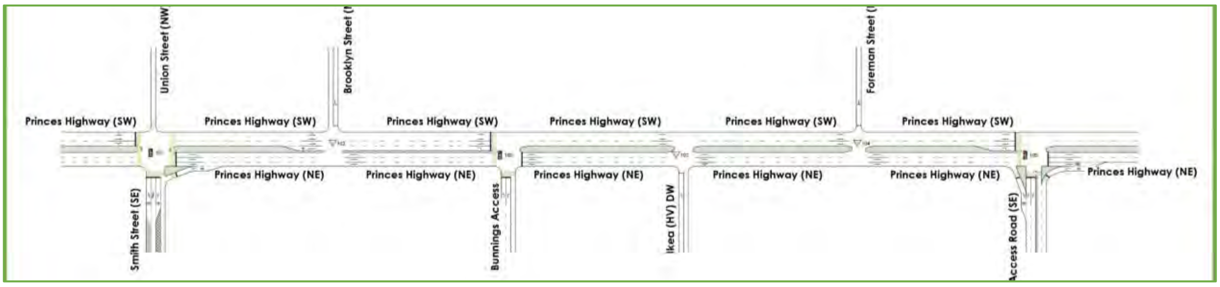


Figure 15: Signalised Scenario Road Network Layout

A summary of the modelled results for the signalised scenario are provided below in Table 4. Reference should also be made to the SIDRA outputs provided in Appendix D which provide detailed results for individual lanes and approaches.

Table 4: Signalised Scenario Intersection Performance

Intersection	Control	Scenario	Period	DoS	AVD	LoS
Princes Highway, Union Street and Smith Street	Signal	Signalised Concept	AM	0.680	30.5	B
			PM	0.717	5.2	A
			SAT	0.682	7.0	A
Princes Highway and Brooklyn Street	Priority*	Signalised Concept	AM	0.569	8.4	A
			PM	0.512	5.7	A
			SAT	0.414	6.5	A
Princes Highway and Ikea Servicing Access	Priority*	Signalised Concept	AM	0.527	3.0	A
			PM	0.490	6.5	A
			SAT	0.336	3.8	A
Princes Highway and Foreman Street	Priority*	Signalised Concept	AM	0.527	11.8	A
			PM	0.473	6.4	A
			SAT	0.469	8.0	A
Princes Highway and IKEA Access	Signal	Signalised Concept	AM	0.604	3.6	A
			PM	1.229	167.6	F
			SAT	0.713	17.6	B
Princes Highway and Bunnings Tempe Access	Signal	Signalised Concept	AM	0.677	4.8	A
			PM	0.751	15.0	B
			SAT	0.721	20.1	B

* LoS for priority intersections based on the worst performing movement in accordance with TfNSW Guide to Traffic Generating Development.

It can be seen from Table 4 that:

- Princes Highway, Union Street and Smith Street intersection is expected to operate satisfactorily under the signalised scenario during all peak periods at either LoS A or B;

- Princes Highway and Brooklyn Street intersection is expected to operate satisfactorily under the signalised scenario during all peak periods at LoS A;
- Princes Highway and Ikea Servicing Access intersection is expected to operate satisfactorily under the signalised scenario during all peak periods at LoS A;
- Princes Highway and Foreman Street intersection is expected to continue to operate at LoS A under the signalised scenario during all peak periods;
- Princes Highway and Ikea Access intersection is expected to operate satisfactorily under the signalised scenario during AM and Saturday periods at either LoS A or B but is however found to operate at LoS F during the PM peak period. The intersection will experience an average delay of 167.6 seconds during the PM peak period which is a significant impact to the IKEA development; and
- The signalised Princes Highway and Tempe Bunning Access is expected to operate satisfactorily during all peak periods at either LoS A or B.

7.3 Modelling Summary

Based on the modelling results presented in Section 7.2 the following is noteworthy:

- Under the approved scenario, vehicles will find it difficult to turn into Bunnings Tempe during the PM and Saturday peak periods and will likely instead use an alternate route.
- Under the signalised scenario, SIDRA has identified the Princes Highway and Ikea Access intersection will be negatively impacted during the PM peak period and is expected to deteriorate to a LoS F.

Overall, SIDRA modelling results has found that the current approved scenario would have the least impact to the existing road network operation noting the impact to the upstream IKEA access under a signalised access scenario. This is notwithstanding that the right-turn into Bunnings Tempe under priority control is expected to be underutilised due to potential delays if drivers do not choose small and potentially unsafe gaps to turn right into the subject site.

8. CONCLUSION

This traffic signal feasibility study has been conducted to determine the feasibility to signalise the intersection of Princes Highway with Bunnings Tempe access driveway. This is largely due to the community response to the approved access arrangements and the push for a signalised intersection that provides a safer traffic solution.

The findings of the study have concluded that there are no reasons that would preclude the provision of traffic signals at the Tempe Bunning's access driveway altogether, and its feasibility is also dependent on many external factors other than traffic engineering or transport planning:

- Impacts to existing infrastructure within the road reserve, such as lighting, sewer, water, stormwater, electricity, gas etc. will need to be addressed through detailed engineering solutions/design.
- Safety findings in the RSA will need to be addressed through detailed engineering solutions/design.
- Transport for NSW will need to provide concurrence to traffic signals noting a safer access for Bunnings customers under a signalised arrangement via Princes Highway will negatively impact Princes Highway / Ikea's access driveway during the PM peak hour.
- Ikea will need to be consulted to traffic signals as their customers will experience greater delays when visiting or leaving the store during the PM peak hour, noting that the intersection operates at a LoS A in the approved PM scenario and a LoS F in the signalised concept scenario which is a significant impact on the operation of the IKEA access.
- Bunnings may need to submit a modification application, including potential amendments to their internal carpark layout in order to provide a signalised access off Princes Highway that is similar or an improvement to the concept scheme shown in this feasibility study. This concept design may be further altered with larger impacts to the proposed Bunnings building by providing for improved vehicle storage at the egress.
- The SIDRA 9 modelling of the approved Bunning access arrangement shows significant delays for vehicles turning right into Bunnings. Specifically, the PM scenario shows that vehicles would have to wait for up to 72.9 seconds to turn right into Bunnings from Princes Highway under the assumption that drivers will find small gaps acceptable. Driver anxiety

Highway under the assumption that drivers will find small gaps acceptable. Driver anxiety behaviours may result in choosing unsafe gaps in a high volume three-lane roadway to turn into the site causing safety concerns. If drivers do not take small gaps, extended delays will occur and this will encourage vehicles to enter the site through alternate routes.

9. RECOMMENDATIONS

This feasibility study has found the approved Princes Highway and Bunnings access experiences substantial delays, and vehicles would have to wait on average 72.9 seconds in the PM peak hour before being able to find a suitable gap to turn right into Bunnings.

It is pertinent to note that this is also on the basis that the gap acceptance parameter within the SIDRA models for this right turn movements have been set as "high", however, even with drivers choosing smaller gaps which could potentially be dangerous, the intersection would still operate at a LoS F.

It is likely that extended delays will occur if drivers do not accept small and potentially unsafe gaps. This may result in vehicles attempting to find another route into Bunnings. With limited opportunity to turn around once at the point of the short right turn lane of the approved scenario, vehicles may merge back into the through lane and proceed to the next signalised intersection and use the IKEA access and roundabout within the site to turn around and approach the site from a southbound direction. Whilst the approved Bunnings development does not permit left turns into the site this will be difficult to enforce and with consideration of the delays that are expected from the SIDRA modelling of the approved scenario, vehicles may still attempt to turn left into the site.

In addition to all of the above, concerns are raised for pedestrians / cyclists travelling along the south-eastern side of the road when crossing the driveway in is current approved form as drivers will be preoccupied to find a suitable gap across three-lanes of traffic and may not have sufficient time to observe and react to pedestrian or cyclist movements.

It is further noted that there is a precedent for a signalised intersection treatment for a fast-food premises (Hungry Jacks) located at 400 Princes Highway, St Peters. This is located along the same arterial road (Princes Highway) less than a kilometre away from the subject site and signals are used here to create a sufficient gap in traffic to allow left turns out of the access road. Generally left turns do not require signal treatment to allow for egress movements which demonstrates the significant volume of traffic along Princes Highway. It further emphasises the safety concerns regarding an unsignalised right turn into the Bunnings site if vehicles a kilometre upstream have difficulty just turning left out of the Hungry Jacks development without traffic being stopped by signals. This intersection is shown in the figure below for reference.

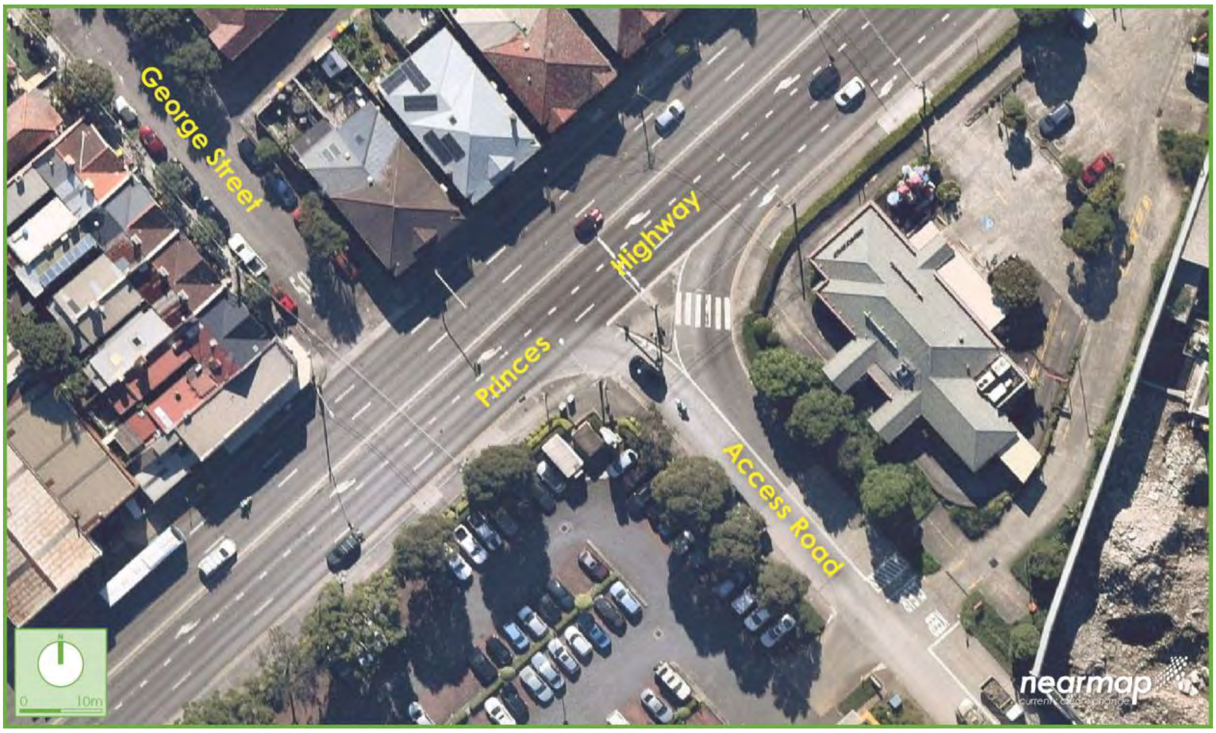


Figure 16: Intersection of Princes Highway and Access Roadway for St Peters Hungry Jacks

The feasibility study has also found that a concept signalised intersection layout sought by the local community and residents group would result in unacceptable impacts on the operation of the existing upstream IKEA access – showing a significant increase in the average delay in the PM peak hour and a change in the LoS of this intersection from a LoS A in the approved PM scenario to a LoS F in the signalised PM scenario. The upgrade of the approved Bunnings intersection into a signalised intersection will also have other challenges including significant economic implications on Bunnings over the approved access arrangements.

Having considered all of the above, the following is recommended:

- At least two (2) additional independent Road Safety Audits (RSA) should be undertaken for the currently approved priority controlled right-turn access into Bunnings via Princes Highway at the detailed design stage to ensure current conditions and opinions of different experts are adequately considered.
- TfNSW to explore signalising the right-turn entry into Bunnings site under the current approved arrangement to address potential safety concerns.

- Consideration to remove the right-turn access into Bunnings altogether if safe access to Bunnings via Princes Highway cannot be feasibility achieved.

APPENDIX A

Bunning Tempe Approved Architectural Plans

DA ISSUE

NOT FOR CONSTRUCTION

NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA ISSUE	09.07.15			
B	ADDITIONAL DA ISSUE	13.01.16			
C	DA ISSUE	21.03.17			
D	HWY RIGHT TURN-NO SIGNALS	15.09.17			
E	DA RFI RESPONSE	11.12.17			
F	SMITH ST BDY ADJUST	10.05.18			
G	SMITH ST BDY/LSCAPE EDGE	24.05.18			
H	SMITH&HWY BDY/LSCAPE EDGE	29.05.18			

CLIENT

BUNNINGS warehouse

JOHN R. BROGAN & ASSOCIATES
PTY. LIMITED
ARCHITECTS, PLANNERS & COMMERCIAL INTERIOR DESIGNERS
EST · 1927
37 PITT ST. SYDNEY NSW 2000
PH: (02) 9 221 2833 FAX: (02) 9 251 4741
EMAIL: jrb@brogans.com.au
A.B.N. 93 003 284 759

TRUE NORTH

PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

SITE PLAN

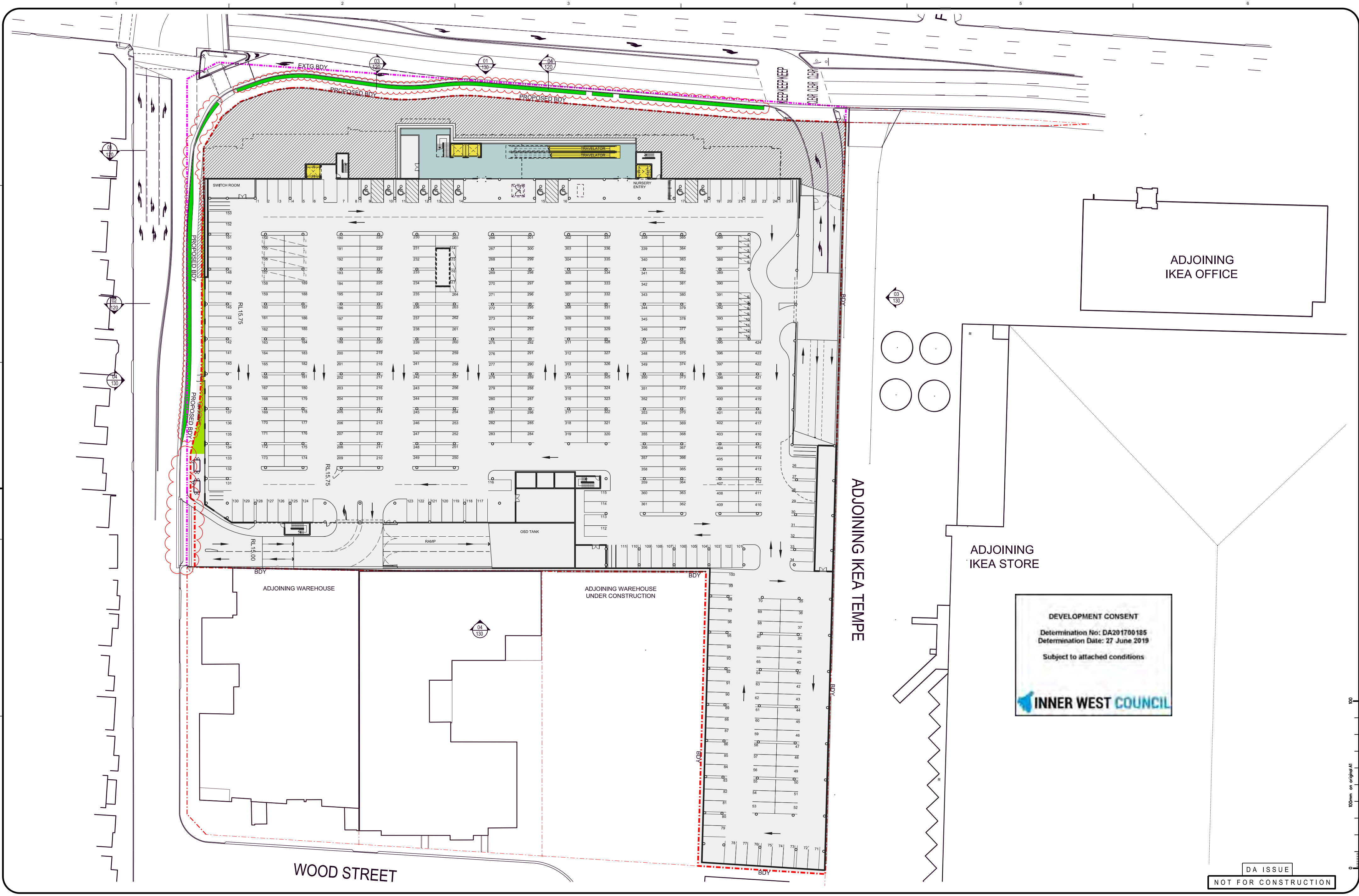
SCALE : 1:400

DATE : OCT 13

PROJ. NO. 1381

DRG. NO. 030

AMD NO. H



NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA ISSUE	21.03.17			
B	HWY RIGHT TURN-NO SIGNALS	15.09.17			
C	DA RFI RESPONSE	11.12.17			
D	SMITH ST BDY ADJUST	10.05.18			
E	SMITH ST BDY/LSCAPE EDGE	23.05.18			
F	SMITH&HWY BDY/LSCAPE EDGE	29.05.18			

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A.B.N. 93 003 284 759

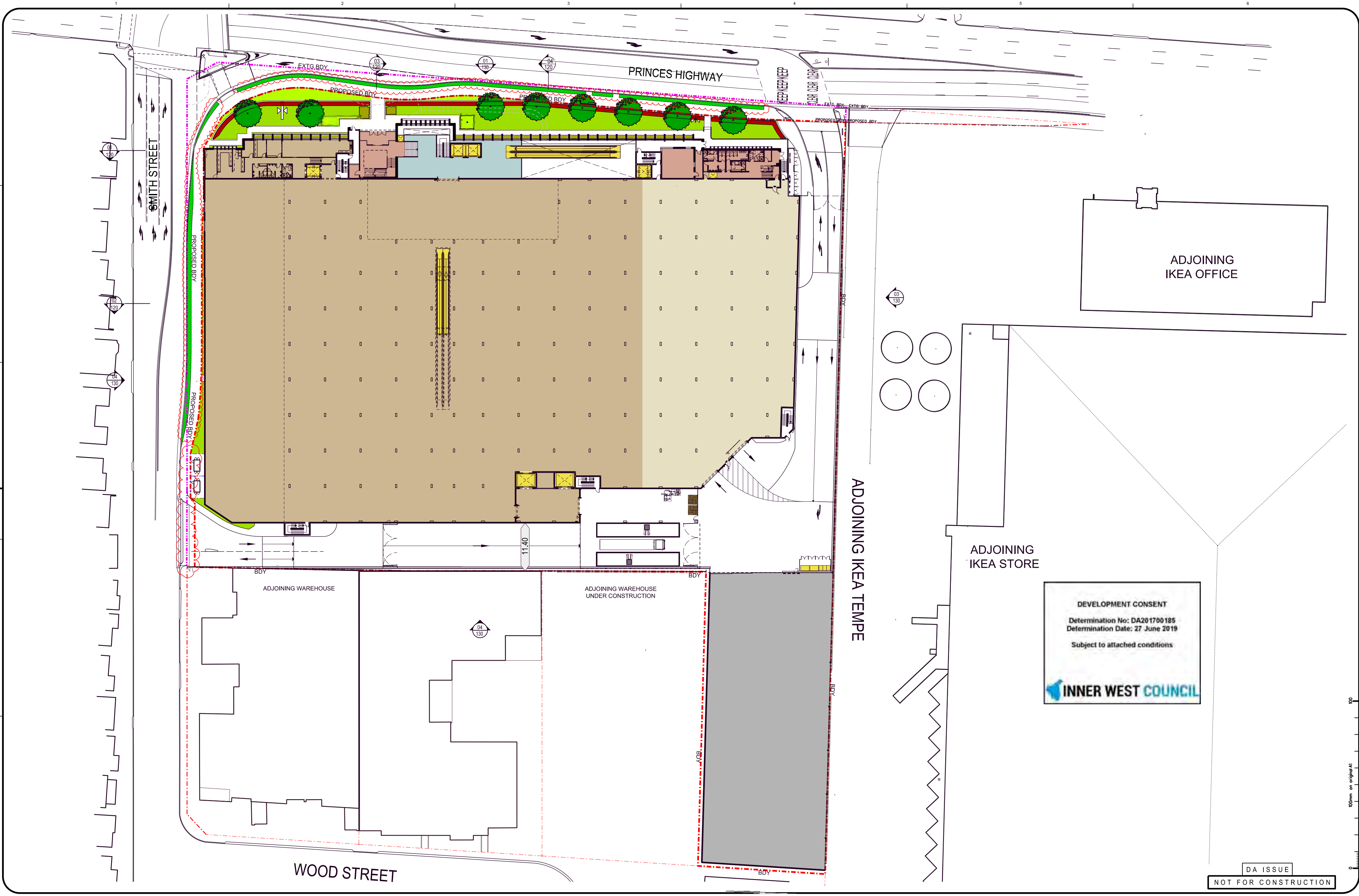
TRUE NORTH

PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

SITE PLAN
UNDERCROFT PARKING LEVEL

SCALE : 1:400
DATE : OCT 13
PROJ. NO. 1381
DRG. NO. 031
AMD NO. F

CAD REF :
Microstation V8i SS2



NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA ISSUE	21.03.17			
B	HWY RIGHT TURN-NO SIGNALS	15.09.17			
C	DA RFI RESPONSE	11.12.17			
D	SMITH ST BDY ADJUST	10.05.18			
E	SMITH ST BDY/LSCAPE EDGE	23.05.18			
F	SMITH&HWY BDY/LSCAPE EDGE	29.05.18			

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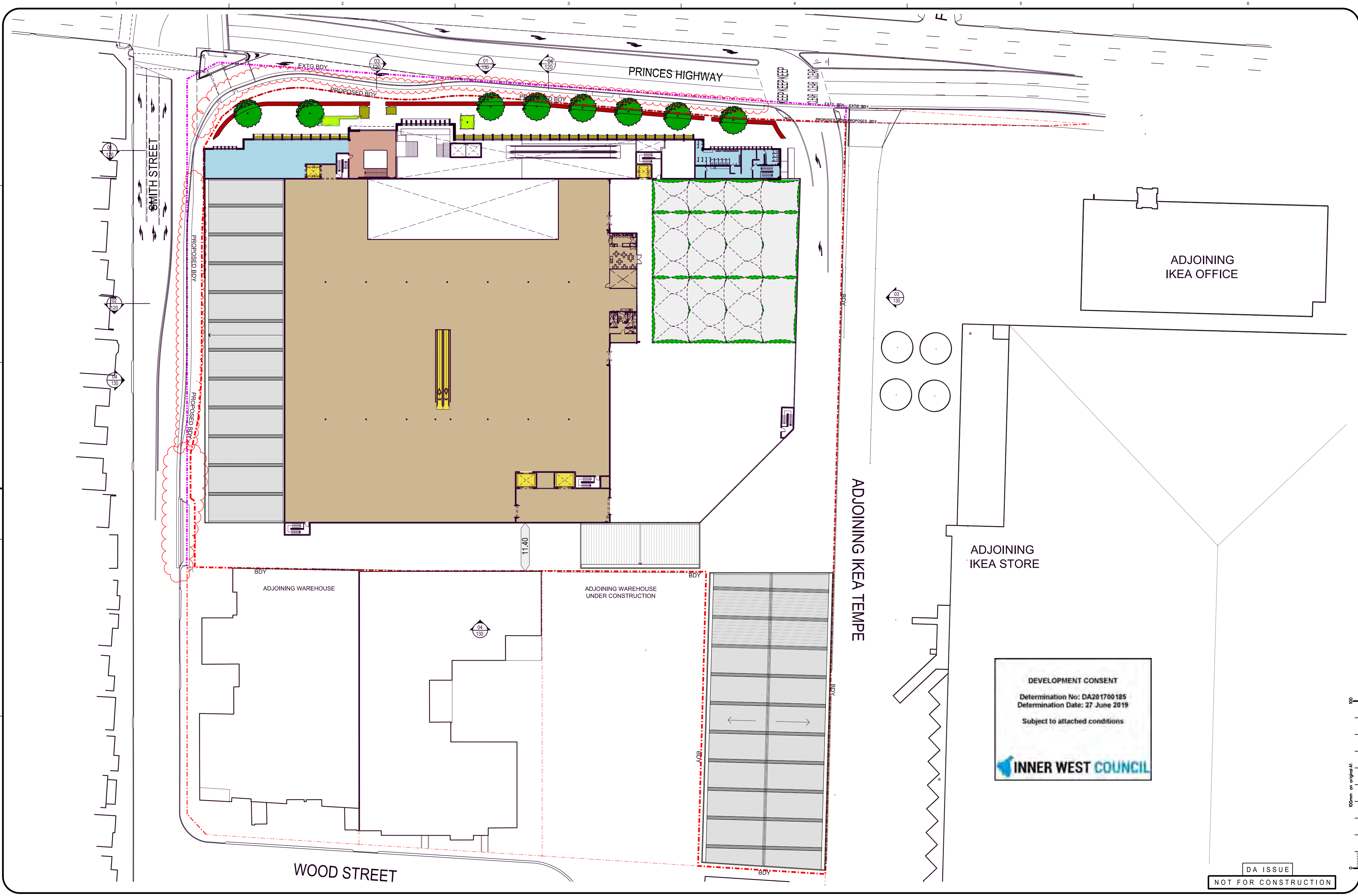
PH: (02) 9 221 2833 FAX: (02) 9 251 4741
EMAIL: jrb@brogans.com.au
A.B.N. 93 003 284 759

TRUE NORTH

PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

SITE PLAN
WAREHOUSE LEVEL 1

SCALE : 1:400
DATE : OCT 13
PROJ. NO. 1381
DRG. NO. 032
AMD NO. F



DA ISSUE

NOT FOR CONSTRUCTION

NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA ISSUE	21.03.17			
B	HWY RIGHT TURN-NO SIGNALS	15.09.17			
C	DA RFI RESPONSE	11.12.17			
D	SMITH ST BDY ADJUST	10.05.18			
E	SMITH ST BDY/LSCAPE EDGE	23.05.18			
F	SMITH&HWY BDY/LSCAPE EDGE	29.05.18			

CLIENT

BUNNINGS warehouse

JOHN R. BROGAN & ASSOCIATES
PTY. LIMITED
ARCHITECTS, PLANNERS & COMMERCIAL INTERIOR DESIGNERS
EST · 1927
37 PITT ST. SYDNEY NSW 2000
PH: (02) 9 221 2833 FAX: (02) 9 251 4741
EMAIL: jrb@brogans.com.au
A.B.N. 93 003 284 759

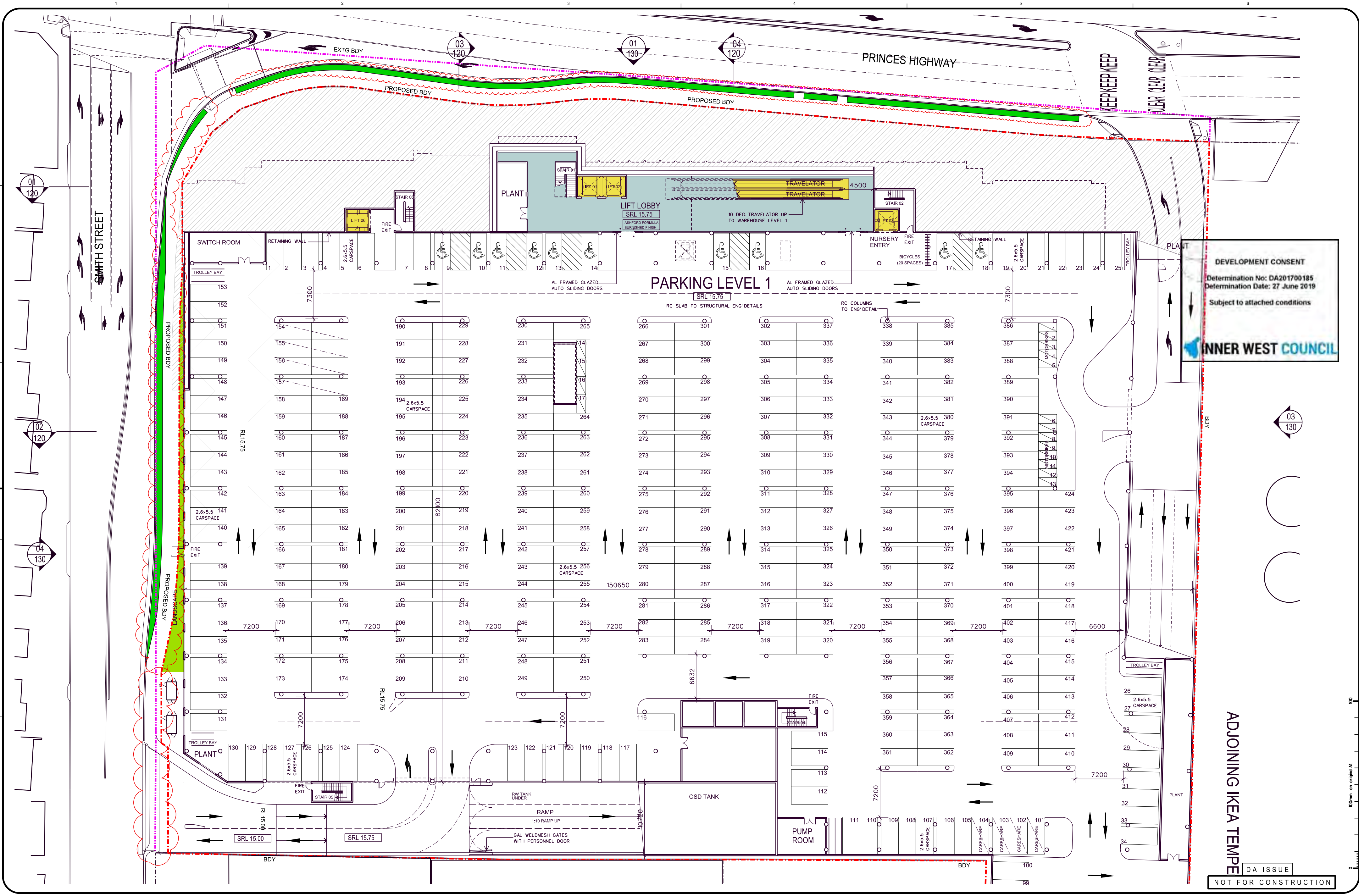
TRUE NORTH

PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

SITE PLAN
WAREHOUSE LEVEL 2

SCALE : 1:400
DATE : OCT 13
PROJ. NO. 1381
DRG. NO. 033
AMD NO. F

CAD REF :



NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA ISSUE	09.07.15			
B	DA ISSUE	21.03.17			
C	HWY RIGHT TURN-NO SIGNALS	15.09.17			
D	DA RFI RESPONSE	11.12.17			
E	SMITH ST BDY ADJUST	10.05.18			
F	SMITH ST BDY/LSCAPE EDGE	23.05.18			
G	SMITH&HWY BDY/LSCAPE EDGE	29.05.18			

CLIENT

BUNNINGS warehouse

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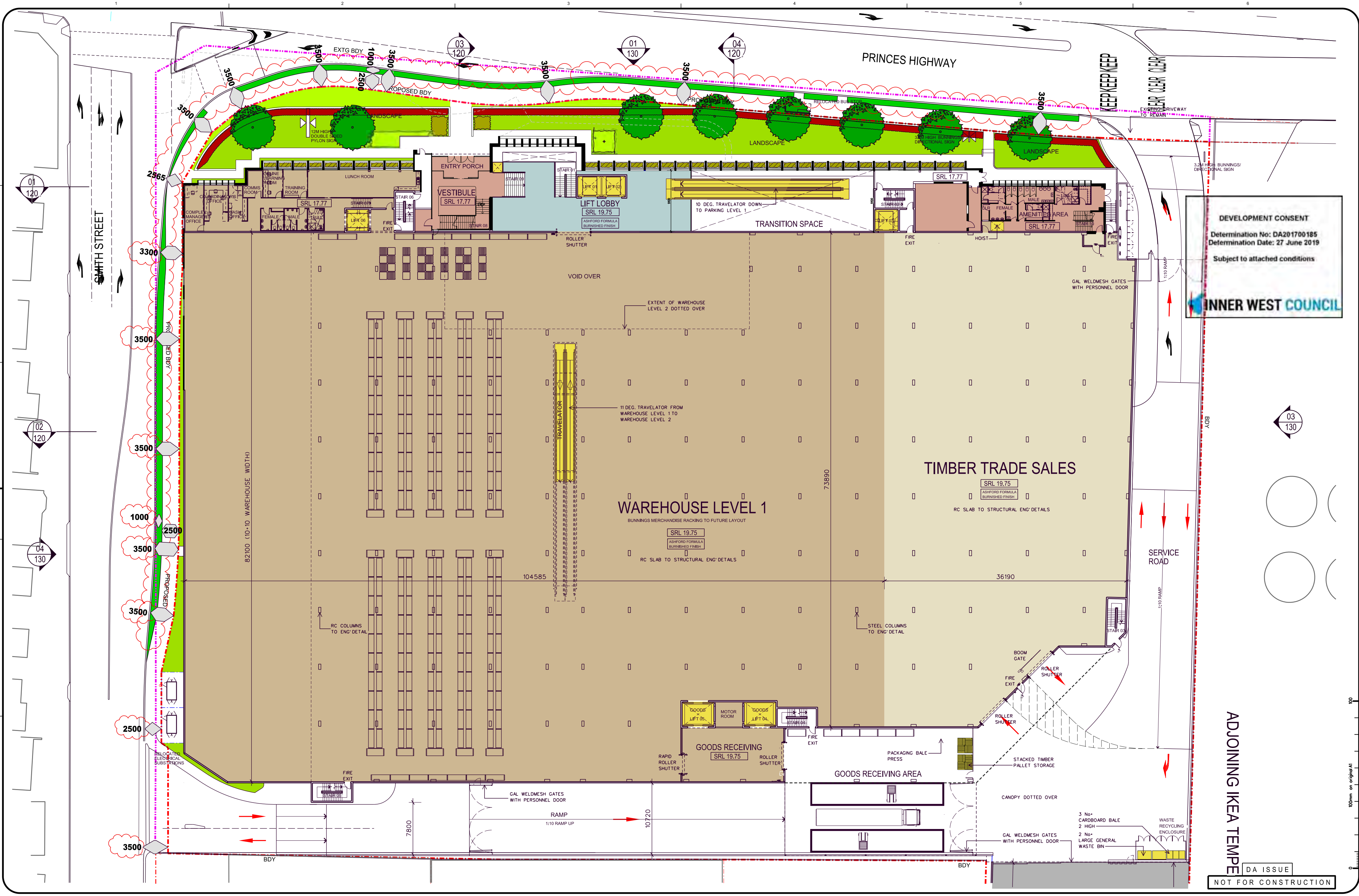
PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

FLOOR PLAN
UNDERCROFT PARKING LEVEL

SCALE : 1:250
DATE : OCT 13
PROJ. NO. 1381
DRG. NO. 100
AMD NO. G



NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA ISSUE	09.07.15			
B	DA ISSUE	21.03.17			
C	HWY RIGHT TURN-NO SIGNALS	15.09.17			
D	HWY RIGHT TURN NO SIGNALS	21.03.17			
E	DA RFI RESPONSE	11.12.17			
F	SMITH ST BDY ADJUST	10.05.18			
G	SMITH ST BDY/LSCAPE EDGE	23.05.18			
H	SMITH&HWY BDY/LSCAPE EDGE	29.05.18			

CLIENT
BUNNINGS warehouse

JOHN R. BROGAN & ASSOCIATES
PTY. LIMITED
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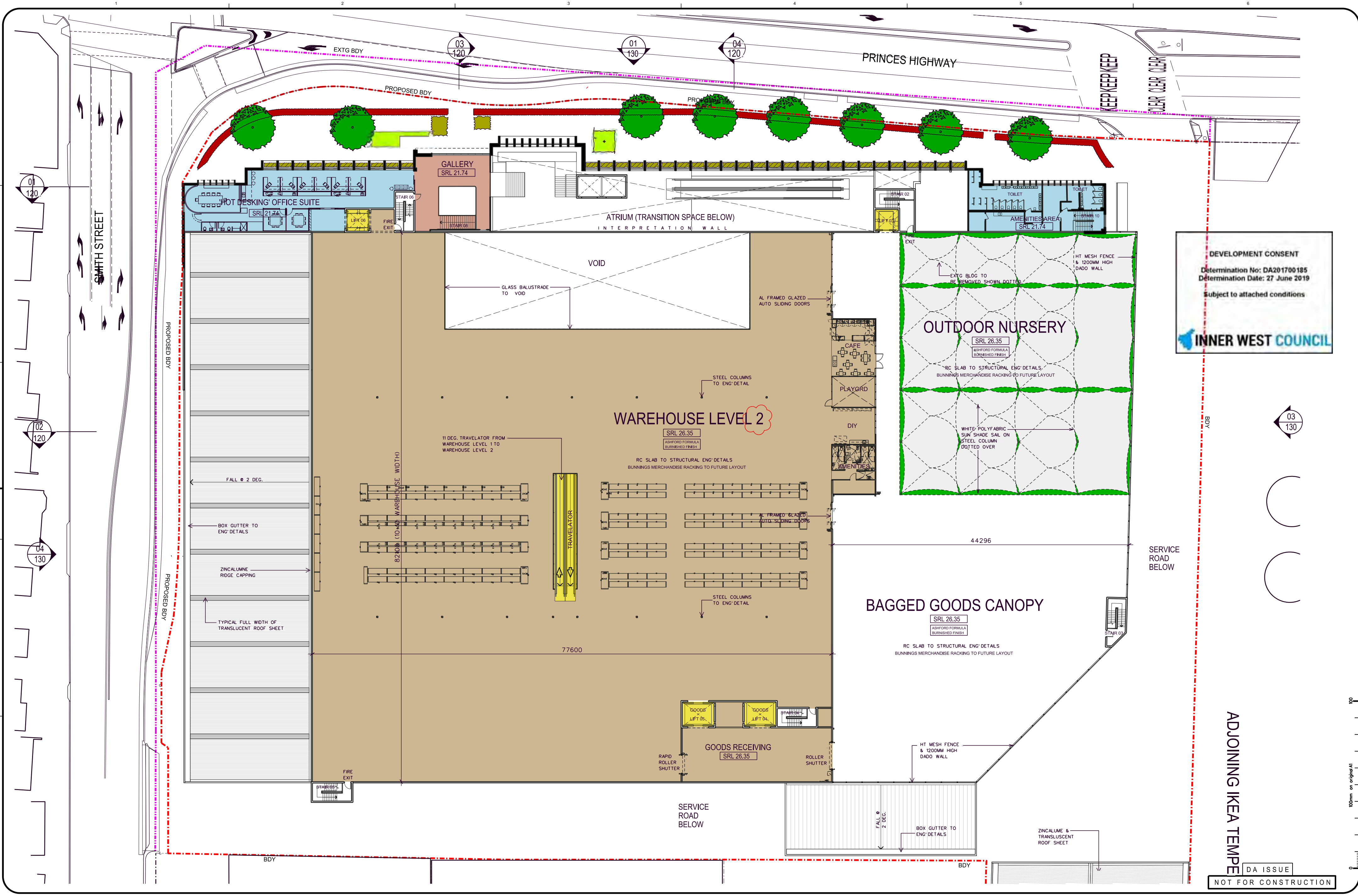
TRUE NORTH

PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

FLOOR PLAN
WAREHOUSE LEVEL 1

SCALE : 1:250
DATE : OCT 13
PROJ. NO. 1381
DRG. NO. 101
AMD NO. H



DEVELOPMENT CONSENT

Determination No: DA201700185
Determination Date: 27 June 2019

Subject to attached conditions

INNER WEST COUNCIL

DA ISSUE

NOT FOR CONSTRUCTION

NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA ISSUE	09.07.15			
B	DA ISSUE	21.03.17			
C	HWY RIGHT TURN-NO SIGNALS	15.09.17			
D	DA RFI RESPONSE	11.12.17			
E	SMITH ST BDY ADJUST	10.05.18			
F	SMITH ST BDY/LSCAPE EDGE	23.05.18			
G	SMITH&HWY BDY/LSCAPE EDGE	29.05.18			
H	WH LEVEL 2 LABEL CORRECTED	31.08.18			

CLIENT

BUNNINGS warehouse

JOHN R. BROGAN & ASSOCIATES
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TRUE NORTH

PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

FLOOR PLAN
WAREHOUSE LEVEL 2

SCALE : 1:250

DATE : OCT 13

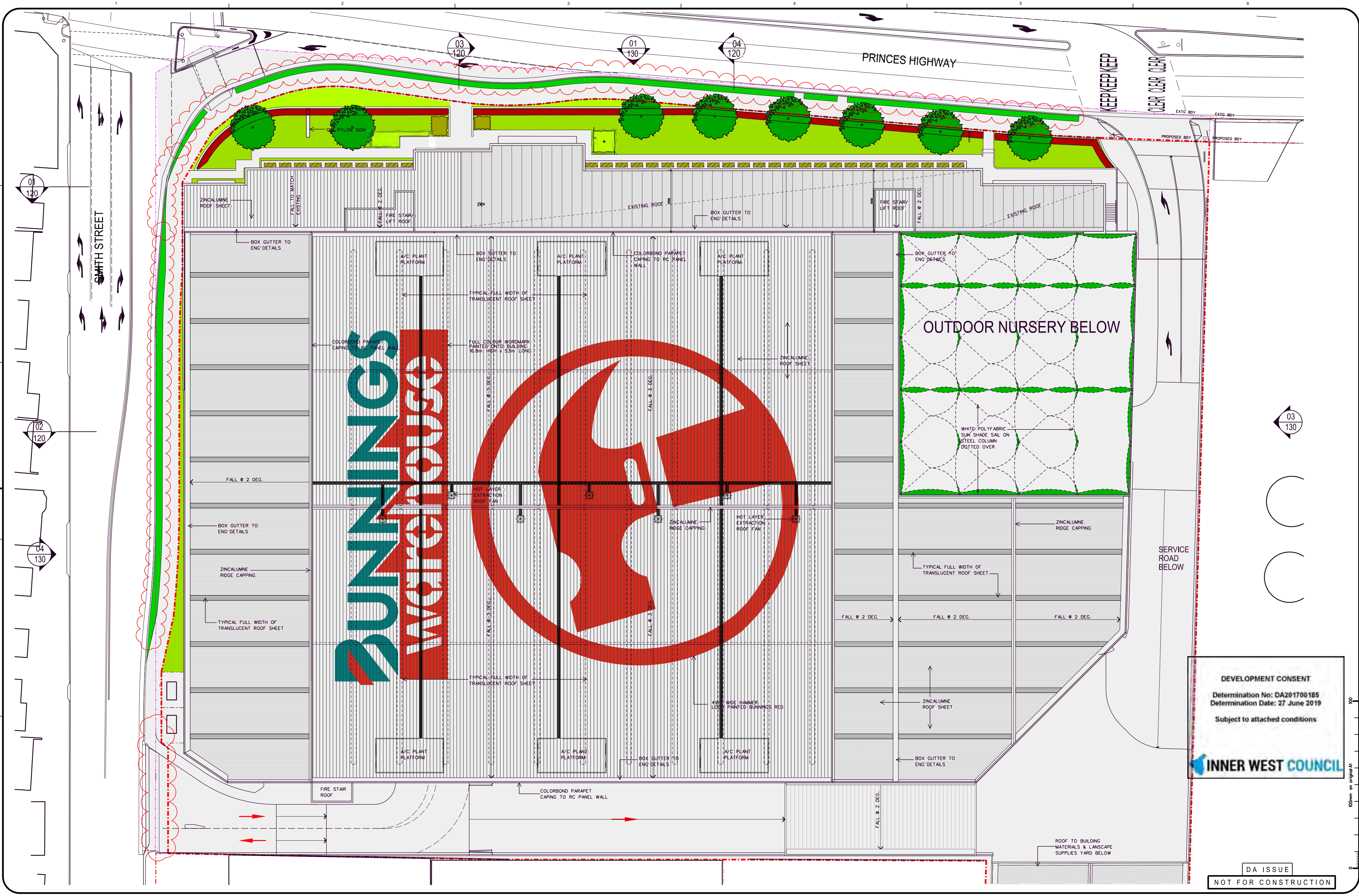
PROJ. NO. 1381

DRG. NO. 102

AMD NO. H

CAD REF :

Microstation V8i SS2 PROPOSED BUNNINGS WAREHOUSE, KEMBLA GRANGE, N.S.W. 2526 - PLOTTED August 2018



DA ISSUE

NOT FOR CONSTRUCTION

NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA ISSUE	09.07.15			
B	ADDITIONAL DA ISSUE	09.07.15			
C	DA ISSUE	21.03.17			
D	DA RFI RESPONSE	11.12.17			
E	SMITH ST BDY ADJUST	10.05.18			
F	SMITH ST BDY/LSCAPE EDGE	23.05.18			
G	SMITH&HWY BDY/LSCAPE EDGE	29.05.18			

CLIENT

BUNNINGS warehouse

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N TRUE NORTH

PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

FLOOR PLAN
ROOF PLAN

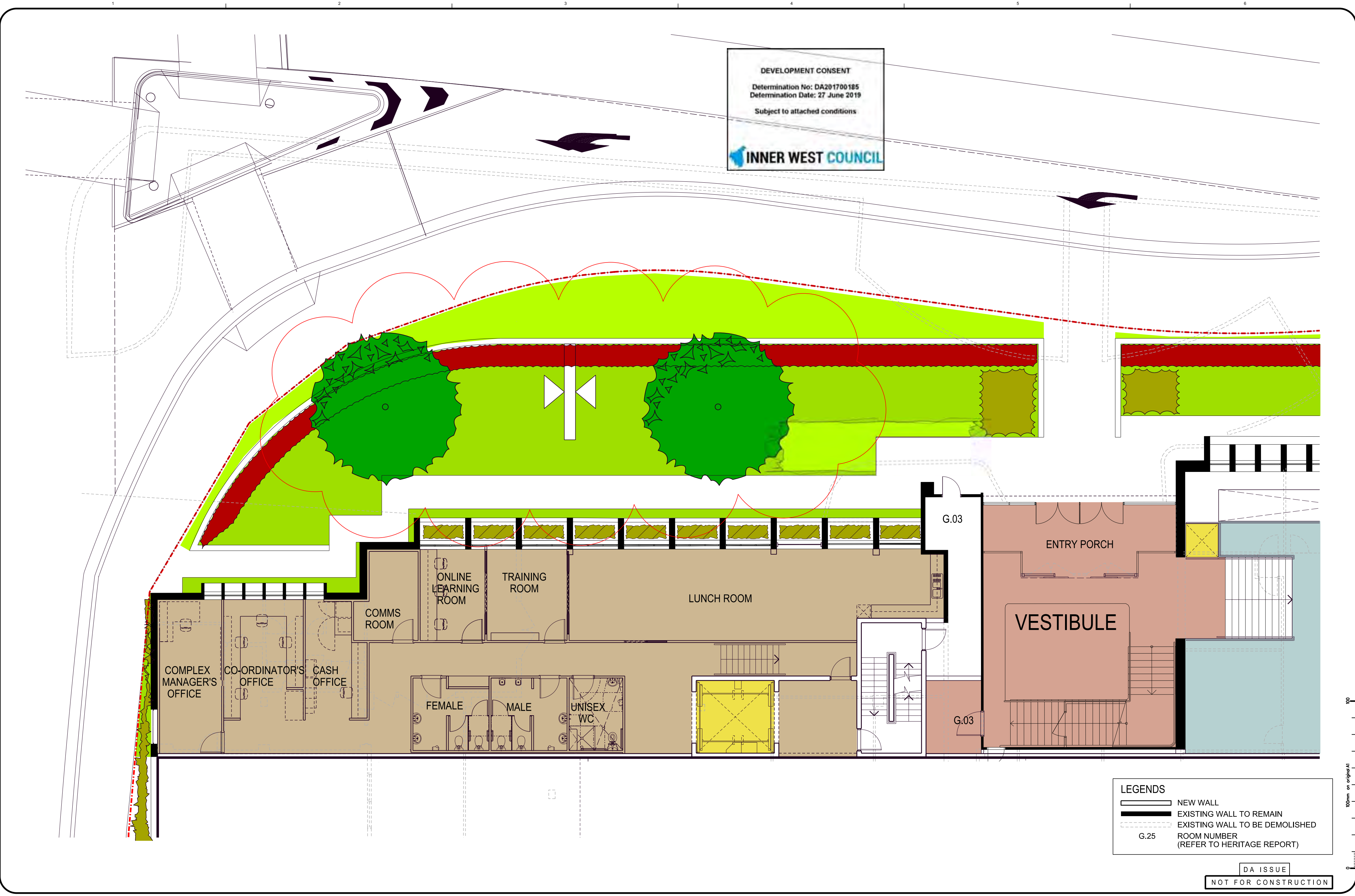
SCALE : 1:250

DATE : OCT 13

PROJ. NO. 1381

DRG. NO. 110

AMD NO. G



DEVELOPMENT CONSENT

Determination No: DA201700185
Determination Date: 27 June 2019

Subject to attached conditions

INNER WEST COUNCIL

LEGENDS

- NEW WALL
- EXISTING WALL TO REMAIN
- EXISTING WALL TO BE DEMOLISHED
- G.25 ROOM NUMBER (REFER TO HERITAGE REPORT)

DA ISSUE

NOT FOR CONSTRUCTION

NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA ISSUE	09.07.15			
B	ADDITIONAL DA ISSUE	13.01.16			
C	DA ISSUE	21.03.17			
D	DA RFI RESPONSE	11.12.17			

Do not scale from this drawing.
Verify dimensions from site and refer any discrepancies to Architects for clarification.

CLIENT

BUNNINGS warehouse

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TRUE NORTH

PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

FLOOR PLAN - GROUND LEVEL
EXISTING BUILDING DETAIL

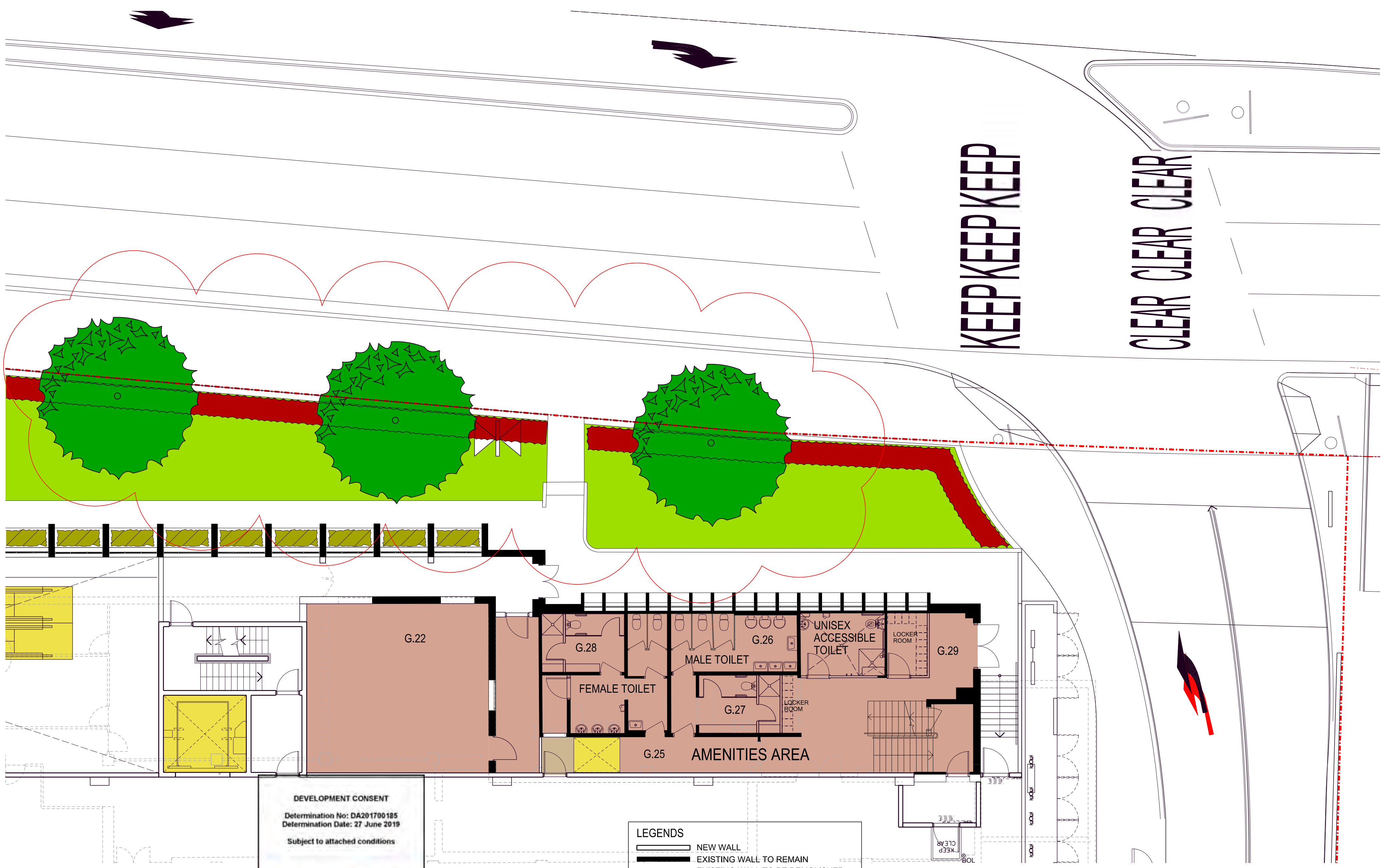
SCALE : 1:75

DATE : OCT 13

PROJ. NO. 1381

DRG. NO. 115

AMD NO. D



DEVELOPMENT CONSENT

Determination No: DA201700185
Determination Date: 27 June 2019

Subject to attached conditions

INNER WEST COUNCIL

LEGENDS

NEW WALL
EXISTING WALL TO REMAIN
EXISTING WALL TO BE DEMOLISHED
G.25 ROOM NUMBER (REFER TO HERITAGE REPORT)

DA ISSUE

NOT FOR CONSTRUCTION

Microstation V8i SS2 PROPOSED BUNNINGS WAREHOUSE, KEMBLA GRANGE, N.S.W. 2526 • PLOTTED December 2017

CAD REF :

NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA ISSUE	09.07.15			
B	ADDITIONAL DA ISSUE	13.01.16			
C	DA ISSUE	21.03.17			
D	DA RFI RESPONSE	11.12.17			

CLIENT

BUNNINGS warehouse

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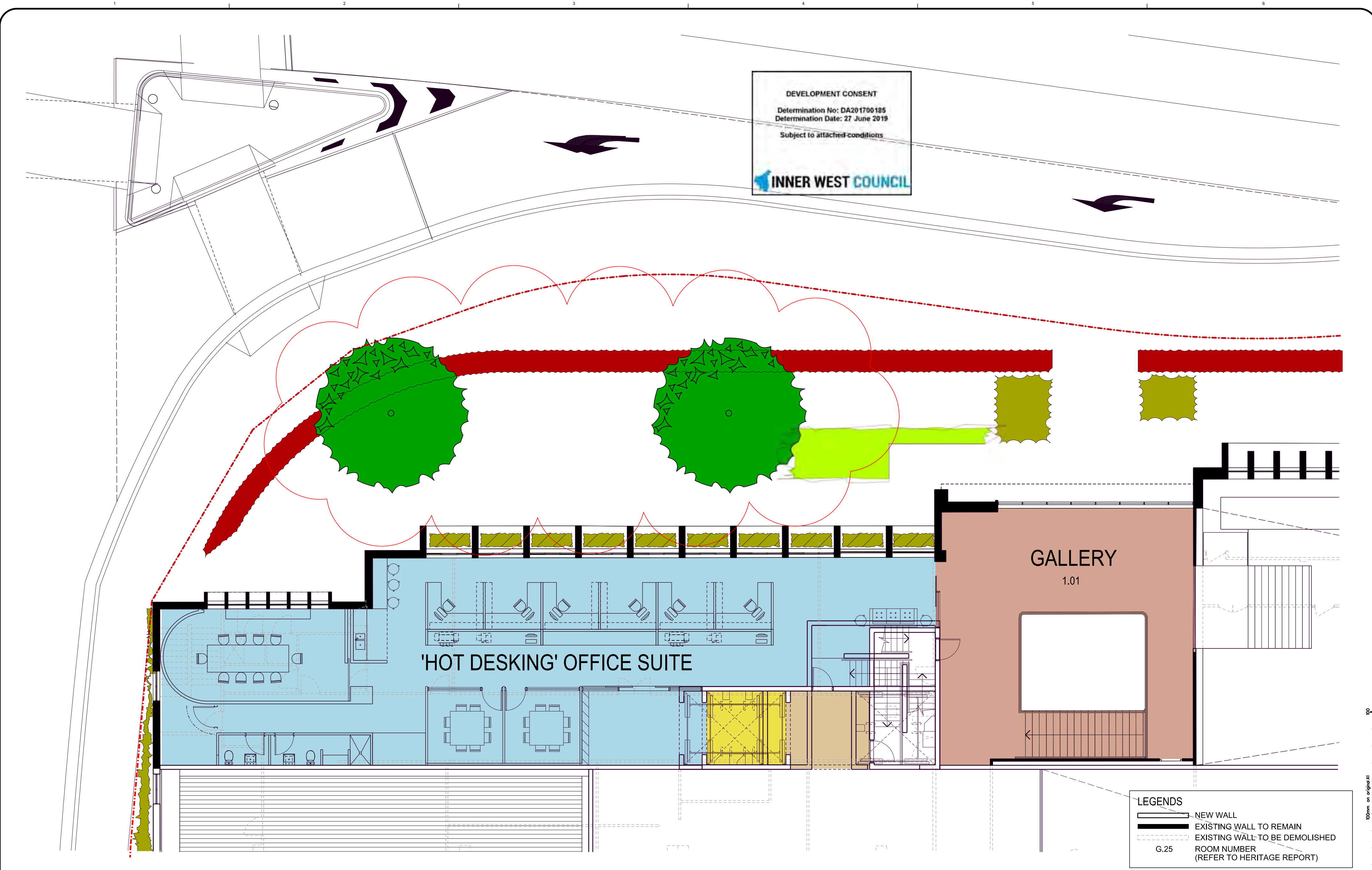
TRUE NORTH

PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

FLOOR PLAN - GROUND LEVEL
EXISTING BUILDING DETAIL

SCALE : 1:75
DATE : OCT 13

PROJ. NO. 1381
DRG. NO. 116
AMD NO. D



DA ISSUE

NOT FOR CONSTRUCTION

NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA ISSUE	09.07.15			
B	DA ISSUE	21.03.17			
C	DA RFI RESPONSE	11.12.17			

Do not scale from this drawing.
Verify dimensions from site and refer any discrepancies to Architects for clarification.

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BUNNINGS warehouse

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N TRUE NORTH

PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

FLOOR PLAN - LEVEL 1
EXISTING BUILDING DETAIL

SCALE : 1:75

DATE : OCT 13

PROJ. NO. 1381

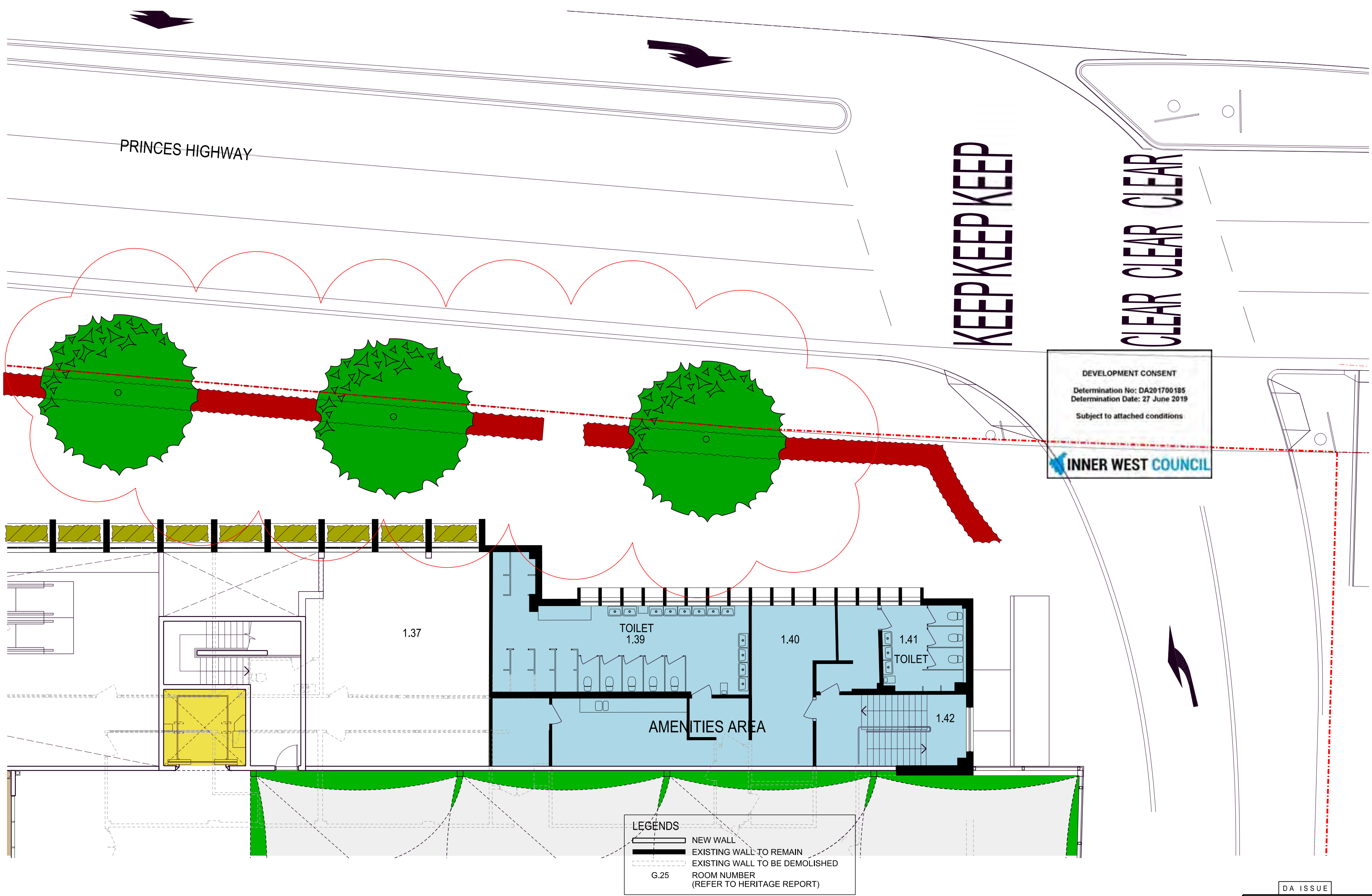
DRG. NO. 117

AMD NO. C

CAD REF :

Microstation V8i SS2

PROPOSED BUNNINGS WAREHOUSE, KEMBLA GRANGE N.S.W. 2526 - PLOTTED December 2017



DA ISSUE

NOT FOR CONSTRUCTION

NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA ISSUE	09.07.15			
B	DA ISSUE	21.03.17			
C	DA RFI RESPONSE	11.12.17			

CLIENT

BUNNINGS warehouse

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ARCHITECTS, PLANNERS & COMMERCIAL INTERIOR DESIGNERS
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N TRUE NORTH

PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

FLOOR PLAN - LEVEL 1
EXISTING BUILDING DETAIL

SCALE : 1:75

DATE : OCT 13

PROJ. NO. 1381

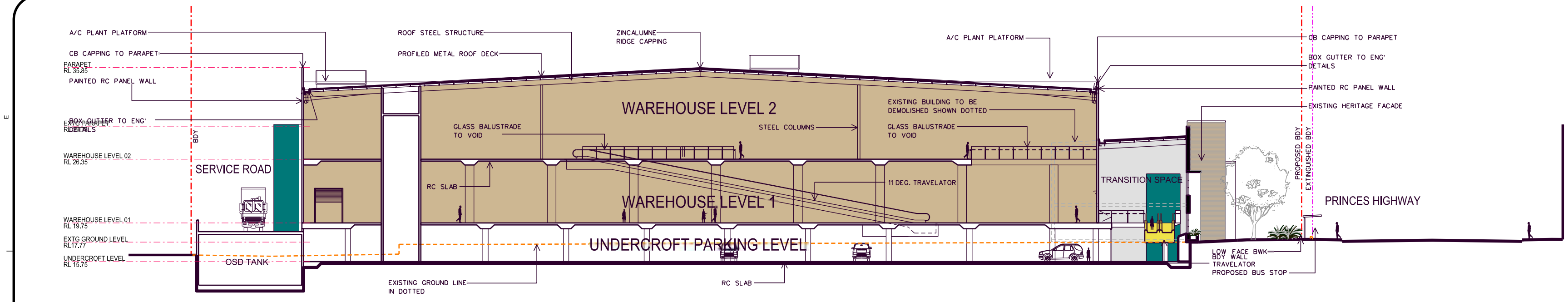
DRG. NO. 118

AMD NO. C

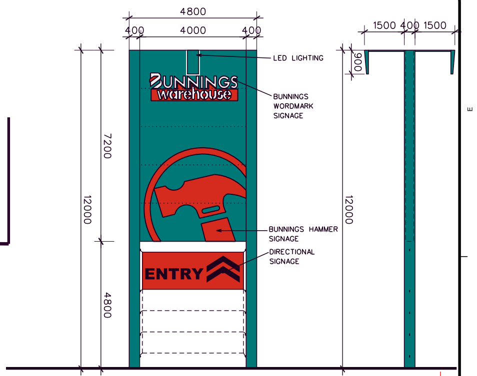
CAD REF :

Microstation V8i SS2

PROPOSED BUNNINGS WAREHOUSE, KEMBLA GRANGE, N.S.W. 2526 - PLOTTED December 2017

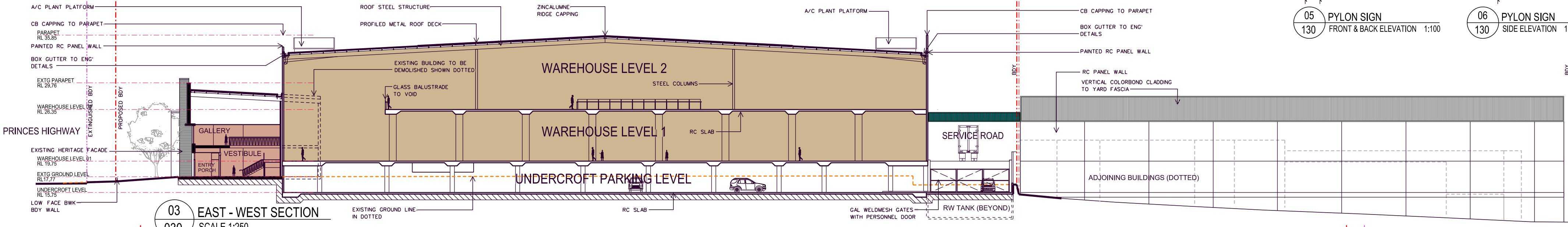


04
030
EAST - WEST SECTION
SCALE 1:250

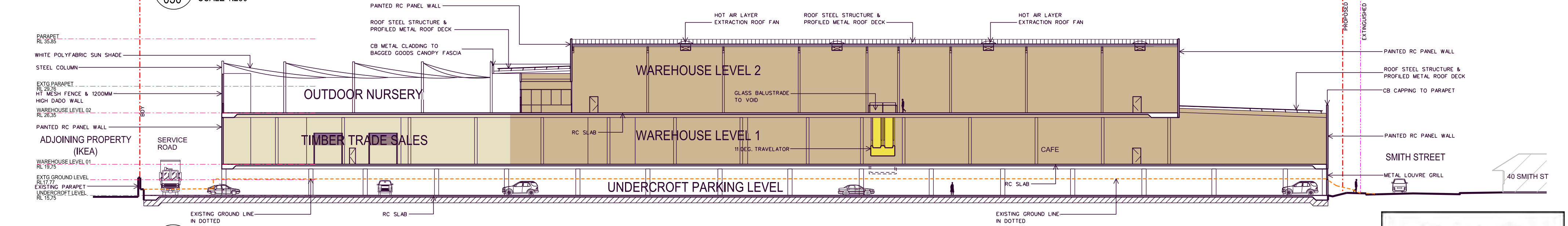


05
130
PYLON SIGN
FRONT & BACK ELEVATION 1:100

06
130
PYLON SIGN
SIDE ELEVATION 1:100



03
030
EAST - WEST SECTION
SCALE 1:250



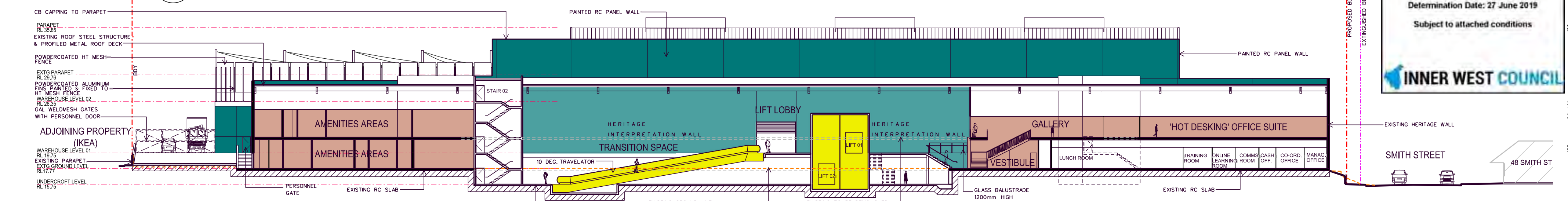
02
030
NORTH - SOUTH SECTION
SCALE 1:250

DEVELOPMENT CONSENT

Determination No: DA201700185
Determination Date: 27 June 2019

Subject to attached conditions

INNER WEST COUNCIL



01
030
NORTH - SOUTH SECTION
SCALE 1:250

0 10 20 30m

DA ISSUE

NOT FOR CONSTRUCTION

PROPOSED BUNNINGS WAREHOUSE, KEMBLA GRANGE, N.S.W. 2526 - PLOTTED March 2017

NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A.	DA ISSUE	09.07.15			
B.	HWY PARAPET HEIGHT LOWERED 1.5M	09.07.15			
C.	ADDITIONAL DA ISSUE	13.01.16			
D.	DA ISSUE	21.03.17			

CLIENT
BUNNINGS warehouse

JOHN R. BROGAN & ASSOCIATES
PTY. LIMITED
ARCHITECTS, PLANNERS & COMMERCIAL INTERIOR DESIGNERS
EST · 1927
37 PITT ST. SYDNEY NSW 2000
PH: (02) 9 221 2833 FAX: (02) 9 251 4741
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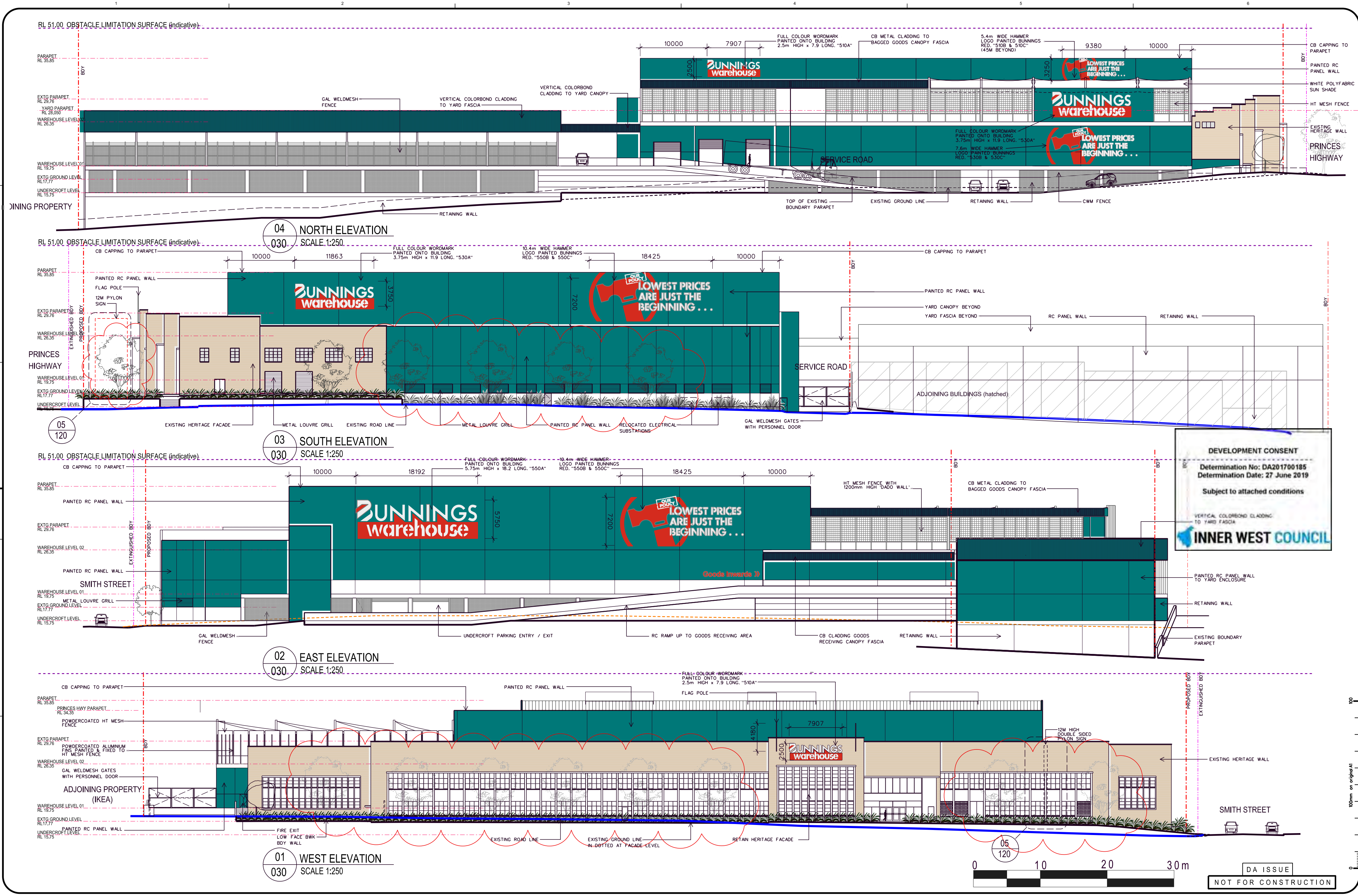
A.B.N. 93 003 284 759

PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

SECTIONS

SCALE: 1:250
DATE: OCT 13
PROJ. NO. 1381
DRG. NO. 120
AMD NO. D



DA ISSUE

NOT FOR CONSTRUCTION

NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA ISSUE	09.07.15			
B	HWY PARAPET HEIGHT LOWERED 1.5M	09.12.15			
C	ADDITIONAL DA ISSUE	13.01.16			
D	DA ISSUE	21.03.17			
E	DA RFI RESPONSE	11.12.17			

Do not scale from this drawing.
Verify dimensions from site and refer any discrepancies to Architects for clarification.

CLIENT

BUNNINGS warehouse

JOHN R. BROGAN & ASSOCIATES
PTY. LIMITED
ARCHITECTS, PLANNERS & COMMERCIAL INTERIOR DESIGNERS
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PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

ELEVATIONS

SCALE : 1:250

DATE : OCT 13

PROJ. NO. 1381

DRG. NO. 130

AMD NO. E

DEVELOPMENT CONSENT

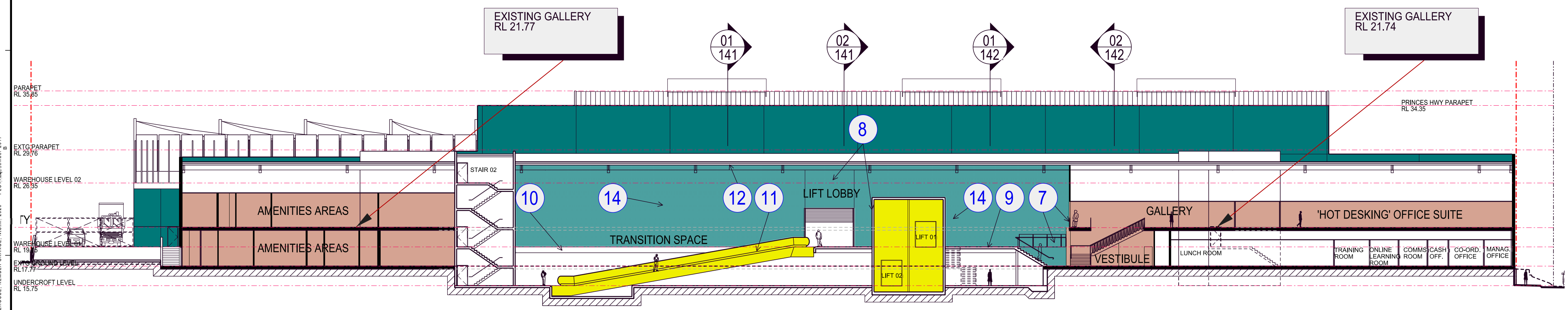
Determination No: DA201700185
Determination Date: 27 June 2019

Subject to attached conditions

INNER WEST COUNCIL

LEGEND

1	CLEAN FACE BRICKWORK. REPOINT MORTAR JOINTS WHERE REQUIRED	9	BURNISHED RC FLOOR SLAB
2	REMOVE REDUNDANT BUILDING SERVICES (FANS, VENTS, AC UNITS ETC) & MAKE GOOD EXTG FABRIC AS REQUIRED	10	PAINTED RC SLAB EDGE
3	REPAIR WINDOW FRAMING & GLAZING AS REQD TO MATCH EXTG	11	STAINLESS STEEL, GLASS, & PAINTED MDF TRAVELATOR
4	CLEAN EXTG SPANDRELL CLADDING/ REPAIR AS REQD TO MATCH EXTG	12	TRANSLUSCENT ROOF SHEET SKYLIGHT
5	PATCH & REPAIR EXTG RENDERED MASONRY BLADE, SPANDRELL & WINDOW HOOD ELEMENT	13	LED HIGH BAY LIGHTING
6	REMOVE EXTG STRUCTURE SHOWN DOTTED	14	BUILDING HERITAGE INTERPRETATION
7	FRAMELESS STRUCTURAL CLEAR GLAZED BALUSTRADE		
8	PAINTED RC/MASONRY WALL		



01 / 030 NORTH - SOUTH SECTION

SCALE 1:200

0 10 30 50m

DA ISSUE

NOT FOR CONSTRUCTION

NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	ADDITIONAL DA ISSUE	13.01.16			
B	DA RFI RESPONSE	11.12.17			

CLIENT

BUNNINGS warehouse

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PTY. LIMITED
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PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

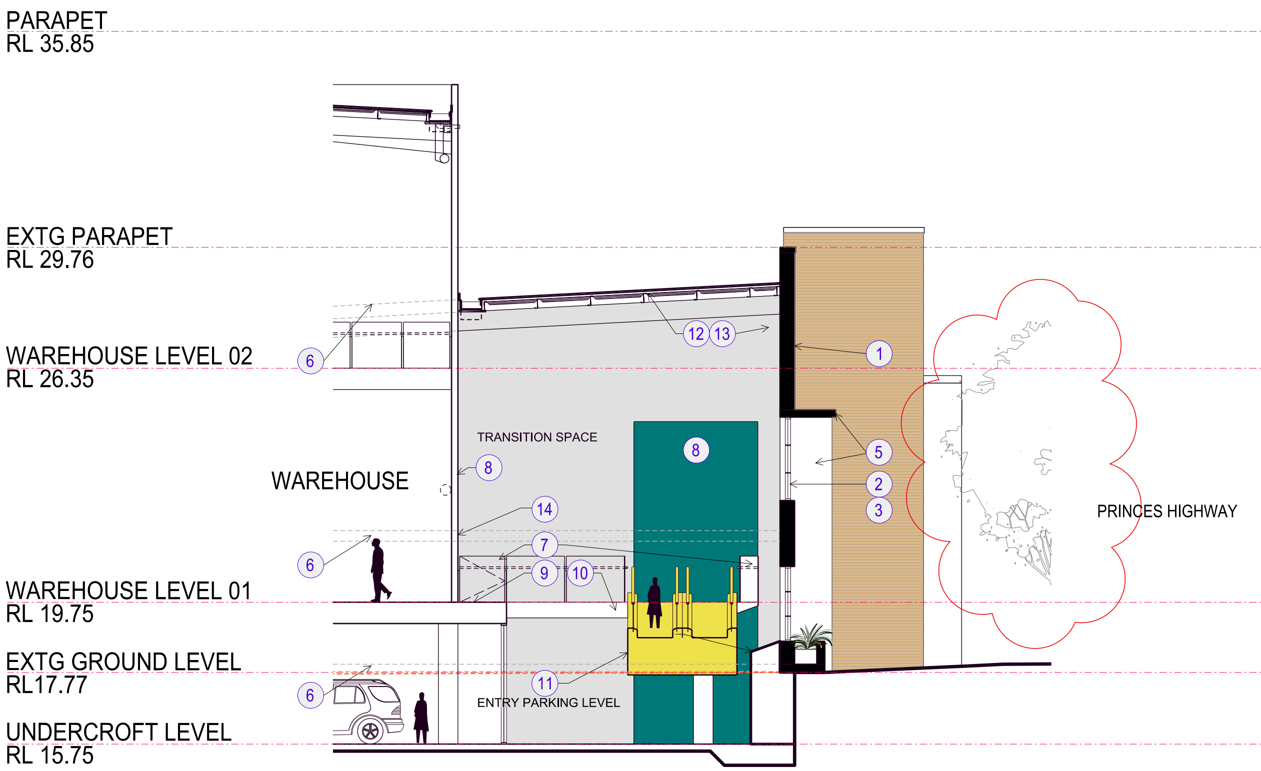
CONCEPT E
SECTIONS

SCALE : 1:400
DATE : OCT 13

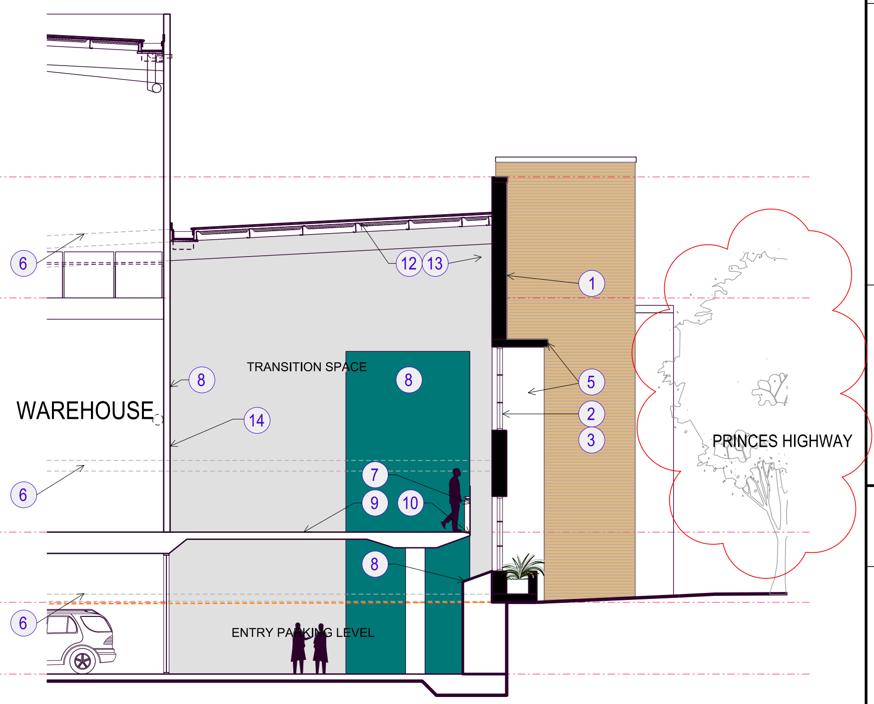
PROJ. NO. 1381
DRG. NO. 140
AMD NO. B

CAD REF :
Microstation V8i SS2
PROPOSED BUNNINGS WAREHOUSE, KEMBLA GRANGE, N.S.W. 2526 - PLOTTED December-2017

100mm on original A1



01 / 030 EAST- WEST SECTION
SCALE 1:75



02 / 030 EAST - WEST SECTION
SCALE 1:75

LEGEND

1	CLEAN FACE BRICKWORK. REPOINT MORTAR JOINTS WHERE REQUIRED	9	BURNISHED RC FLOOR SLAB
2	REMOVE REDUNDANT BUILDING SERVICES (FANS, VENTS, AC UNITS ETC) & MAKE GOOD EXTG FABRIC AS REQUIRED	10	PAINTED RC SLAB EDGE
3	REPAIR WINDOW FRAMING & GLAZING AS REQD TO MATCH EXTG	11	STAINLESS STEEL, GLASS, & PAINTED MDF TRAVELATOR
4	CLEAN EXTG SPANDRELL CLADDING/ REPAIR AS REQD TO MATCH EXTG	12	TRANSLUSCENT ROOF SHEET SKYLIGHT
5	PATCH & REPAINT EXTG RENDERED MASONRY BLADE, SPANDRELL & WINDOW HOOD ELEMENT	13	LED HIGH BAY LIGHTING
6	REMOVE EXTG STRUCTURE SHOWN DOTTED	14	BUILDING HERITAGE INTERPRETATION
7	FRAMELESS STRUCTURAL CLEAR GLAZED BALUSTRADE		
8	PAINTED RC/MASONRY WALL		

DEVELOPMENT CONSENT
Determination No: DA201700185
Determination Date: 27 June 2019
Subject to attached conditions
INNER WEST COUNCIL

0 2 5 10m

DA ISSUE
NOT FOR CONSTRUCTION

NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	ADDITIONAL DA ISSUE	13.01.16			
B	DA RFI RESPONSE	11.12.17			

CLIENT
BUNNINGS warehouse

JOHN R. BROGAN & ASSOCIATES
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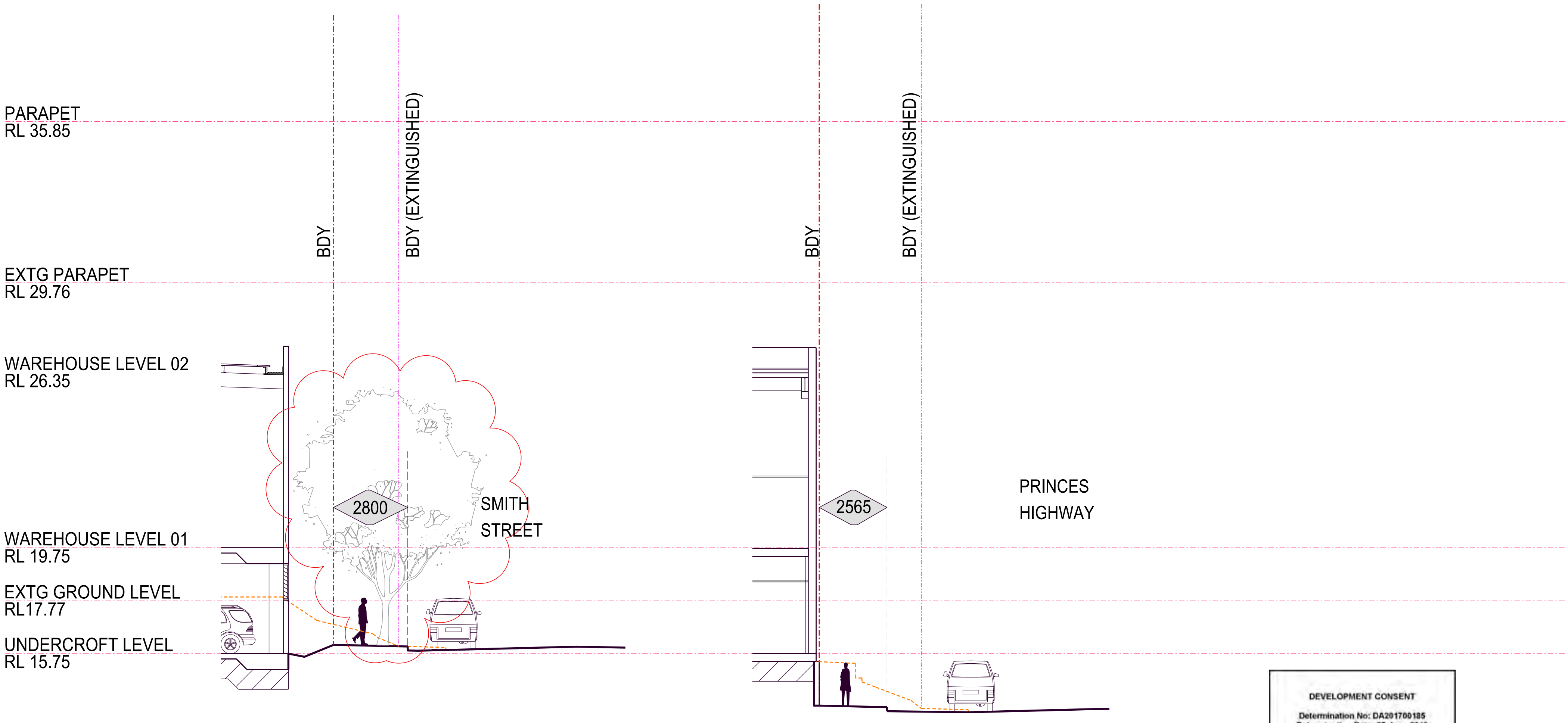
PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

DETAIL SECTIONS

SCALE : 1:75
DATE : OCT 13
PROJ. NO. 1381
DRG. NO. 141
AMD NO. B

CAD REF :
Microstation V8i SS2 PROPOSED BUNNINGS WAREHOUSE, KEMBLA GRANGE, N.S.W. 2526 - PLOTTED December 2017



01 - SECTION
SCALE 1:75

02 - SECTION
SCALE 1:75

DEVELOPMENT CONSENT

Determination No: DA201700185
Determination Date: 27 June 2019

Subject to attached conditions

INNER WEST COUNCIL

0 2 5 10m

NOT FOR CONSTRUCTION

NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA RFI RESPONSE	11.12.17			

CLIENT
BUNNINGS warehouse

JOHN R. BROGAN & ASSOCIATES
PTY. LIMITED
ARCHITECTS, PLANNERS & COMMERCIAL INTERIOR DESIGNERS
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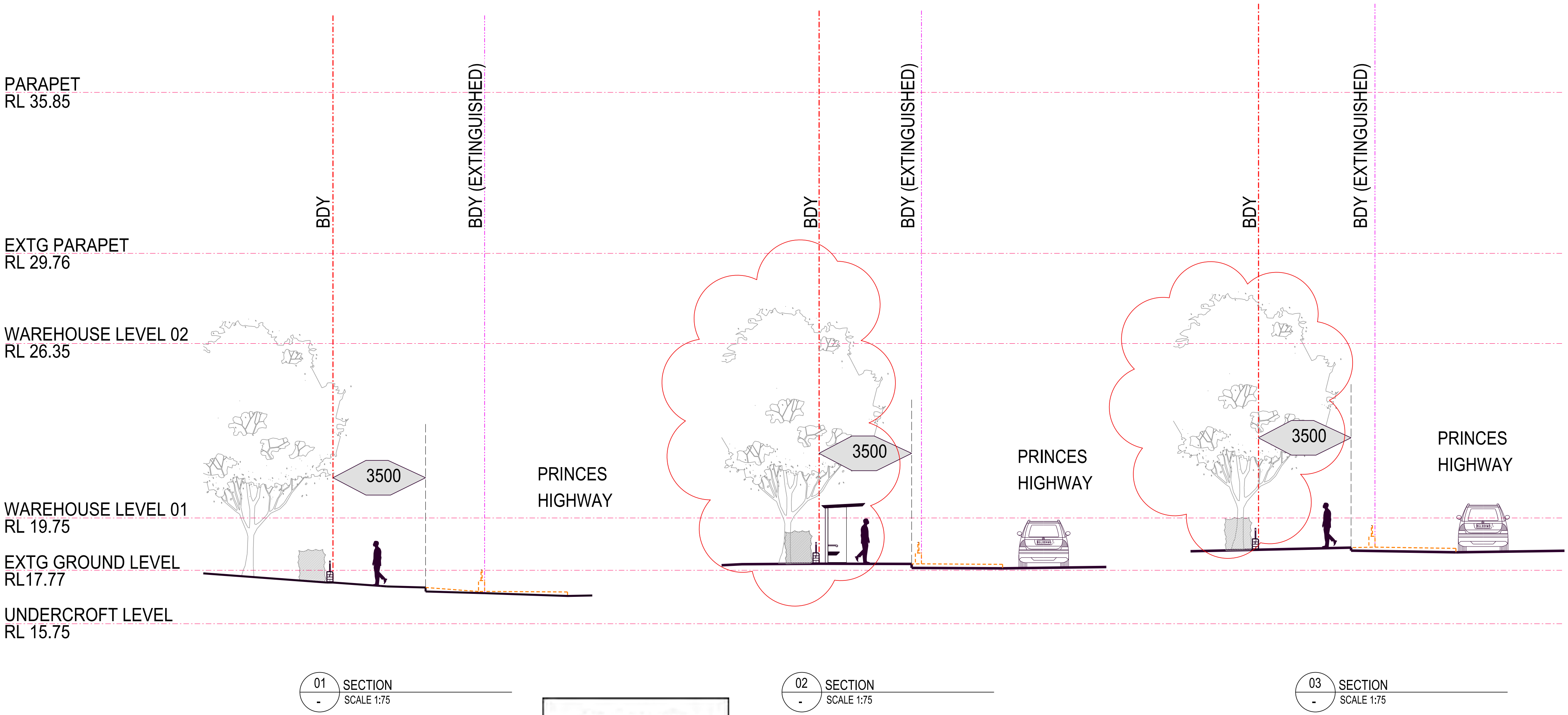
PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

FOOTPATH DETAIL SECTIONS 1/2

SCALE : 1:75
DATE : OCT 13
PROJ. NO. 1381
DRG. NO. 143
AMD NO. A

CAD REF :

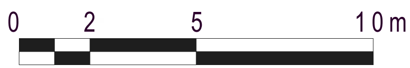


DEVELOPMENT CONSENT

Determination No: DA201700185
Determination Date: 27 June 2019

Subject to attached conditions

INNER WEST COUNCIL



NOT FOR CONSTRUCTION

CAD REF :

NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA RFI RESPONSE	11.12.17			

CLIENT

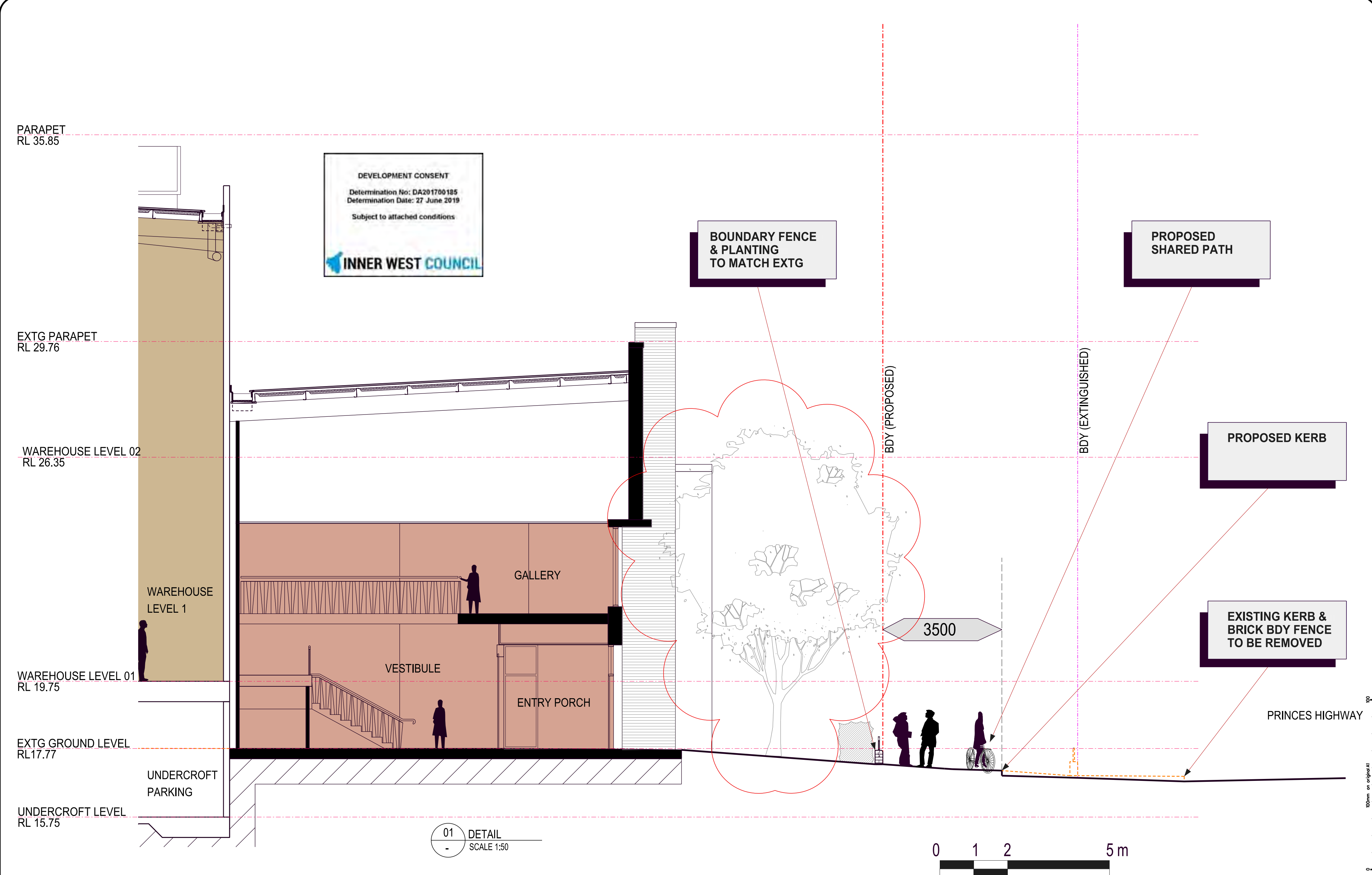
BUNNINGS warehouse

JOHN R. BROGAN & ASSOCIATES
PTY. LIMITED
ARCHITECTS, PLANNERS & COMMERCIAL INTERIOR DESIGNERS
EST · 1927
37 PITT ST. SYDNEY NSW 2000
PH: (02) 9 221 2833 FAX: (02) 9 251 4741
EMAIL: jrb@brogans.com.au
A.B.N. 93 003 284 759

PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

FOOTPATH DETAIL SECTIONS 2/2

SCALE : 1:75
DATE : OCT 13
PROJ. NO. 1381
DRG. NO. 144
AMD NO. A



NO.	AMENDMENT	DATE	NO.	AMENDMENT	DATE
A	DA RFI RESPONSE	11.12.17			

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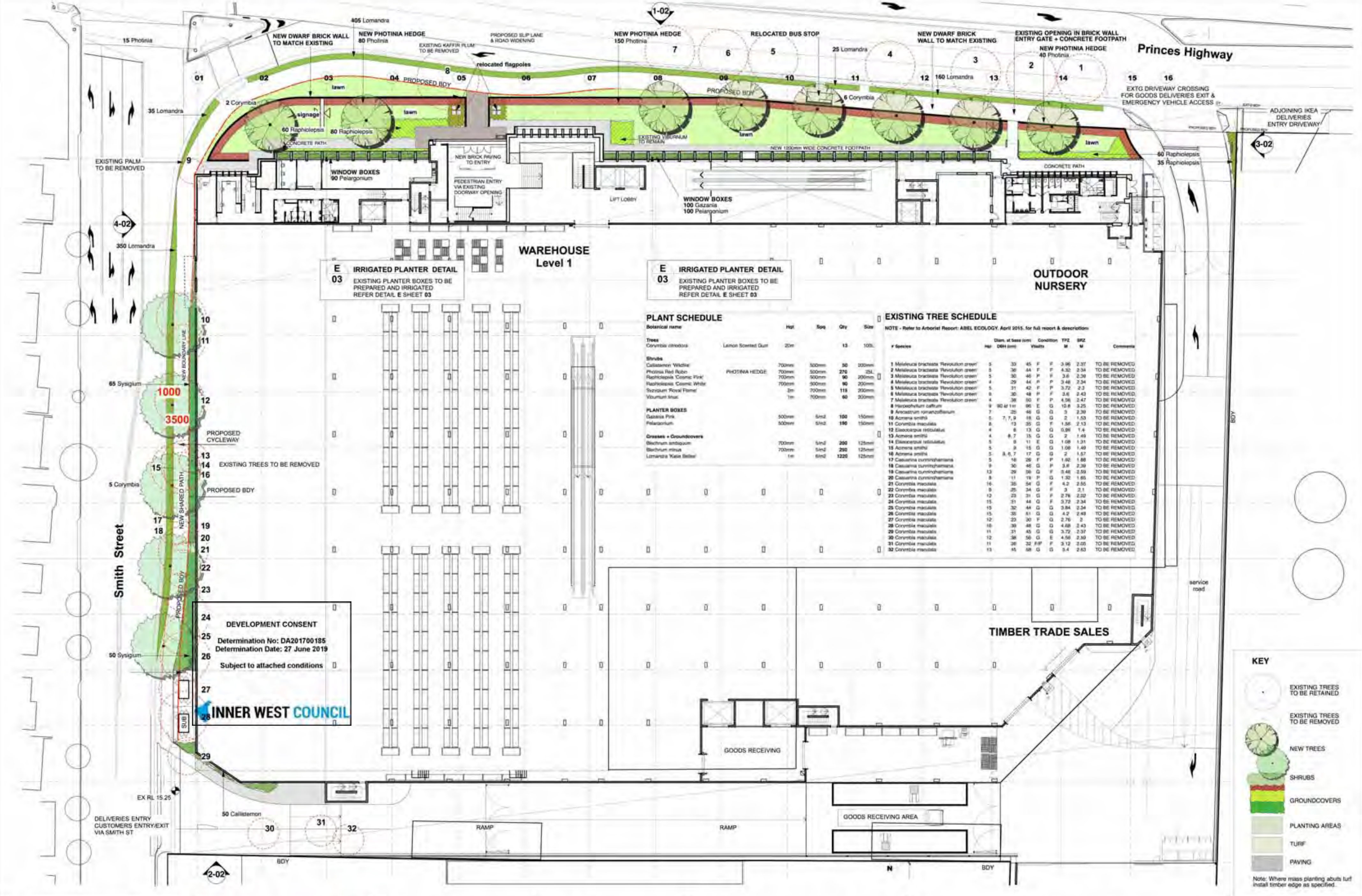
PROPOSED BUNNINGS WAREHOUSE TEMPE
728 - 750 PRINCES HIGHWAY (CNR SMITH ST)
TEMPE NSW 2044

FOOTPATH DETAIL

SCALE : 1:50
DATE : OCT 13
PROJ. NO. 1381
DRG. NO. 145
AMD NO. A



PLANT SCHEDULE

Botanical name		Hgt	Spg	Qty	Size
Trees					
Corymbia citriodora	Lemon Scented Gum	20m		13	100L
Shrubs					
Callistemon 'Wildfire'		700mm	500mm	50	200mm
Photinia Red Robin	PHOTINIA HEDGE	700mm	500mm	270	25L
Raphiolepsis 'Cosmic Pink'		700mm	500mm	90	200mm
Raphiolepsis 'Cosmic White'		700mm	500mm	90	200mm
Syzygium 'Royal Flame'		2m	700mm	115	200mm
Viburnum tinus		1m	700mm	60	200mm
PLANTER BOXES					
Gazania Pink		500mm	5/m2	100	150mm
Pelargonium		500mm	5/m2	190	150mm
Grasses + Groundcovers					
Blechnum ambiguum		700mm	5/m2	200	125mm
Blechnum minus		700mm	5/m2	250	125mm
Lomandra 'Katie Belles'		1m	6/m2	1220	125mm

EXISTING TREE SCHEDULE

NOTE - Refer to Arborist Report: ABEL ECOLOGY, April 2015, for full report & description

# Species	Hgt	Diam. at base (cm) DBH (cm)		Condition	Vitality	TPZ M	SRZ M	Comments
1 Melaleuca bracteata 'Revolution green'	5	33	45	F	F	3.96	2.37	TO BE REMOVED
2 Melaleuca bracteata 'Revolution green'	5	36	44	F	F	4.32	2.34	TO BE REMOVED
3 Melaleuca bracteata 'Revolution green'	5	30	46	P	F	3.6	2.39	TO BE REMOVED
4 Melaleuca bracteata 'Revolution green'	4	29	44	P	P	3.48	2.34	TO BE REMOVED
5 Melaleuca bracteata 'Revolution green'	5	31	42	F	P	3.72	2.3	TO BE REMOVED
6 Melaleuca bracteata 'Revolution green'	6	30	48	P	F	3.6	2.43	TO BE REMOVED
7 Melaleuca bracteata 'Revolution green'	4	38	50	F	P	4.56	2.47	TO BE REMOVED
8 Harpephyllum caffrum	9	90 at 1m	86	E	G	10.8	3.25	TO BE REMOVED
9 Arecastrum romanzoffianum	7	25	46	G	G	3	2.39	TO BE REMOVED
10 Acmena smithii	5	7, 7, 9	18	G	G	2	1.53	TO BE REMOVED
11 Corymbia maculata	8	13	35	G	F	1.56	2.13	TO BE REMOVED
12 Elaeocarpus reticulatus	4	8	13	G	G	0.96	1.4	TO BE REMOVED
13 Acmena smithii	4	8, 7	15	G	G	2	1.49	TO BE REMOVED
14 Elaeocarpus reticulatus	5	9	11	E	G	1.08	1.31	TO BE REMOVED
15 Acmena smithii	5	9	15	G	G	1.08	1.49	TO BE REMOVED
16 Acmena smithii	5	8, 6, 7	17	G	G	2	1.57	TO BE REMOVED
17 Casuarina cunninghamiana	5	16	26	F	P	1.92	1.88	TO BE REMOVED
18 Casuarina cunninghamiana	9	30	46	G	P	3.6	2.39	TO BE REMOVED
19 Casuarina cunninghamiana	13	29	56	G	F	3.48	2.59	TO BE REMOVED
20 Casuarina cunninghamiana	8	11	19	P	G	1.32	1.65	TO BE REMOVED
21 Corymbia maculata	16	35	54	G	F	4.2	2.55	TO BE REMOVED
22 Corymbia maculata	9	25	34	G	F	3	2.1	TO BE REMOVED
23 Corymbia maculata	12	23	31	G	F	2.76	2.02	TO BE REMOVED
24 Corymbia maculata	15	31	44	G	F	3.72	2.34	TO BE REMOVED
25 Corymbia maculata	15	32	44	G	G	3.84	2.34	TO BE REMOVED
26 Corymbia maculata	15	35	51	G	G	4.2	2.49	TO BE REMOVED
27 Corymbia maculata	12	23	30	F	G	2.76	2	TO BE REMOVED
28 Corymbia maculata	16	39	48	G	G	4.68	2.43	TO BE REMOVED
29 Corymbia maculata	11	31	45	G	G	3.72	2.37	TO BE REMOVED
30 Corymbia maculata	12	38	56	G	E	4.56	2.59	TO BE REMOVED
31 Corymbia maculata	11	26	32	F/P	F	3.12	2.05	TO BE REMOVED
32 Corymbia maculata	13	45	68	G	G	5.4	2.63	TO BE REMOVED

revision	description	date
K	FOOTPATH PLANTING AJUSTED TO CYCLEWAY	29-05-2018
J	FOOTPATH PLANTING ADDED TO CYCLEWAY	23-05-2018
I	REVISED DA ISSUE	07-12-2017
H	REVISED DA ISSUE	27-03-2017
G	SMITH STREET FRONTAGE PLANTS REV'D	12-01-2016
F	ENTRY PATH ADDED	10-12-2015
E	DA ISSUE	01-07-2015
D	COORDINATION ISSUE	30-06-2015
C	COORDINATION ISSUE	29-06-2015
B	COORDINATION ISSUE	25-06-2015
A	PRELIMINARY ISSUE	22-06-2015

client: BUNNINGS warehouse

architect: JOHN R. BROGAN & ASSOCIATES
37 Pitt Street, Sydney NSW 2000
p: 8221 2833 e:jrb@brogans.com.au

landscape architect: JOHN LOCK & associates
LANDSCAPE ARCHITECTURE
jla
Suite 4, 211 Ben Boyd Road, Neutral Bay NSW 2089
p:02 9969 9866 e:landesign@bigpond.com

0 2.5 5 10 15 25 m

project: **Proposed Bunnings Tempe**
728 - 750 Princes Highway
Tempe NSW 2044

LANDSCAPE PLAN

scale: 1:250 @ A1
1:500 @ A3

date: 15/06/2015

drawing #: **2212 LP - 01**

DEVELOPMENT CONSENT

Determination No: DA201700185
Determination Date: 27 June 2019

Subject to attached conditions

INNER WEST COUNCIL

4 **NORTH ELEVATION - part**
1:250

2 **EAST ELEVATION - part**
1:250

3 **SOUTH ELEVATION**
1:250

1 **WEST ELEVATION**
1:250

revision	description	date
I	REVISED DA ISSUE	07/12/2017
H	REVISED DA ISSUE	27/03/2017
G	SMITH STREET FRONTAGE PLANTS REV'D	12/01/2016
F	ENTRY PATH ADDED	10/12/2015
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A	PRELIMINARY ISSUE	22/06/2015

client: BUNNINGS warehouse

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37 Pitt Street, Sydney NSW 2000
p: 9221 2833 e:jrb@brogans.com.au

landscape architect: JOHN LOCK & associates
LANDSCAPE ARCHITECTURE
jla
Suite 3, 5 Earl Street, Mosman NSW 2088
p:02 9969 9866 e:landesign@bigpond.com

0 2.5 5 10 15 25 m

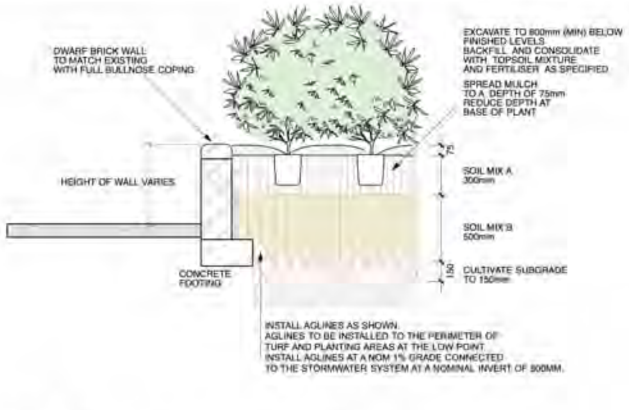
project: **Proposed Bunnings Tempe**
728 - 750 Princes Highway
Tempe NSW 2044

LANDSCAPE ELEVATIONS

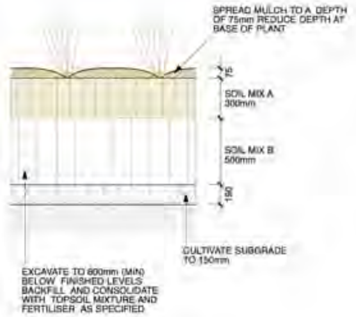
scale: 1:250 @ A1
1:500 @ A3

date: 15/06/2015

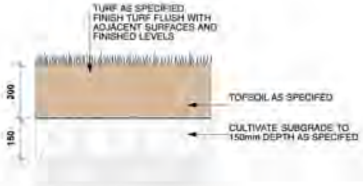
drawing #: **2212 LP - 02**



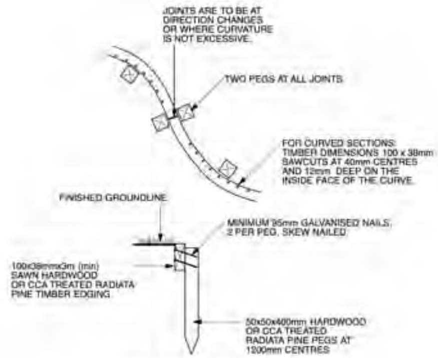
A **MASS PLANTING - RETAINING WALL**
1:20@A1



B **MASS PLANTING**
1:20@A1



C **TURF DETAIL**
1:10@A1



D **TIMBER EDGE DETAIL**
1:10@A1

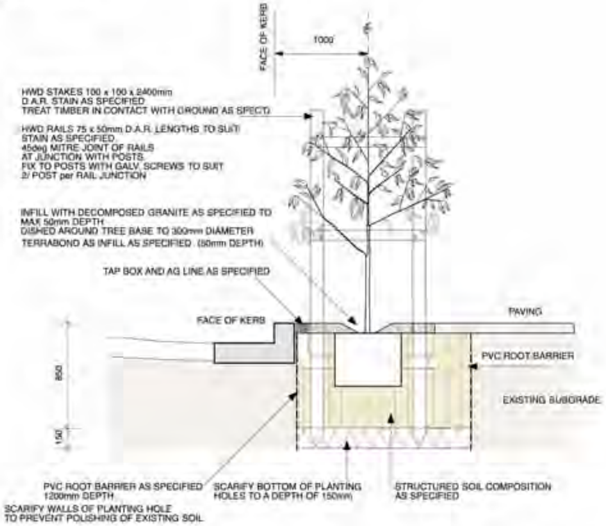
E **PLANTER DETAIL**
1:20@A1

DEVELOPMENT CONSENT

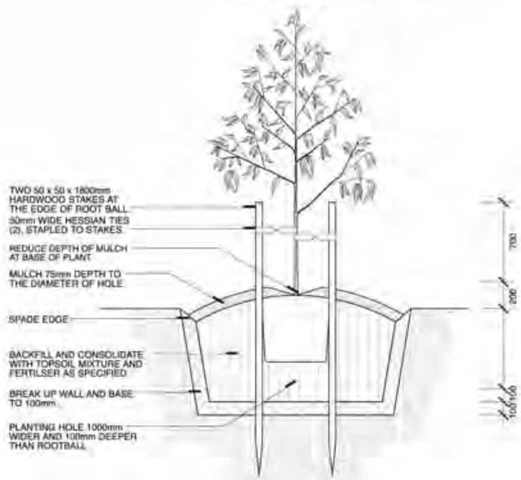
Determination No: DA201700185
Determination Date: 27 June 2019

Subject to attached conditions

INNER WEST COUNCIL



F **STREET TREE PIT IN PAVING**
1:20@A1



G **TYPICAL TREE PIT DETAIL**
1:20@A1

SPECIFICATION NOTES

SITE PREPARATION / SOIL WORKS
ALL EXISTING TREES MARKED FOR RETENTION SHALL BE PROTECTED FOR THE DURATION OF THE BUILDING WORKS. REMOVE FROM SITE ALL PERENNIAL WEEDS SUCH AS OXALIS, ONION WEED AND THE LIKE.

NO REGRADING IS TO BE CARRIED OUT WITHIN THE DRIPLINE OF THE TREES TO BE RETAINED. WHERE EXCAVATION IS NECESSARY USE HAND METHODS TO AVOID DAMAGE TO THE ROOT SYSTEM DO NOT CUT ROOTS GREATER THAN 50MM. CUT ROOTS CLEANLY WITH A SAW AND DO NOT SEAL THE WOUND.

TREE PROTECTION
PROTECT ALL EXISTING TREES AS NOTED ON THE DRAWINGS FOR THE DURING OF THE BUILDING WORKS.

TAKE ALL NECESSARY PRECAUTIONS, INCLUDING THE FOLLOWING:

Tree Protection fence:
INSTALL A TREE PROTECTION FENCES AT THE MAXIMUM RADIUS ALLOWABLE TO ACCOMMODATE THE PROPOSED DEVELOPMENT. MAINTAIN THE FENCE FOR THE DURATION OF THE BUILDING WORKS.

CONSTRUCT THE FENCE 1.8 M HIGH WITH CHAINWIRE MESH ON STEEL POSTS. ALL AREAS WITHIN THE PERIMETER OF THE FENCE ARE TO BE COVERED TO A DEPTH OF 100MM WITH WOODCHIP MULCH.

Temporary Irrigation:
INSTALL A TEMPORARY IRRIGATION SYSTEM TO ALL TREES TO BE RETAINED. INSTALL DRIP EMITTERS ON POLY LATERALS. THE IRRIGATION SYSTEM IS TO BE CONTROLLED BY A GALCON OR SIMILAR AUTOMATIC CONTROLLER.

Harmful materials:
DO NOT STORE, STOCKPILE, DUMP OR OTHERWISE REPLACE UNDER OR NEAR TREES, BULK MATERIALS AND HARMFUL MATERIALS INCLUDING OIL, PAINT, WASTE CONCRETE, CLEARINGS, BOULDERS AND THE LIKE. DO NOT PLACE SPOIL FROM EXCAVATIONS AGAINST TREE TRUNKS, EVEN FOR SHORT PERIODS. PREVENT WIND-BLOWN MATERIALS SUCH AS CEMENT FROM HARMING TREES AND PLANTS.

Damage:
PREVENT DAMAGE TO TREE BARK. DO NOT ATTACH STAYS, GUYS AND THE LIKE TO TREES.

Work under trees:
DO NOT REMOVE TOPSOIL FROM WITHIN THE DRIP LINE OF TREES UNLESS OTHERWISE SPECIFIED IF IT IS NECESSARY TO EXCAVATE WITHIN THE DRIP LINE, USE HAND METHODS SUCH THAT ROOT SYSTEMS ARE PRESERVED INTACT AND UNDAMAGED.

Roots:
DO NOT CUT TREE ROOTS EXCEEDING 50 MM DIAMETER UNLESS PERMITTED BY THE SUPERINTENDENT. WHERE IT IS NECESSARY TO CUT TREE ROOTS, USE A CHAIN SAW OR SIMILAR MEANS SUCH THAT THE CUTTING DOES NOT UNDULY DISTURB OR ROCK THE REMAINING ROOT SYSTEM. IMMEDIATELY AFTER CUTTING, APPLY AN APPROVED BITUMINOUS FUNGICIDAL SEALANT TO THE CUT SURFACE TO PREVENT THE INCURSION OF ROT OR DISEASE.

Compacted Ground:
AVOID COMPACTION OF THE GROUND UNDER TREES. IF THE GROUND UNDER TREES HAS BEEN UNDULY COMPACTED DURING THE WORK UNDER THE CONTRACT, FOR EXAMPLE BY THE OPERATION OF HEAVY CONSTRUCTIONAL PLANT, LOOSEN THE SOIL BY CORING.

SOIL WORKS
THOROUGHLY CULTIVATE THE SUBSOIL TO A DEPTH OF 150MM. SUPPLY AND INSTALL THE FOLLOWING SOIL MIXS TO THE SPECIFIED DEPTHS:

SOIL DEPTH

- TURF 200MM
- PLANTING 300MM

SOIL MIX A

- BLACK LOAM 60%
- COARSE WASHED RIVER SAND 30%
- ORGANIC MIX /COMPOST 10%

- **ORGANIC LAYER 50 MM DEEP**
  CULTIVATE A 50MM LAYER OF ORGANIC ADDMIX INTO THE TOP 100MM OF SOILMIX

Addmix composition

- TREATED HARDWOOD SAWDUST 30%
- PINE PARK FINES 40%
- COMPOSTED MANURE 30%

SOIL MIX B

- SITE TOPSOIL IF AVAILABLE OR IMPORTED MIX OF:
- BLACK LOAM 70%
- COARSE WASHED RIVER SAND 30%

TREE PLANTING AREAS TO BE MOUNDED 300 MM ABOVE THE EXISTING GROUND LINE TO IMPROVE DRAINAGE FROM PLANTING HOLES. TREE HOLES TO BE EXCAVATED 2 TIMES LARGER THAN THE ROOTBALL AND BACKFILLED WITH SOIL MIX AS SPECIFIED ABOVE.

TURFED AREAS
APPLY SHIRLEYS NO17 LAWN FERTILISER TO SOIL APPLIED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS. TURF SHALL BE:

- **GREENLEAS COUCH** WITH AN EVEN THICKNESS OF 30MM.

DO NOT LET TURF DRY OUT. LIGHTLY TOP DRESS TURF 6 WEEKS AFTER LAYING WITH 10MM IMPORTED TOPSOIL.THATCH TO BE LAID WITH STAGGERED JOINTS. FLUSH WITH PATHWAY LEVELS.

MULCH
SUPPLY AND PLACE 75 MM LAYER OF HARDWOOD HORTICULTURAL GRADE MULCH, (GRADED IN SIZE 15 MM X 15MM X 15MM, FREE FROM WOOD SLIVERS). SET DOWN 25MM FROM ADJACENT PAVING.

PLANT MATERIALS
ALL PLANTS SHALL BE TRUE TO TYPE, OF HEALTHY GROWTH DISEASE FREE NURSERY STOCK AND NOT DISPLAYING RESTRICTED GROWTH PATTERNS. SHOULD THERE BE A REQUIREMENT FOR SUBSTITUTIONS THEY SHALL NOT CHANGED WITHOUT PRIOR APPROVAL OF THE LANDSCAPE ARCHITECT. NO VARIEGATED STRAIN SHALL BE USED. ALLOW FOR SLOW RELEASE FERTILISER TO ALL PLANTS APPLIED AT THE MANUFACTURERS RECOMMENDED RATE TO BE SAME OR SIMILAR TO OSMOCOTE.

FERTILIZER:
MASS PLANTED AREAS : ALLOW 2 SHIRLEYS SLOW RELEASE KOKEI PELLETS PER 5 - 35 LITRE PLANT AND ONE PER 150MM PLANT TURF AREAS : ALLOW SHELLYS NO.17 LAWN FERTILIZER OR EQUIVALENT . APPLIED IN ACCORDANCE WITH THE MANUFACTURERS INSTRUCTIONS.

STAKES AND TIES
DURABLE HARDWOOD , STRAIGHT, SIZE SHALL BE 50X50X1800 WITH TIES SPACED APPROXIMATELY 300MM APART. DRIVE STAKES 600MM INTO THE GROUND ON THE WINDWARD SIDE OF THE PLANT. TIES SHALL BE 50MM HESSIAN WEBBING FIXED IN A FIGURE OF EIGHT PATTERN.

PLANT ESTABLISHMENT PERIOD
FROM THE DATE OF PRACTICAL COMPLETION , THERE SHALL BE A PERIOD OF **52** WEEKS FOR THE PLANTING ESTABLISHMENT PERIOD. ANY FAILED PLANTS SHALL BE REPLACED WITH THE SAME TYPE AND SPECIES. THE MULCHED SURFACES SHALL BE MAINTAINED IN A NEAT AND TIDY CONDITION, STAKES AND TIES SHALL BE ADJUSTED AS REQUIRED AND THE TURF SHALL BE REGULARLY MOWED TO MAINTAIN A HEALTHY GROUND COVER. A CONSTANT WATER REGIME SHALL BE MAINTAINED TO ENSURE HEALTHY GROWTH OF ALL PLANT MATERIAL.

IRRIGATION
ALL PLANTING AREAS TO BE SUPPLIED WITH A FULLY AUTOMATIC DRIP IRRIGATION SYSTEM EQUIVALENT TO 'NETAFIM'. THE IRRIGATION SYSTEM SHALL MEET ALL THE REQUIREMENTS OF THE WATER AND ELECTRICITY SUPPLY AUTHORITY AND RELEVANT AUSTRALIAN STANDARDS. PROVIDE RICHDEL OR SIMILAR APPROVED CONTROLLER . CONNECTION TO SYDNEY WATER MAINS TO BE THROUGH AN APPROVED REDUCED PRESSURE ZONE DEVICE INSTALLED TO WATER REGULATIONS.

revision	description	date
H	REVISED DA ISSUE	27/03/2017
G	SMITH STREET FRONTAGE PLANTS REVD	12/01/2016
F	ENTRY PATH ADDED	15/12/2015
E	DA ISSUE	21/07/2015
D	COORDINATION ISSUE	30/06/2015
C	COORDINATION ISSUE	29/06/2015
B	COORDINATION ISSUE	25/06/2015
A	PRELIMINARY ISSUE	23/06/2015

BUNNINGS warehouse

JOHN R. BROGAN & ASSOCIATES
37 Pitt Street, Sydney NSW 2000
p: 9221 2833 e: jrb@brogans.com.au

JOHN LOCK & associates
LANDSCAPE ARCHITECTURE
jla

0 2.5 5 10 15 25 m

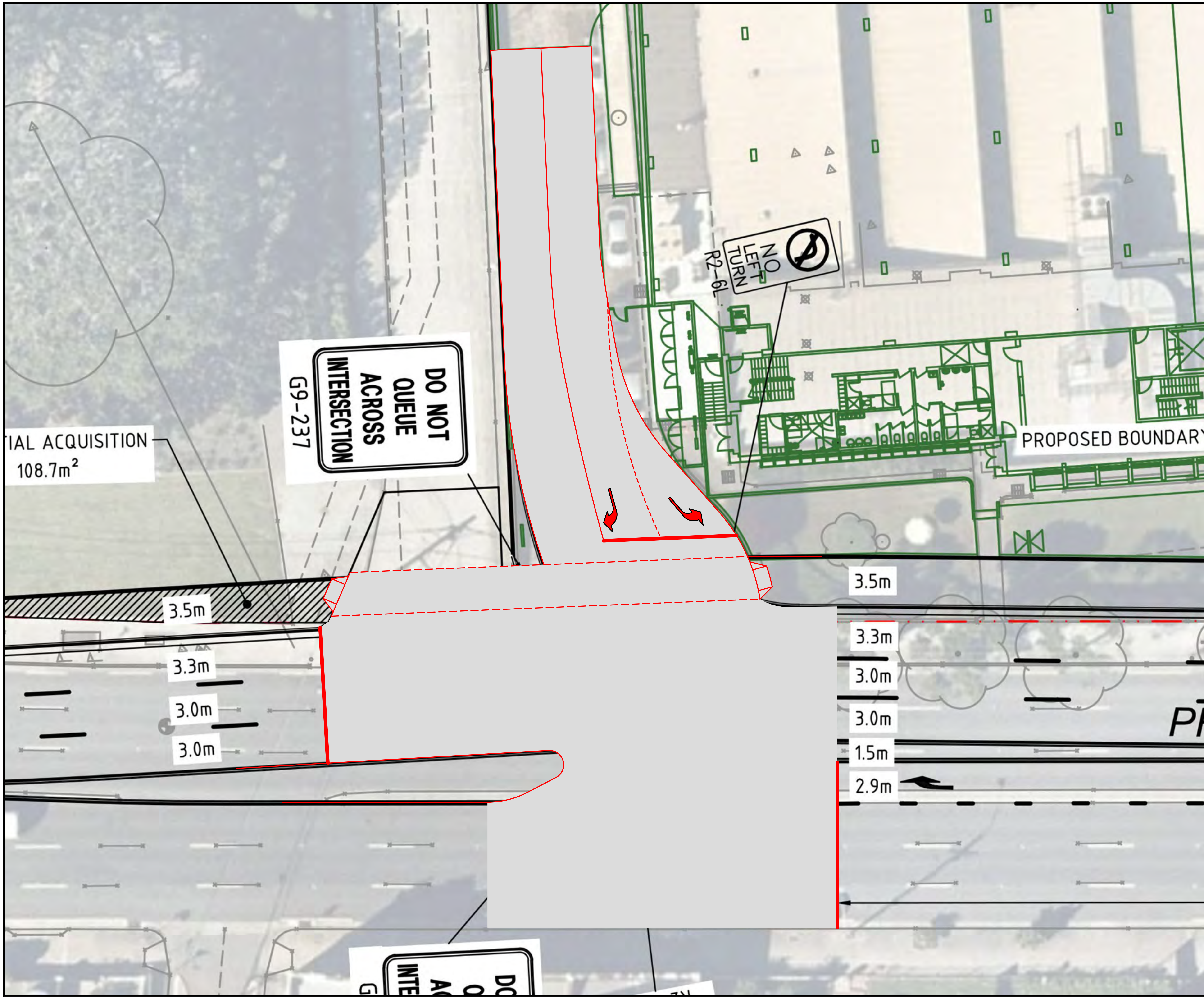
Proposed Bunnings Tempe
728 - 750 Princes Highway
Tempe NSW 2044

LANDSCAPE DETAILS

as shown @ A1
50% @ A3
15/06/2015
2212 LP - 03

APPENDIX B

Concept Plan



Notes:

This drawing is prepared for information purposes only. It is not to be used for construction.

TRAFFIX is responsible for vehicle swept path diagrams and/or drawing mark-ups only. Base drawing prepared by others.

Vehicle swept path diagrams prepared using computer generated turning path software and associated CAD drawing platforms. Vehicle data based upon relevant Australian Standards *(AS/NZS 2890.1:2004 Parking facilities - Off-street car parking,* and/or *AS2890.2:2002 Parking facilities - Off-street commercial vehicle facilities*). These standards embody a degree of tolerance, however the vehicle characteristics in these standards represent a suitable design vehicle and do not account for all variations in vehicle dimensions / specifications and/or driver ability or behaviour.

Rev.	Revision Note	By.	Date
A	Preliminary Concept Sketch	TY	20-07-22

Swept Path Legend
- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
N/A

Client
Inner West Council

Scale
0 2.5 5 7.5 10m
1:250 @ A3

Project Description
Bunnings Tempe Feasibility Study

Drawing Prepared By
TRAFFIX
TRAFFIC AND TRANSPORT PLANNERS

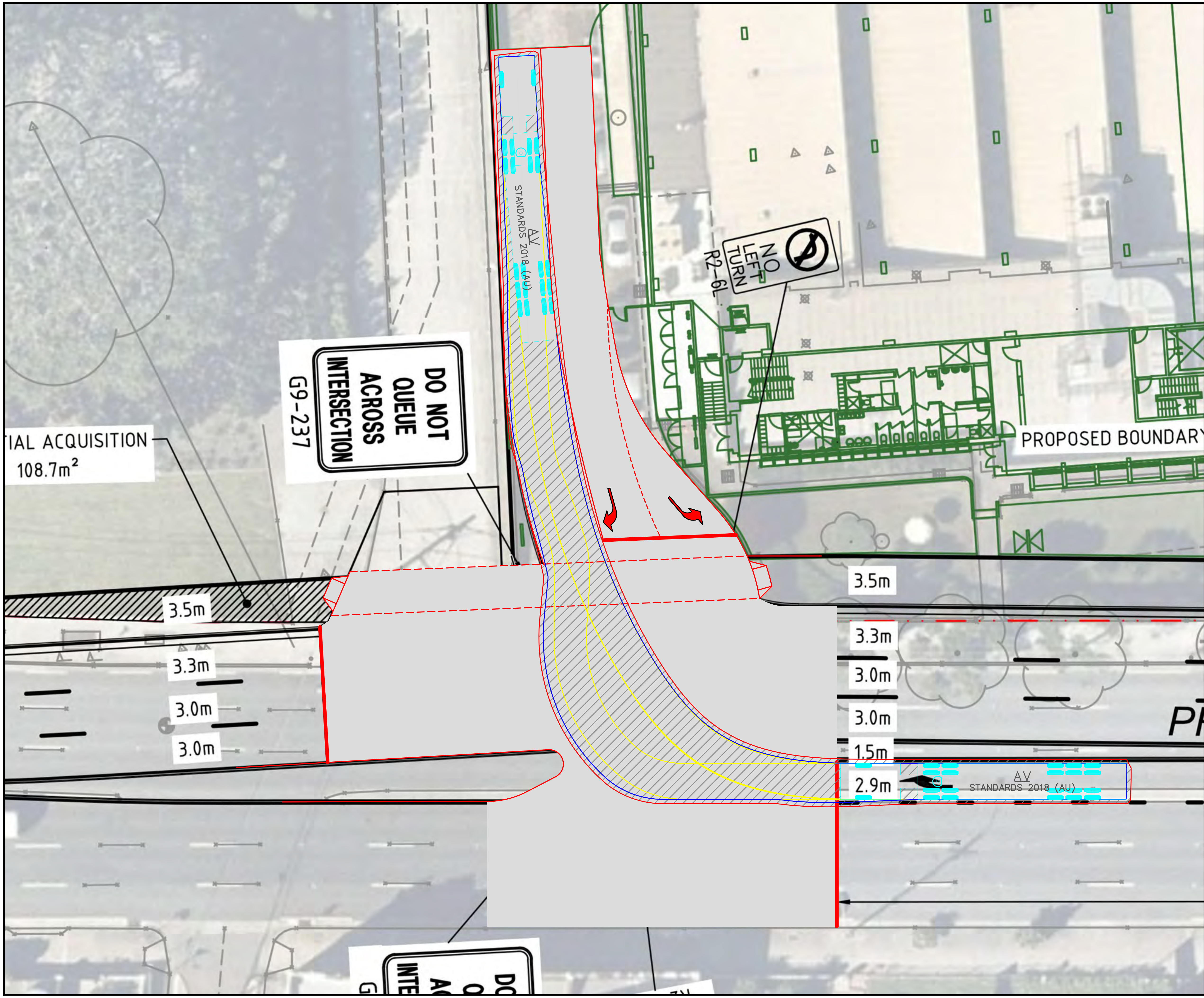
Suite 2.08, 50 Holt Street
Surry Hills, NSW 2010
PO Box 1124
Strawberry Hills, NSW 2012
t: +61 2 8324 8700
f: +61 2 9830 4481
w: www.traffix.com.au

Drawing Title
Signalisation of Tempe Bunning's Princes Highway Access Driveway Concept Layout

Drawn: TY	Checked: BL	Date: 20-07-22

22.256d01v01 TRAFFIX Concept Design Sketch.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
22.256	Concept	SK.01	A



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Rev.	Revision Note	By.	Date
A	Preliminary Concept Sketch	TY	20-07-22

Swept Path Legend

- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
N/A

Client
Inner West Council

Scale
0 2.5 5 7.5 10m
1:250 @ A3

Project Description
Bunnings Tempe Feasibility Study

Drawing Prepared By
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Suite 2.08, 50 Holt Street
Surry Hills, NSW 2010
PO Box 1124
Strawberry Hills, NSW 2012
t: +61 2 8324 8700
f: +61 2 9830 4481
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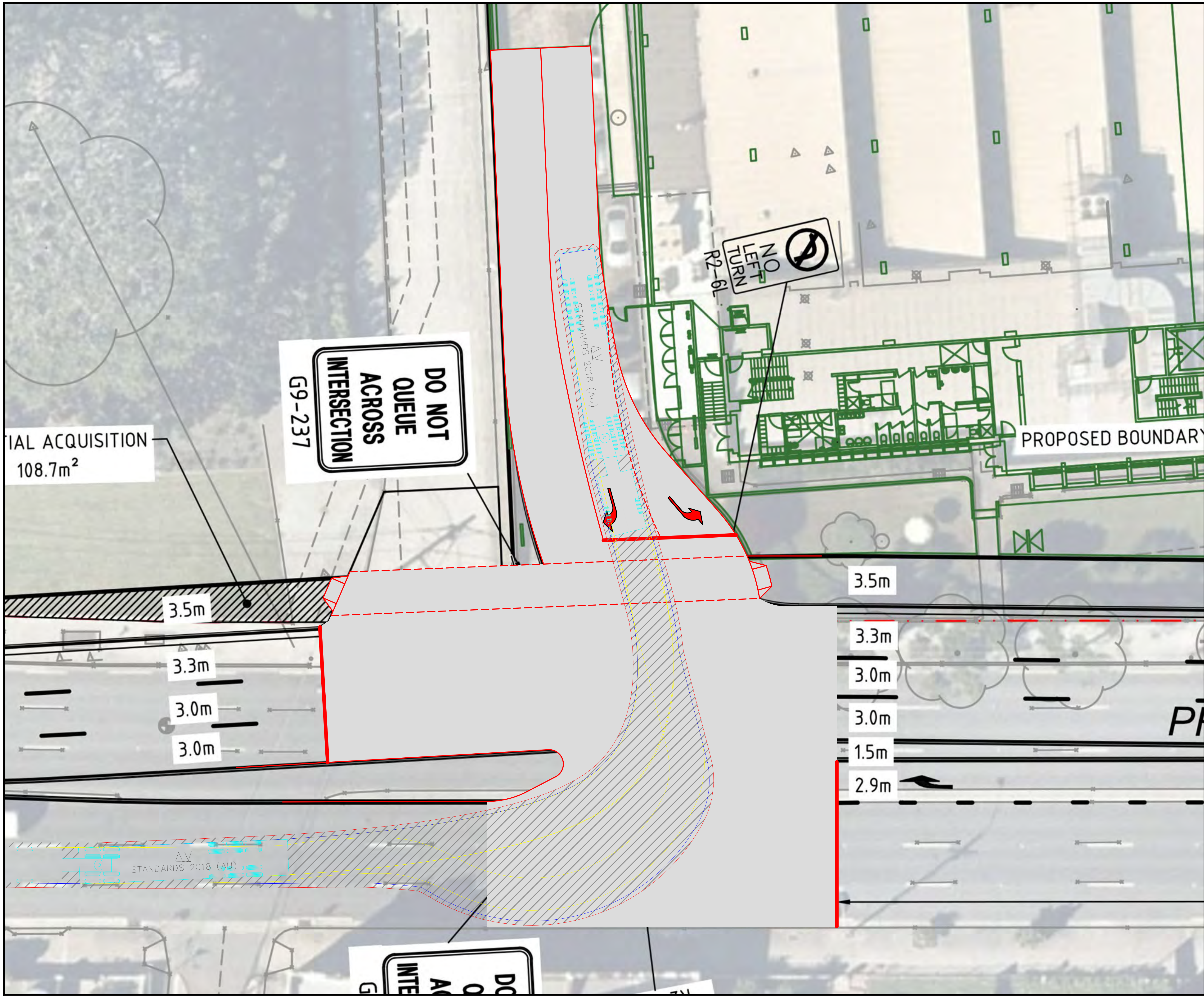
Drawing Title
Signalisation of Tempe Bunning's Princes Highway Access Driveway Concept Layout
20m AV Right Turn Entry

Drawn: TY	Checked: BL	Date: 20-07-22

22.256d01v01 TRAFFIX Concept Design Sketch.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
22.256	Concept	SK.02	A



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Rev.	Revision Note	By.	Date
A	Preliminary Concept Sketch	TY	20-07-22

Swept Path Legend
- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
N/A

Client
Inner West Council

Scale
0 2.5 5 7.5 10m
1:250 @ A3

Project Description
Bunnings Tempe Feasibility Study

Drawing Prepared By
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Suite 2.08, 50 Holt Street
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PO Box 1124
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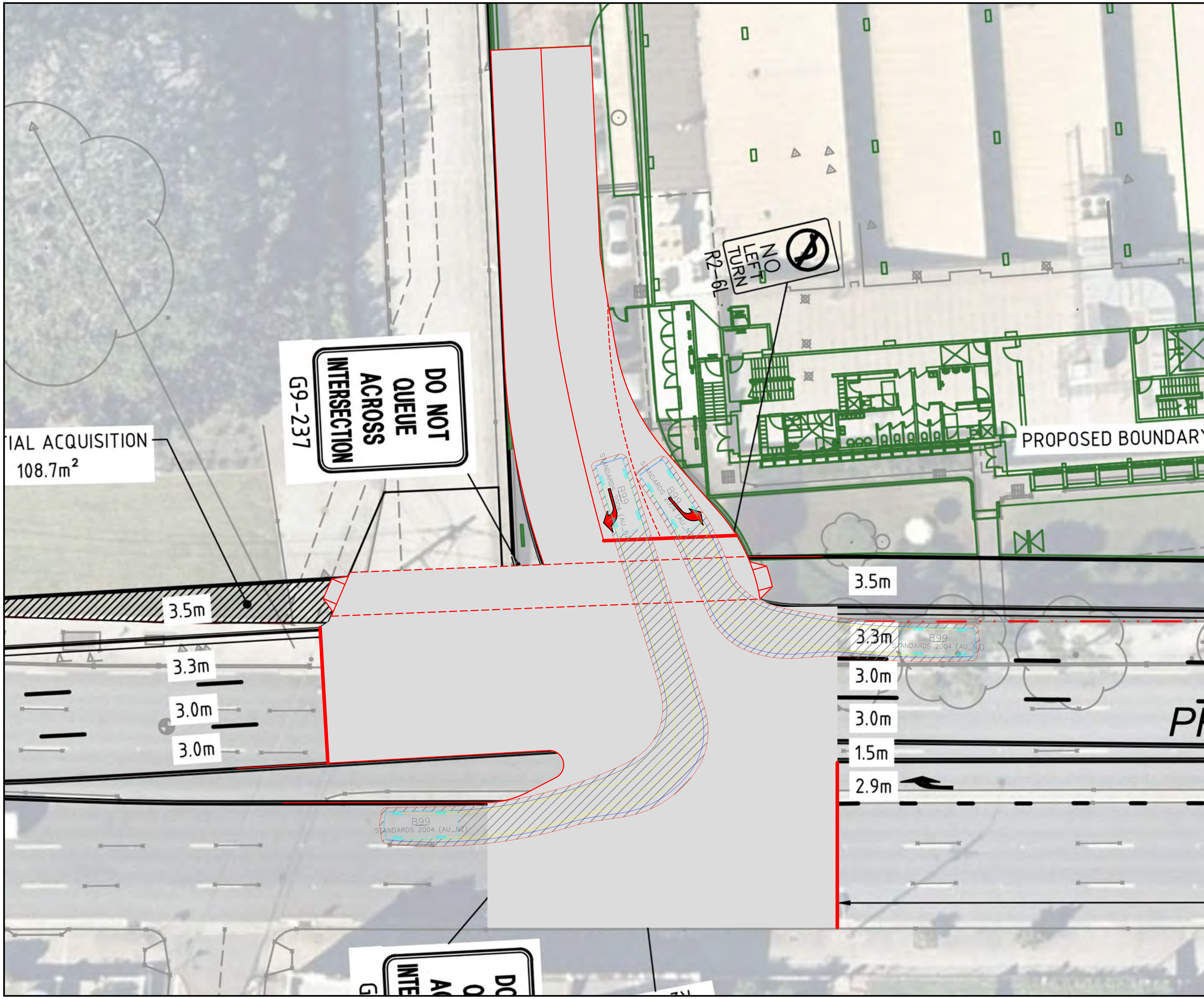
Drawing Title
Signalisation of Tempe Bunning's Princes Highway Access Driveway Concept Layout
20m AV Right Turn Exit

Drawn: TY	Checked: BL	Date: 20-07-22

22.256d01v01 TRAFFIX Concept Design Sketch.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
22.256	Concept	SK.03	A



Notes:

This drawing is prepared for information purposes only. It is not to be used for construction.

TRAFFIX is responsible for vehicle swept path diagrams and/or drawing mark-ups only. Base drawing prepared by others.

Vehicle swept path diagrams prepared using computer generated turning path software and associated CAD drawing platforms. Vehicle data based upon relevant Australian Standards *(AS/NZS 2890.1:2004 Parking facilities - Off-street car parking, and/or AS2890.2:2002 Parking facilities - Off-street commercial vehicle facilities)*. These standards embody a degree of tolerance, however the vehicle characteristics in these standards represent a suitable design vehicle and do not account for all variations in vehicle dimensions / specifications and/or driver ability or behaviour.

Rev.	Revision Note	By.	Date
A	Preliminary Concept Sketch	TY	20-07-22

Swept Path Legend
- Wheel Path
- Vehicle Body Envelope
- Clearance Envelope (300mm)

Architect
N/A

Client
Inner West Council

Scale
0 2.5 5 7.5 10m
1:250 @ A3

Project Description
Bunnings Tempe Feasibility Study

Drawing Prepared By
TRAFFIX
TRAFFIC AND TRANSPORT PLANNERS

Suite 2.08, 50 Holt Street
Surry Hills, NSW 2010
PO Box 1124
Strawberry Hills, NSW 2012
t: +61 2 8324 8700
f: +61 2 9830 4481
w: www.traffix.com.au

Drawing Title
Signalisation of Tempe Bunning's Princes Highway Access Driveway Concept Layout
B99 Left and Right Turn Exit

Drawn: TY | Checked: BL | Date: 20-07-22

22.256d01v01 TRAFFIX Concept Design Sketch.dwg

Project No.	Drawing Phase	Drawing No.	Rev.
22.256	Concept	SK.04	A

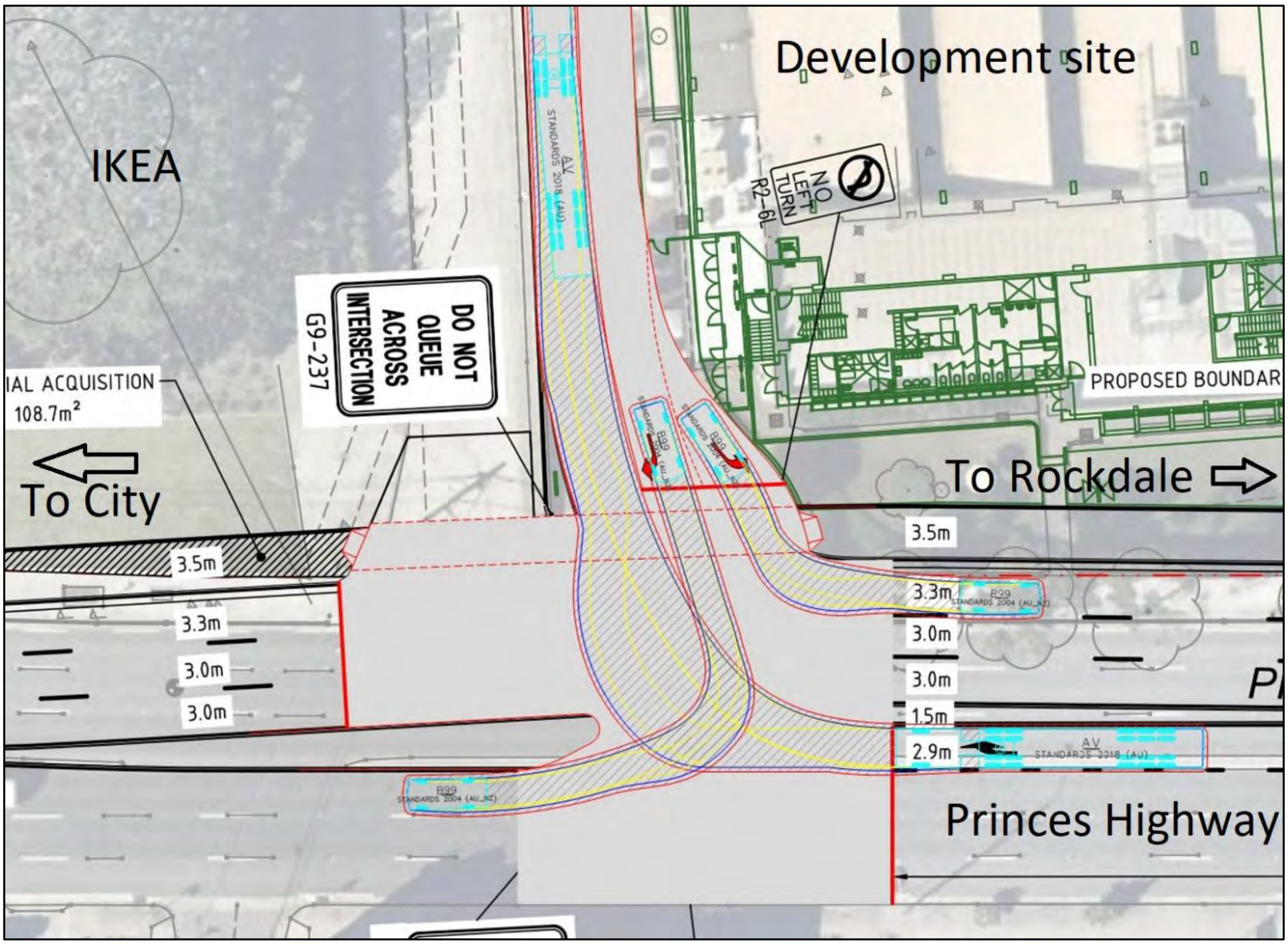
APPENDIX C

Road Safety Audit

Traffix

Proposed signalised access to Tempe Bunnings develoment

Concept design road safety audit



DC Traffic Engineering Pty Ltd
ABN 50 148 960 632
www.dctrafficengineering.com.au

Traffix

Proposed signalised access to Tempe Bunnings develoment

Concept design road safety audit

Authors Damien Chee

Report No TRF-PROJ-0040-01 CD RSA TEMPE REV 1

Date 2/8/2022

This report has been prepared for Traffix.

CONTENTS

Appendices

1 Introduction

1.1 Project and audit details

Details of the audit have been summarised in Table 1.

Table 1 Details of the road safety audit.

Audited project	Proposed signalised access to proposed Bunnings development, on the eastern side of Princes Highway, to the north of Smith Street, Tempe.
Client/ contact	Thomas Yang Senior Engineer Traffix Ph: (02) 8384 8700 / 0433 438 966 E: thomas.yang@traffix.com.au
Audit type	*Concept design* road safety audit.
Purpose	A *concept design* road safety audit was required so that safety issues could be considered and addressed in the refinement of the design.
Background	A new Bunnings Warehouse is proposed on the eastern side of Princes Highway to the north of Smith Street, in Tempe. As part of this development, a new signalised access is proposed which will stem off the eastern side of Princes Highway. This side road will allow left and right turns out of the site, as well as right-turns into the site. Inbound left-turns to the site will be prohibited. These movements would need to use the alternative access via Smith Street. A concept design has been prepared and was required to be formally reviewed via a road safety audit. An extract of this concept is shown on the front cover of this report. This report details the processes and findings of the *concept design* road safety audit.
Scope of project/ audit	The following plan was presented to the audit team and was considered to be the auditable material and scope: ▪ Project 22.256 drawing SK.01 revision A.
Audit team details	Damien Chee, level 3 (lead) road safety auditor - Registration number: RSA-02-0094. Linda Chee, level 2 road safety auditor –Registration number RSA-02-1069.
Audit methodology	The audit was undertaken using the following methodology: ▪ The concept design was reviewed on 1/8/2022. ▪ A site inspection was carried out on 1/8/2022. This was only for familiarisation purposes, to understand the pre-existing road, traffic and land use conditions, and to contextualise the setting/ environment that the intersection works would be delivered in. ▪ The road safety audit findings have been documented in this report in accordance with the NSW Centre for Road Safety's *Guidelines for Road Safety Audit Practices* (2011). The audit findings are documented in Section 2. ▪ This report includes completed road safety audit checklist as sourced from the Austroads *Guide to Road Safety Part 6A: Implementing Road Safety Audits.*
Material supplied	See *scope of audit*.
Meeting and assessment details	Review of plans on 1/8/2022. Site inspection carried out on 1/8/2022.

1.2 Responding to the audit report

Road safety audits provide the opportunity to highlight potential road safety problems and have them formally considered by the project manager in conjunction with all other project considerations.

The responsibility for the project rests with the project manager, not with the auditor. The project manager is under no obligation to accept the audit findings. Also, it is not the role of the auditor to agree to, or approve the project manager’s responses to the audit.

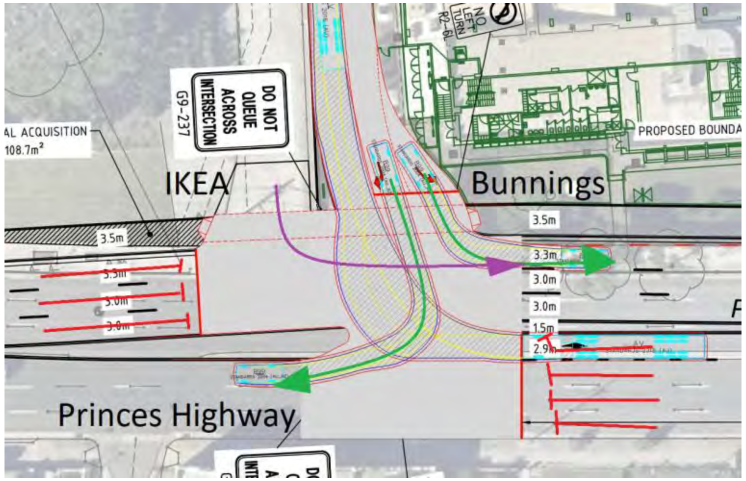
1.3 Previous audits

There were no previous road safety audit reports of direct relevance to this project that were issued to the audit team.

2 Safety audit findings

The road safety audit findings are documented in Table 2.

Table 2 Road safety audit findings.

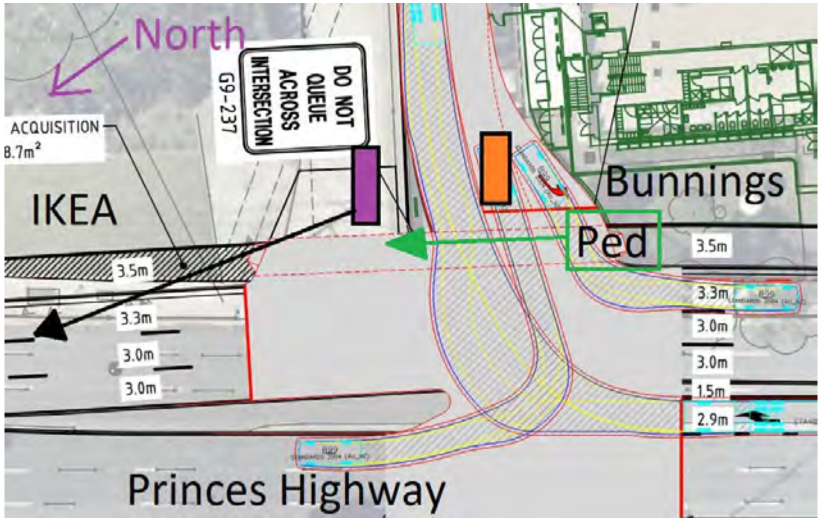
Ref	Location/ priority	Road safety audit finding	Priority
1	Conflict between outbound left-turn from IKEA driveway[1] and outbound movements from Bunnings.	Two fundamental problems with the design are that (1) the IKEA driveway and the Bunnings driveway are too close to each other and (2) the IKEA driveway remains as a priority-controlled intersection despite being within a signal-controlled intersection. These two fundamental problems would lead to the following crash conflict and risk. The outbound traffic in the IKEA driveway, presumably restricted to left-turns only, would need to select gaps in the southbound direction of Princes Highway when egressing from this property. During the signal phase when northbound-southbound traffic on Princes Highway are held on red signal (all red arrow-stubs), and the outbound traffic from Bunnings is given the green signal display, this would be an opportune time for any outbound traffic from IKEA to egress from this property (see purple arrow). Furthermore, this traffic (not under any signalised control) would be able to legally make this egressing movement. As shown below, this would create an obvious crash conflict with the outbound traffic from Bunnings. Many of these outbound drivers from Bunnings would not expect a conflict to emerge from the adjacent driveway in this manner. As described in items 2a and 2b, the outbound traffic from IKEA would also be under priority control (not signalised control) and would not be adequately controlled against north-south pedestrian movements on the signalised crossing. This would lead to distinct *vehicle-pedestrian* crash conflicts as well.  ***Left:*** *The signal phase where outbound traffic from Bunnings is given a green display would be the most opportune time for vehicles to also egress from IKEA. However, as shown, this would create distinct crash conflicts with the outbound traffic from Bunnings (ie. conflicts between the purple movement and the two green movements).*	High

[1] This is not the main vehicular access-egress to IKEA. Rather, it is a secondary and lower-volume driveway to the IKEA administration building.

<table>
<tr><th>Ref</th><th>Location/ priority</th><th>Road safety audit finding</th><th>Priority</th></tr>
<tr><td>2a</td><td>Poor legibility in the priority and control rules for pedestrians on the eastern signalised crossing.</td><td>

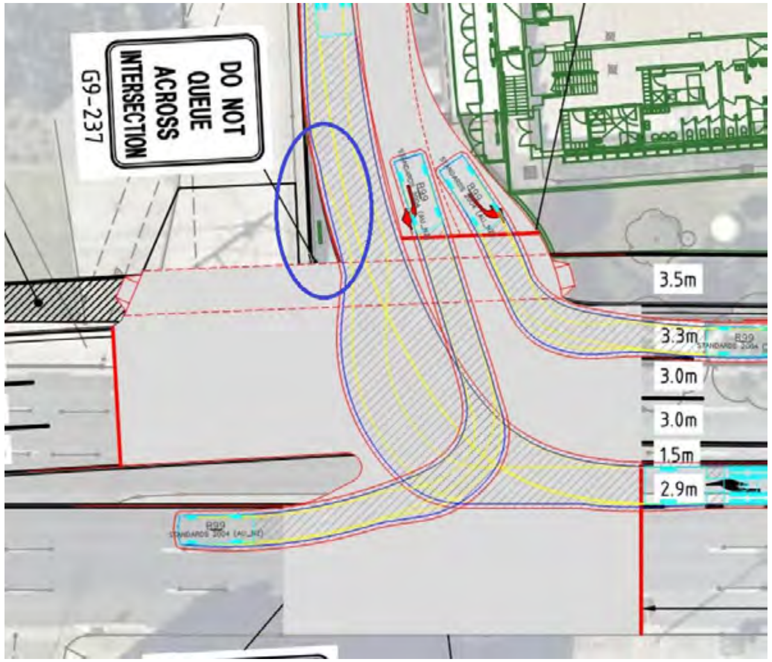
Item 1 discussed the fundamental problem of having a signal-controlled driveway to Bunnings immediately adjacent to a priority controlled driveway to IKEA. This will also reduce the legibility of the pedestrian crossing and the relative priority rules. For example, outbound traffic from the IKEA driveway would need to adhere to priority rules when egressing. They would need to give way to southbound vehicles on Princes Highway as well as pedestrians on the north-south crossing. However, this is a *give way* control rather than the outbound traffic being traffic signal controlled (ie. held on red and released on green). By contrast, the outbound traffic from Bunnings would be controlled by signals so there should be less ambiguity regarding which road user has priority (ie. outbound vehicles or crossing pedestrians). By having two differing priority-systems side-by-side, the crossing pedestrian would be subjected to differing degrees of protection. On one hand, they would be better protected against outbound traffic from Bunnings due to the signal control and the fact that this is less ambiguous and offers more clear-cut time-separation between the conflicting road user movements. On the other hand, they would be subjected to a give way control at the IKEA driveway where drivers may make poor decisions without the aid of traffic signals.

Pedestrians crossing in the northbound direction would be most at risk. Since the outbound traffic from IKEA is restricted to left-turns only, these drivers would tend to look to their right towards the oncoming southbound traffic on Princes Highway to judge for gaps. By doing so, they are at higher risk of not noticing a pedestrian approaching from their left (ie. a northbound pedestrian approaching from the south). This could lead to a *vehicle-pedestrian* crash.



Left: *The outbound driver in the IKEA driveway (purple vehicle) is subjected to a give way priority rule. These drivers would tend to look to their right (north) to check for gaps in the southbound traffic stream of Princes Highway. By doing so, they may not notice pedestrians approaching from their left (from the south).*

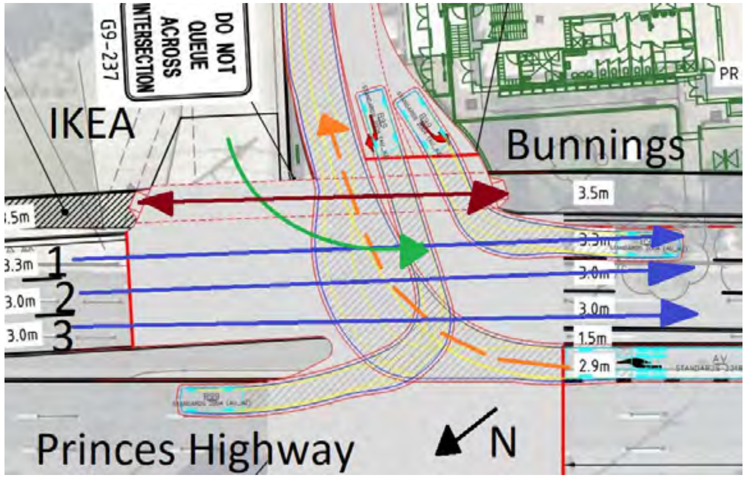
</td><td>High</td></tr>
</table>

Ref	Location/ priority	Road safety audit finding	Priority
2b	Poor legibility in the priority and control rules for pedestrians on the eastern signalised crossing.	Further to item 2a, pedestrians are likely to use the small gap between the two driveways as a refuge point, especially when crossing illegally (during the “don’t walk” display). This area is small and not suitable as a pedestrian refuge area.  ***Left:*** *Pedestrians are likely to use the small area between the two driveways as a makeshift refuge point.*	High

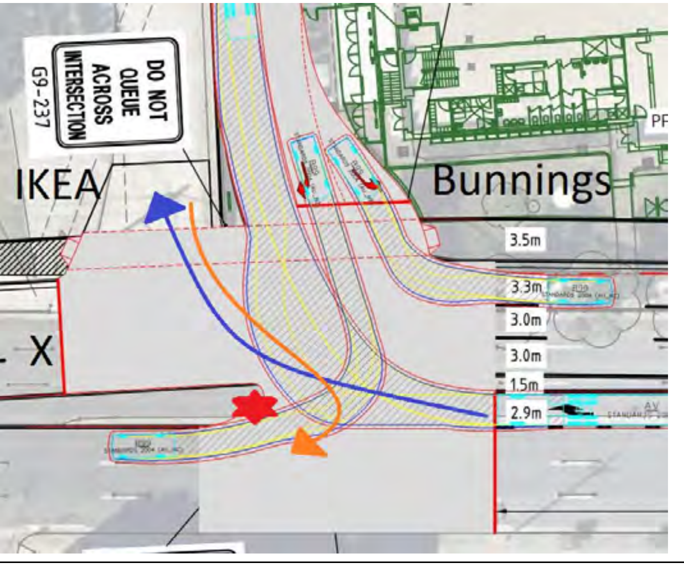
<table>
<tr><th>Ref</th><th>Location/ priority</th><th>Road safety audit finding</th><th>Priority</th></tr>
<tr><td>3</td><td>Filtered right-turns into the Bunnings driveway.</td><td>
At the concept stage with no TCS plan prepared, it is unclear whether filtered right turns will be permitted by northbound traffic into Bunnings (orange arrow). This is considered to be a very high risk movement. The northbound right-turning driver would need to detect and select gaps in, and give way to the following traffic streams:

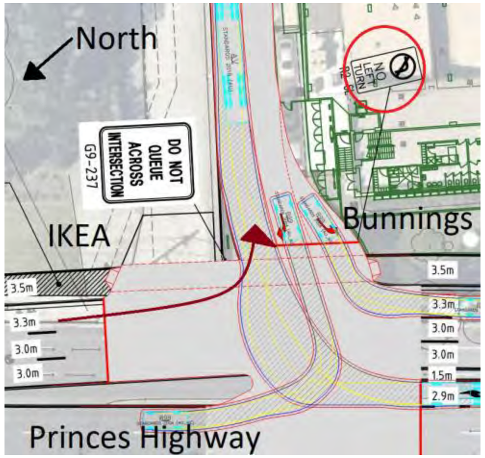
- Traffic in lane 3 southbound (lanes are numbered below).
- Traffic in lane 2 southbound, which may be visually obscured by traffic in lane 3.
- Traffic in lane 1 southbound, which may be visually obscured by traffic in lanes 2 and 3.
- Pedestrians crossing the eastern signalised leg, which may be obscured by traffic in lanes 1, 2 and 3.
- Outbound left-turning vehicles from the IKEA driveway. Note that this conflict would also exist with a fully controlled right-turn since the outbound left-turning driver from IKEA would only need to adhere to a *give way* rule (ie. they are not traffic signal controlled).

With the multitude of conflicting movements, northbound right-turning drivers are likely to make poor gap selections with consequential crash risk. As such, filtered right-turns are not recommended.

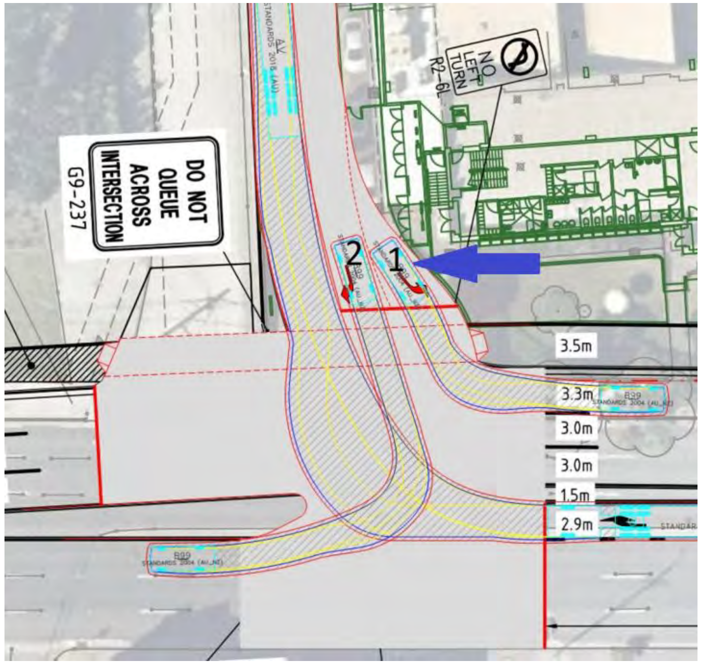


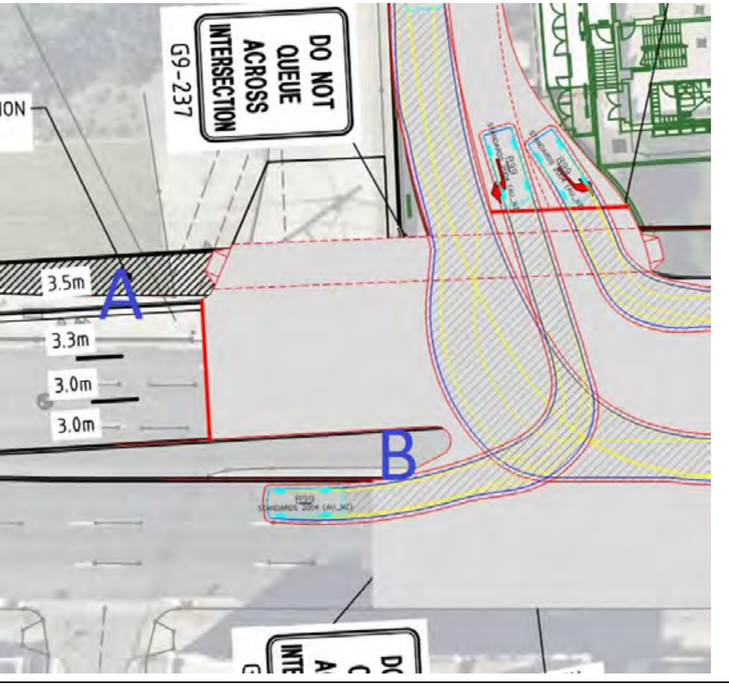
***Left:** Filtered right turns into the Bunnings driveway would need to detect and select gaps in three southbound traffic streams, a two-way pedestrian crossing facility and outbound traffic from the IKEA driveway.*
</td><td>High</td></tr>
</table>

Ref	Location/ priority	Road safety audit finding	Priority
4	Illegal right-turns into and out of the IKEA driveway.	The proposed driveway to Bunnings would be positioned immediately adjacent to the driveway to the IKEA administration building. As shown below, due to the hold line at X, the IKEA driveway actually falls within the traffic-controlled area of the intersection. The audit team anticipates that there will be occasional illegal right-turn movements into and out of the IKEA driveway. For example, a northbound vehicle could turn right into the IKEA driveway under the guise of an intended right-turn into the Bunnings driveway (see blue arrow). Since the hold line X keeps queued traffic out of the way of the IKEA driveway, there would tend to be an uninhibited passage to IKEA. Similarly, there could be illegal right turns out of the IKEA driveway as per the orange arrow. This is especially since the proper alternative route would be via (i) a left-turn into Princes Highway southbound, (ii) a left-turn into Smith Street, (iii) a u-turn/ three-point turn in Smith Street and (iv) an outbound right-turn from Smith Street. This alternative route is circuitous and time-consuming. Any illegal right-turn movements from the IKEA driveway would also increase the risk of impacts with the median nose (red star) including any traffic signal posts and signs. The IKEA driveway is currently a *left-in-left-out* T intersection and is assumed to retain the same access restrictions under the proposed scenario.  ***Left:*** *The introduction of a gap in the raised median (compared to existing and pre-project conditions where there is no gap in place), could result in illegal right turns into and out of the IKEA driveway as shown by the blue and orange arrows respectively.*	Medium

<table>
<tr><th>Ref</th><th>Location/ priority</th><th>Road safety audit finding</th><th>Priority</th></tr>
<tr><td>5</td><td>NO LEFT TURN rule from Princes Highway to Bunnings.</td><td>The design indicates that there will be a NO LEFT TURN rule for southbound traffic on Princes Highway to the Bunnings site. The audit team notes the following issues:
▪ This is a very unrealistic expectation, and a high degree of non-compliance would be expected. Left-turn bans are extremely rare since they are the least conflicted/ opposed movement. The alternative access route via Smith Street is more circuitous and time-consuming. As shown in the right-hand image, there is a brick wall separating both driveways. Any illegal left-turns into the Bunnings site could lead to vehicle impacts with this wall. Alternatively, there could be head-on crashes with outbound traffic in the Bunnings driveway.
▪ Since a left-turn ban would apply to the Bunnings driveway, it stands to reason that there will not be any left-turn signal controls to safeguard pedestrians (since this movement should not happen anyway, assuming 100% compliance). Without any left-turn control, and since the driveway to IKEA remains a priority-controlled intersection, this would allow for uncontrolled left-turns into the IKEA driveway. Without any left-turn arrow controls, this could increase the risk of left-turn on pedestrian crashes involving left-turn movements into IKEA. Contrastingly, there is no legible method for controlling the left-turns into the IKEA driveway. If a left-turn arrow aspect is included with the signal personality, then the release of the red-arrow hold (therefore allowing left-turns into the IKEA driveway), could be misinterpreted as a release for southbound traffic to also turn left into Bunnings (which would be illegal).
▪ The NO LEFT TURN sign could be misinterpreted as a rule that also applies to the IKEA driveway. Clearly this is not the case as there is no other legal method of entering that driveway.


Left: Extract from the design showing the intended NO LEFT TURN rule prohibiting inbound left-turns into the Bunnings site. Right: The existing conditions showing the two driveways side-by-side and the brick wall separating these.</td><td>Medium</td></tr>
</table>

Ref	Location/ priority	Road safety audit finding	Priority
6	Outbound left-turn lane from Bunnings.	The design indicates that a short left-turn lane will be provided for outbound traffic in the Bunnings driveway. This will be very ineffective in servicing outbound left-turning traffic and is likely to have a poor utilisation rate. The audit team notes the following issues: ▪ In many situations, left-turning drivers will not be able to access this lane due to the queue in the right-turn lane extending back to the east. Even a one-car queue may block access to the left-turn lane. ▪ Left-turning vehicles that are trapped in the right-turn lane and in queue are likely to remain in lane 2 even when making their left-turn movement. Many drivers would be reluctant to move into lane 1 at the “last second” to make this left-turn movement. This is a case of poor utilisation of lane 1, and this driveway would perform very similar to if there was only one lane provided (shared by left and right-turning traffic). ▪ Further to the previous points, the low utilisation and blocked access to the left-turn lane would waste much cycle time. For example, when the northbound right-turn is given a green arrow display, this would typically be accompanied by an outbound left-turn green arrow display. However, if “would be” left-turning vehicles cannot access this short lane, the entire signal phase would be wasted and there would be no throughput from the outbound left-turn lane. Whilst many of these issues are traffic management and operation related, there are road safety side effects as well. For example, extensive queuing and *rear-end* crash risks, unnecessary delays leading to driver frustration and risk-taking behaviour.  ***Left:*** *The outbound left-turn lane is short and likely to be severely under-utilised.*	Low

Ref	Location/ priority	Road safety audit finding	Priority
7	DO NOT QUEUE ACROSS INTERSECTION signs.	G9-237 DO NOT QUEUE ACROSS INTERSECTION signs are proposed on the eastern and western sides of Princes Highway. However, these are not appropriately placed. The eastern sign is placed midway along the control area of the intersection. It really ought to be placed at the start of, or upstream of the start of, the control area (such as point A). The western sign would be too far to the right to be effective as a regulatory sign. It would be better placed at point B such that it is visible by drivers at the hold line as well as those moving into the intersection.  ***Left:*** *The DO NOT QUEUE ACROSS INTERSECTION signs are poorly placed.*	Low

Ref	Location/ priority	Road safety audit finding	Priority
8	Alignment of southbound lanes.	The three southbound lanes will have a slight horizontal kink in the control area of the intersection. As such, drivers in each lane would be required to make minor steering adjustments when in the control area of the intersection. Whilst this is a relatively minor steering requirement, consideration should be given to revising the lane alignment such that the approach lanes match up with the departure lane alignments. It should be noted that in the existing, pre-project situation, the approach lanes match up with the departure lane alignments and the road is straight.  ***Left:*** *Extract from the design showing the slight horizontal kink for the southbound lanes from approach to departure.* ***Right:*** *Under current, pre-project conditions, the three southbound lanes are straight with no horizontal changes.*	Low

3 Concluding statement

DC Traffic Engineering has undertaken a *concept design* road safety audit of this project in accordance with the methodology outlined in Section 1 of this report.

Issues identified have been noted in this report for the Project Manager to review, assess, and where appropriate, make the necessary recommendations to improve safety.

Damien Chee
Audit Team Leader
DC Traffic Engineering Pty Ltd

Appendix A

Road Safety Audit Checklist

Issue	Comment
2.1 General topics	
1 Changes since previous audit ▪ Do the conditions for which the scheme was originally designed still apply? (eg. no changes to the surrounding network, area activities or traffic mix) ▪ Has the general form of the project design remained unchanged since previous audit (if any)?	There were no previous road safety audit reports issued to the audit team.
2 Drainage ▪ Will the scheme drain adequately? ▪ Has the possibility of surface flooding been adequately addressed, including overflow from surrounding or intersecting drains and water courses?	Yes.
3 Climatic conditions ▪ Has consideration been given to weather records or local experience which may indicate a particular problem? (eg. snow, ice, wind, fog).	Yes.
4 Landscaping ▪ If any landscaping proposals are available, are they compatible with safety requirements (eg. sight lines and hazards in clear zones)?	Yes.
5 Services ▪ Does the design adequately deal with buried and overhead services (especially in regard to overhead clearances, etc)? ▪ Has the location of fixed objects or furniture associated with services been checked, including the position of poles?	Services adjustment plans not provided.
6 Access to property and developments ▪ Can all accesses be used safely? (entry and exit/merging). ▪ Is the design free of any downstream or upstream effects from accesses, particularly near intersections? ▪ Have rest areas and truck parking accesses been checked for adequate sight distance, etc.?	All issues were with respects to the property access.
7 Adjacent developments ▪ Does the design handle accesses to major adjacent generators of traffic and developments safely? ▪ Is the drivers' perception of the road ahead free of misleading effects of any lighting or traffic signals on an adjacent road?	Yes.
8 Emergency vehicles and access ▪ Has provision been made for safe access and movements by emergency vehicles? ▪ Does the design and positioning of medians and vehicle barriers allow emergency vehicles to stop & turn without unnecessarily disrupting traffic?	Yes.

<table>
<tr><th>Issue</th><th>Comment</th></tr>
<tr><td>9 Future widening and/or realignments
If the scheme is only a stage towards a wider or dual carriageway is the design adequate to impart this message to drivers? (Is the reliance on signs minimal/appropriate, rather than excessive?)
Is the transition between single and dual carriageway (either way) handled safely?</td><td>Unknown.</td></tr>
<tr><td>10 Staging of the scheme
If the scheme is to be staged or constructed at different times:
Are the construction plans and program arranged to ensure maximum safety?
Do the construction plans and program include specific safety measures, signing; adequate transitional geometry; etc. for any temporary arrangements?</td><td>Unknown.</td></tr>
<tr><td>11 Staging of the works
If the construction is to be split into several contracts, are they arranged safely?</td><td>Unknown.</td></tr>
<tr><td>12 Maintenance
Can maintenance vehicles be safely located?</td><td>Yes. Similar to existing conditions.</td></tr>
<tr><td><h2>2.2 Design issues (general)</h2></td><td></td></tr>
<tr><td>1 Design standards
Is the design speed and speed limit appropriate (eg. consider the terrain; function of the road)?
Has the appropriate design vehicle and check vehicle been used?</td><td>Yes.</td></tr>
<tr><td>2 Typical cross sections
Are lane widths, shoulders, medians and other cross section features adequate for the function of the road?
Is the width of traffic lanes and carriageway suitable in relation to: •
Alignment?
Traffic volume?
Vehicle dimensions?
The speed environment?
Combinations of speed and traffic volume?
Are overtaking/climbing lanes provided if needed?
Have adequate clear zones been achieved?</td><td>The short left-turn lane in the new access will lack utilisation.</td></tr>
</table>

<table>
<tr><th>Issue</th><th>Comment</th></tr>
<tr><td>3 The effect of cross sectional variation
▪ Is the design free of undesirable variations in cross section design?
▪ Are crossfalls safe? (particularly where sections of existing highway have been utilised or there have been compromises to accommodate accesses, etc.)
▪ Does the cross section avoid unsafe compromises such as narrowings at bridge approaches or past physical features?</td><td>See previous.</td></tr>
<tr><td>4 Roadway layout
▪ Are all traffic management features designed so as to avoid creating unsafe conditions?
▪ Is the layout of road markings and reflective materials able to deal satisfactorily with changes in alignment? (particularly where the alignment may be substandard.)</td><td>Fundamental problem with having two accesses side-by-side and with two differing control methods.</td></tr>
<tr><td>5 Shoulders and edge treatment
▪ Are the following safety aspects of shoulder provision satisfactory:
▪ Provision of sealed or unsealed shoulders?
▪ Width and treatment on embankments?
▪ Cross fall of shoulders?
▪ Are the shoulders likely to be safe if used by slow moving vehicles or cyclists?
▪ Are any rest areas and truck parking areas safely designed?</td><td>Kerbed road.</td></tr>
<tr><td>6 Effect of departures from standards or guidelines
▪ Any approved departures from standards or guidelines: is safety maintained?
▪ Any hitherto undetected departures from standards: is safety maintained?</td><td>Yes.</td></tr>
<tr><td><h2>2.3 Alignment details</h2></td><td></td></tr>
<tr><td>1 Geometry of horizontal and vertical alignment
▪ Does the horizontal and vertical design fit together correctly?
▪ Is the design free of visual cues that would cause a driver to misread the road characteristics (eg. visual illusions, subliminal delineation such as lines of trees, poles, etc.)?
▪ Does the alignment provide for speed consistency?</td><td>Horizontal kink in southbound lanes raised.</td></tr>
</table>

Issue	Comment

2 Visibility; sight distance
▪ Are horizontal and vertical alignments consistent with the visibility requirements?
▪ Will the design be free of sight line obstructions due to:
  ▪ Safety fences or barriers?
  ▪ Boundary fences?
  ▪ Street furniture?
  ▪ Parking facilities?
  ▪ Signs?
  ▪ Landscaping?
  ▪ Bridge abutments?
  ▪ Parked vehicles in laybys or at the kerb?
  ▪ Queued traffic?
▪ Are railway crossings, bridges and other hazards all conspicuous?
▪ Is the design free of any other local features which may affect visibility?
	Yes.

3 New/existing road interface ▪ Does the interface occur well away from any hazard? (eg. a crest, a bend, a roadside hazard or where poor visibility/distractions may occur.) ▪ If carriageway standards differ, is the change effected safely? ▪ Is the transition where the road environment changes (eg. urban to rural; restricted to unrestricted; lit to unlit) Is it done safely? ▪ Has the need for advance warning been considered?	Yes.
4 'Readability' of the alignment by drivers ▪ Will the general layout, function and broad features be recognised by drivers in sufficient time? ▪ Will approach speeds be suitable and can drivers correctly track through the scheme?	Yes.
2.4 Intersections	

<table>
<tr><th>Issue</th><th>Comment</th></tr>
<tr><td>1 Visibility to and visibility at intersections
▪ Are horizontal and vertical alignments at the intersection or on the approaches to the intersection consistent with the visibility requirements?
▪ Will drivers be aware of the presence of the intersection (especially on the minor road approach)?
▪ Will the design be free of sight line obstructions due to:
  ▪ Safety fences or barriers?
  ▪ Boundary fences?
  ▪ Street furniture?
  ▪ Parking facilities?
  ▪ Signs?
  ▪ Landscaping?
  ▪ Bridge abutments?
▪ Are railway crossings, bridges and other hazards near intersections conspicuous?
▪ Will the design be free of any local features which adversely affect visibility?
▪ Will intersection sight lines be obstructed by permanent or temporary features such as parked vehicles in laybys, or by parked or queued traffic generally?</td><td>Yes.</td></tr>
<tr><td>2 Layout, including the appropriateness of type
▪ Is the type of intersection selected (cross roads, T, roundabout, signalised, etc.) appropriate for the function of the two roads?
▪ Are the proposed controls (Give Way, Stop, Signals, etc.) appropriate for the particular intersection?
▪ Are junction sizes appropriate for all vehicle movements?
▪ Are the intersections free of any unusual features which could affect road safety?
▪ Are the lane widths and swept paths adequate for all vehicles?
▪ Is the design free of any upstream or downstream geometric features which could affect safety? (eg. merging of lanes.)
▪ Are the approach speeds consistent with the intersection design?
▪ Where a roundabout is proposed:
▪ Have pedal cycle movements been considered?
▪ Have pedestrian movements been considered?
▪ Are details regarding the circulating carriageway sufficient?</td><td>Fundamental problem with having two accesses side-by-side and with two differing control methods.</td></tr>
</table>

Issue	Comment
3 Readability by drivers ▪ Will the general type, function and broad features be perceived correctly by drivers? ▪ Are the approach speeds and likely positions of vehicles as they track through the scheme safe? ▪ Is the design free of sunrise or sunset problems which may create a hazard for motorists?	Yes.
2.5 Special road users	
1 Adjacent land ▪ Will the scheme be free of adverse effects from adjacent activity and intensity of land use? (If not, what special measures are needed?	Yes.
2 Pedestrians ▪ Have pedestrian needs been satisfactorily considered? ▪ If footpaths are not specifically provided, is the road layout safe for use by pedestrians (particularly at blind corners or on bridges)? ▪ Are pedestrian subways or footbridges sited to provide maximum use? (i.e. Is the possibility of pedestrians crossing at grade in their vicinity minimised?) ▪ Has specific provision been made for pedestrian crossings, school crossings or pedestrian signals? ▪ Where present, are these facilities sited to provide maximum use with safety? ▪ Are pedestrian refuges/kerb extensions provided where needed? ▪ Has specific consideration been given to provision required for special groups (eg. young, elderly, disabled, deaf or blind)?	Pedestrians on the eastern side of the crossing will be signal controlled, but will be subjected to two traffic streams that are controlled by entirely different means.
3 Cyclists ▪ Have the needs of cyclists been satisfactorily considered, especially at intersections? ▪ Have cycle lanes been considered? ▪ Are all cycleways of standard or adequate design? ▪ Where a need for shared pedestrian/cycle facilities exists, have they been safely treated? ▪ Where cycleways terminate at intersections or adjacent to the carriageway, has the transition treatment been handled safely? ▪ Have any needs for special cycle facilities been satisfactorily considered? (eg. cycle signals)	Yes.

Issue	Comment
4 Motorcyclists ▪ Has the location of devices or objects which might destabilise a motorcycle been avoided on the road surface? ▪ Will warning or delineation be adequate for motorcyclists? ▪ Has barrier kerb been avoided in high speed areas? ▪ In areas more likely to have motorcycles run off the road is the roadside forgiving or safely shielded?	Yes.
5 Equestrians and stock ▪ Have the needs of equestrians been considered, including the use of verges or shoulders and rules regarding the use of the carriageway? ▪ Can underpass facilities be used by equestrians/stock?	NA.
6 Freight ▪ Have the needs of truck drivers been considered, including turning radii and lane widths?	Most issues will affect trucks.
7 Public transport ▪ Has public transport been catered for? ▪ Have the needs of public transport users been considered? ▪ Have the manoeuvring needs of public transport vehicles been considered? ▪ Are bus stops well positioned for safety?	Yes.
8 Road maintenance vehicles ▪ Has provision been made for road maintenance vehicles to be used safely at the site?	Yes.
2.6 Signs and lighting	
1 Lighting ▪ Is this project to be lit? Will safety be maintained if the project is not lit? ▪ Is the design free of features which make illuminating sections of the road difficult (eg. Shadow from trees or overbridges)? ▪ Has the question of siting of lighting poles been considered as part of the general concept of the scheme? ▪ Are frangible or slip-base poles to be provided? ▪ Are any special needs created by ambient lighting? Will safety be maintained if special treatments are not provided? ▪ Have the safety consequences of vehicles striking lighting poles (of any type) been considered?	Assumed to be similar to existing.

Issue	Comment
2 Signs ▪ Are signs appropriate for their location? ▪ Are signs located where they can be seen and read in adequate time? ▪ Will signs be readily understood? ▪ Are signs located so that visibility to and from accesses and intersecting roads is maintained? ▪ Are signs appropriate to the driver's needs (eg. destination signs, advisory speed signs, etc.)? ▪ Have the safety consequences of vehicles striking sign posts been considered? ▪ Are signs located so that drivers' sight distance is maintained? ▪ Any signs to be located in the clear zone: are they frangible or adequately shielded by a crash barrier?	Signage not included on the plans since these were only concept level plans.
3 Marking and delineation ▪ Has the appropriate standard of delineation and marking been adopted? ▪ Are the proposed markings consistent with the works in the adjoining section of the route? ▪ Are the previous/adjacent markings to be upgraded? If not, will safety be maintained?	Southbound lanes will have a horizontal kink.
2.7 Traffic management	
1 Traffic flow and access restrictions ▪ Can traffic volumes from the proposed scheme be safely accommodated on existing sections of road? ▪ Has parking provision and parking control been adequately considered? ▪ Can any turn bans be implemented without causing problems at adjacent intersections? ▪ Has the effect of access to future developments been considered? ▪ Any traffic diverting to other roads (eg. to avoid a traffic control device): is safety maintained?	Traffic management issues identified with short left-turn lane from Bunnings.

Issue	Comment
2 Overtaking and merges ▪ Is overtaking sight distance and stopping distance adequate? ▪ Have suitable shoulder widths been provided at lane drop merges? ▪ Have standard signs and markings been provided for any lane drop? ▪ Has adequate sight distance been provided to any lane drop? ▪ Are shoulders wide enough opposite access points and intersections?	NA. Multi-lane road.
3 Rest areas and stopping zones Are there sufficient roadside stopping areas, rest areas and truck parking areas? Are any entries and exits to rest areas or truck parking areas safe?	NA.
4 Construction and operation ▪ If the scheme is to be constructed "under traffic", can this be done so safely? ▪ Can the scheme be safely constructed? ▪ Have the maintenance requirements been adequately considered? ▪ Is safe access to and from the works available?	Road occupancy required.
2.8 Additional questions to be considered for development proposals	Questions omitted as they were adequately covered in other checklist questions.
2.9 Any other matter	
1 Safety aspects not already covered ▪ Will there be special events? Have any consequent unusual or hazardous conditions been considered? ▪ Is the road able to safely handle oversize vehicles, or large vehicles like trucks, buses, emergency vehicles, road maintenance vehicles? ▪ If required, can the road be closed for special events in a safe manner? ▪ If applicable, are special requirements of scenic or tourist routes satisfied?	No.

APPENDIX D

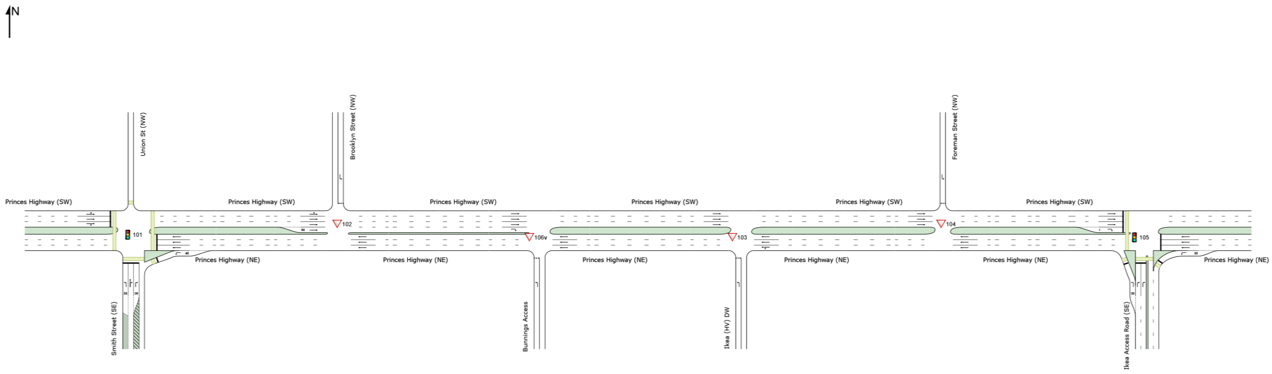
SIDRA Movement Summaries

NETWORK LAYOUT

Network: N101 [Approved AM (Network Folder: Approved)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	101 AM APPROVED Princes Hwy, Smith St & Union St
102	NA	102 AM APPROVED Princes Hwy & Brooklyn St
103	NA	103 AM APPROVED Princes Hwy & Ikea (HV) DW
104	NA	104 AM APPROVED Princes Hwy & Foreman St
105	NA	105 AM APPROVED Princes Hwy & Ikea Access Road
106v	NA	106 AM APPROVED Princes Hwy & Bunnings Access

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Phase Summaries

Site: 101 [101 AM APPROVED Princes Hwy, Smith St & Union St (Site Folder: Approved AM - Network)]

Network: 5 [Approved AM (Network Folder: Approved)]

Intersection: Princes Hwy, Smith St & Union St
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

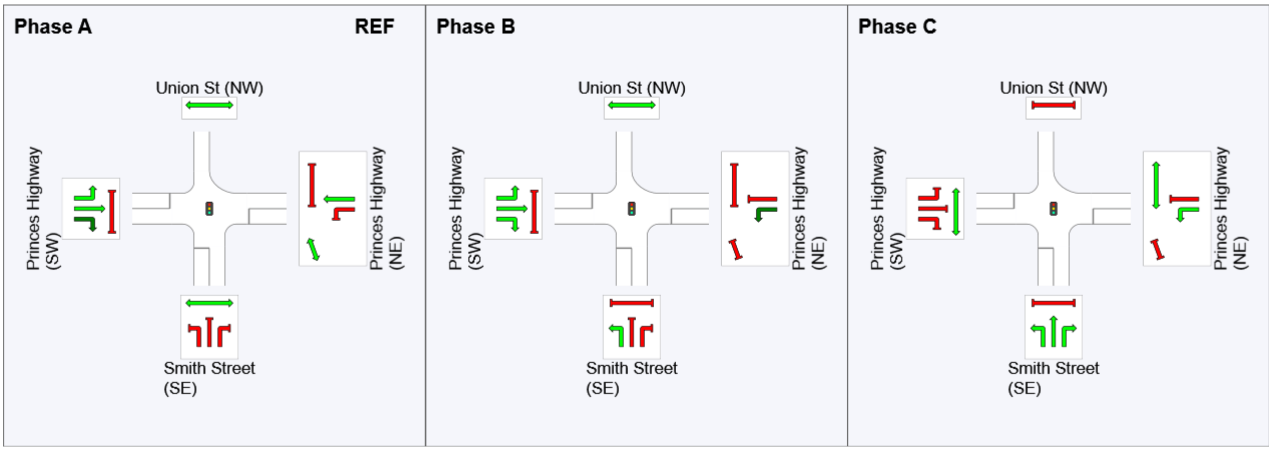
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	27	98
Green Time (sec)	21	65	16
Phase Time (sec)	27	71	22
Phase Split	23%	59%	18%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

Site: 105 [105 AM APPROVED Princes Hwy & Ikea Access Road (Site Folder: Approved AM - Network)]

Network: 5 [Approved AM (Network Folder: Approved)]

Intersection: Princes Hwy & Ikea Access Road
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

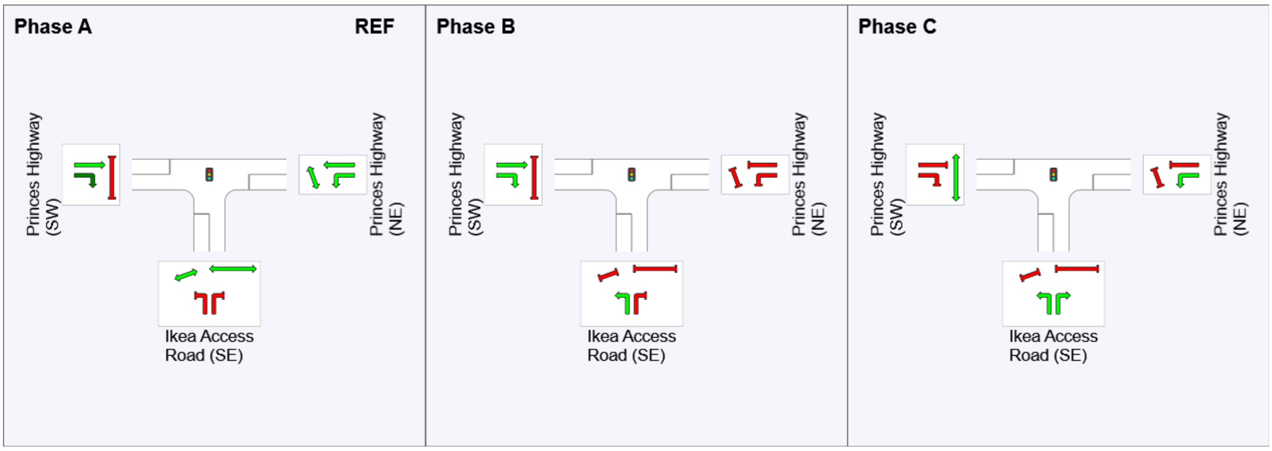
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	26	117	14
Green Time (sec)	85	11	6
Phase Time (sec)	91	17	12
Phase Split	76%	14%	10%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

Project: T:\Synergy\Projects\22\22.256\Modelling\22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study.sip9

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Movement Summaries

Site: 101 [101 AM APPROVED Princes Hwy, Smith St & Union St (Site Folder: Approved AM - Network)]

Network: 5 [Approved AM (Network Folder: Approved)]

Intersection: Princes Hwy, Smith St & Union St
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street (SE)														
1	L2	29	7.1	29	7.1	0.023	9.1	LOS A	0.5	3.4	0.28	0.59	0.28	36.0
2	T1	15	0.0	15	0.0	* 0.170	49.6	LOS D	2.2	16.2	0.92	0.72	0.92	23.0
3	R2	67	7.8	67	7.8	0.170	54.8	LOS D	2.2	16.2	0.92	0.72	0.92	14.0
Approach		112	6.6	112	6.6	0.170	42.1	LOS C	2.2	16.2	0.75	0.69	0.75	19.0
East: Princes Highway (NE)														
4	L2	47	0.0	47	0.0	0.045	9.8	LOS A	0.7	5.2	0.33	0.62	0.33	37.9
5	T1	796	0.0	796	0.0	* 0.754	52.7	LOS D	15.7	109.7	1.00	0.89	1.08	10.7
Approach		843	0.0	843	0.0	0.754	50.3	LOS D	15.7	109.7	0.96	0.87	1.04	11.6
West: Princes Highway (SW)														
10	L2	33	3.2	33	3.2	0.702	12.6	LOS A	29.1	211.6	0.54	0.51	0.54	41.5
11	T1	2941	4.8	2941	4.8	0.702	7.7	LOS A	29.1	212.0	0.55	0.54	0.55	28.2
12	R2	54	0.0	54	0.0	* 0.702	14.8	LOS B	24.2	175.9	0.59	0.61	0.59	38.4
Approach		3027	4.7	3027	4.7	0.702	7.9	LOS A	29.1	212.0	0.56	0.54	0.56	28.9
All Vehicles		3982	3.7	3982	3.7	0.754	17.8	LOS B	29.1	212.0	0.65	0.62	0.66	19.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 102 [102 AM APPROVED Princes Hwy & Brooklyn St (Site Folder: Approved AM - Network)]

Network: 5 [Approved AM (Network Folder: Approved)]

Intersection: Princes Hwy & Brooklyn St
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	954	10.3	954	10.3	0.281	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach		954	10.3	954	10.3	0.281	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
North: Brooklyn Street (NW)														
7	L2	24	4.3	24	4.3	0.036	8.4	LOS A	0.1	1.0	0.56	0.71	0.56	40.8
Approach		24	4.3	24	4.3	0.036	8.4	LOS A	0.1	1.0	0.56	0.71	0.56	40.8
West: Princes Highway (SW)														
10	L2	18	11.8	18	11.8	0.399	5.0	LOS A	0.0	0.0	0.00	0.01	0.00	55.9
11	T1	2994	4.9	2994	4.9	0.399	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.4
Approach		3012	4.9	3012	4.9	0.399	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.3
All Vehicles		3989	6.2	3989	6.2	0.399	0.1	NA	0.1	1.0	0.00	0.01	0.00	58.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 103 [103 AM APPROVED Princes Hwy & Ikea (HV) DW (Site Folder: Approved AM - Network)]

Network: 5 [Approved AM (Network Folder: Approved)]

Intersection: Princes Hwy & Ikea (HV) DW
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea (HV) DW														
1	L2	1	0.0	1	0.0	0.001	2.2	LOS A	0.0	0.0	0.36	0.30	0.36	24.2
Approach		1	0.0	1	0.0	0.001	2.2	LOS A	0.0	0.0	0.36	0.30	0.36	24.2
East: Princes Highway (NE)														
4	L2	1	0.0	1	0.0	0.172	2.1	LOS A	0.0	0.0	0.00	0.00	0.00	56.8
5	T1	939	10.4	939	10.4	0.172	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach		940	10.4	940	10.4	0.172	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
West: Princes Highway (SW)														
11	T1	2987	4.9	2987	4.9	0.527	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach		2987	4.9	2987	4.9	0.527	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.5
All Vehicles		3928	6.2	3928	6.2	0.527	0.0	NA	0.0	0.0	0.00	0.00	0.00	58.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 104 [104 AM APPROVED Princes Hwy & Foreman St (Site Folder: Approved AM - Network)]

Network: 5 [Approved AM (Network Folder: Approved)]

Intersection: Princes Hwy & Foreman St
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	939	10.4	939	10.4	0.171	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		939	10.4	939	10.4	0.171	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Foreman Street (NW)														
7	L2	31	3.4	31	3.4	0.072	11.8	LOS A	0.2	1.6	0.73	0.87	0.73	38.0
Approach		31	3.4	31	3.4	0.072	11.8	LOS A	0.2	1.6	0.73	0.87	0.73	38.0
West: Princes Highway (SW)														
11	T1	2987	4.9	2987	4.9	0.527	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach		2987	4.9	2987	4.9	0.527	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.5
All Vehicles		3957	6.2	3957	6.2	0.527	0.1	NA	0.2	1.6	0.01	0.01	0.01	57.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 105 [105 AM APPROVED Princes Hwy & Ikea Access Road (Site Folder: Approved AM - Network)]

Network: 5 [Approved AM (Network Folder: Approved)]

Intersection: Princes Hwy & Ikea Access Road
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea Access Road (SE)														
1	L2	9	0.0	9	0.0	0.029	45.9	LOS D	0.4	3.1	0.83	0.66	0.83	6.7
3	R2	13	41.7	13	41.7	* 0.076	65.5	LOS E	0.4	3.5	0.97	0.66	0.97	12.2
Approach		22	23.8	22	23.8	0.076	57.1	LOS E	0.4	3.5	0.91	0.66	0.91	10.6
East: Princes Highway (NE)														
4	L2	22	28.6	22	28.6	0.017	8.0	LOS A	0.2	2.0	0.19	0.56	0.19	39.3
5	T1	928	11.6	928	11.6	0.238	6.1	LOS A	6.0	46.5	0.37	0.32	0.37	41.9
Approach		951	12.0	951	12.0	0.238	6.1	LOS A	6.0	46.5	0.36	0.33	0.36	41.8
West: Princes Highway (SW)														
11	T1	2959	5.0	2959	5.0	* 0.617	2.7	LOS A	17.2	125.9	0.32	0.30	0.32	53.9
12	R2	43	0.0	43	0.0	0.110	8.3	LOS A	0.5	3.7	0.26	0.62	0.26	34.9
Approach		3002	4.9	3002	4.9	0.617	2.7	LOS A	17.2	125.9	0.32	0.31	0.32	53.6
All Vehicles		3975	6.7	3975	6.7	0.617	3.9	LOS A	17.2	125.9	0.34	0.31	0.34	50.6

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

▽ Site: 106v [106 AM APPROVED Princes Hwy & Bunnings Access (Site Folder: Approved AM - Network)]

Network: 5 [Approved AM (Network Folder: Approved)]

Intersection: Princes Hwy & Bunnings Access
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bunnings Access														
1	L2	15	0.0	15	0.0	0.014	6.7	LOS A	0.0	0.3	0.35	0.58	0.35	49.0
Approach		15	0.0	15	0.0	0.014	6.7	LOS A	0.0	0.3	0.35	0.58	0.35	49.0
East: Princes Highway (NE)														
5	T1	886	11.0	886	11.0	0.162	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		886	11.0	886	11.0	0.162	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
West: Princes Highway (SW)														
11	T1	2987	4.9	2987	4.9	0.527	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
12	R2	6	0.0	6	0.0	0.015	9.8	LOS A	0.0	0.3	0.65	0.77	0.65	24.0
Approach		2994	4.9	2994	4.9	0.527	0.0	NA	0.0	0.3	0.00	0.00	0.00	57.4
All Vehicles		3895	6.2	3895	6.2	0.527	0.1	NA	0.0	0.3	0.00	0.00	0.00	57.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Phase Summaries

Site: 101 [101 PM APPROVED Princes Hwy, Smith St & Union St (Site Folder: Approved PM - Network)]

Network: 6 [Approved PM (Network Folder: Approved)]

Intersection: Princes Hwy, Smith St & Union St
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

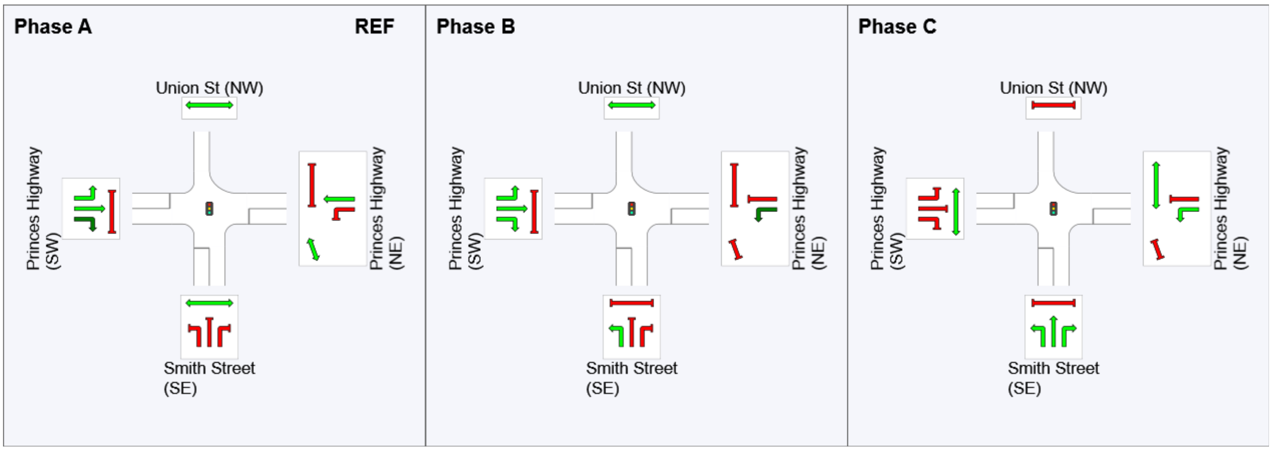
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	75	98
Green Time (sec)	69	17	16
Phase Time (sec)	75	23	22
Phase Split	63%	19%	18%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

Site: 105 [105 PM APPROVED Princes Hwy & Ikea Access Road (Site Folder: Approved PM - Network)]

Network: 6 [Approved PM (Network Folder: Approved)]

Intersection: Princes Hwy & Ikea Access Road
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

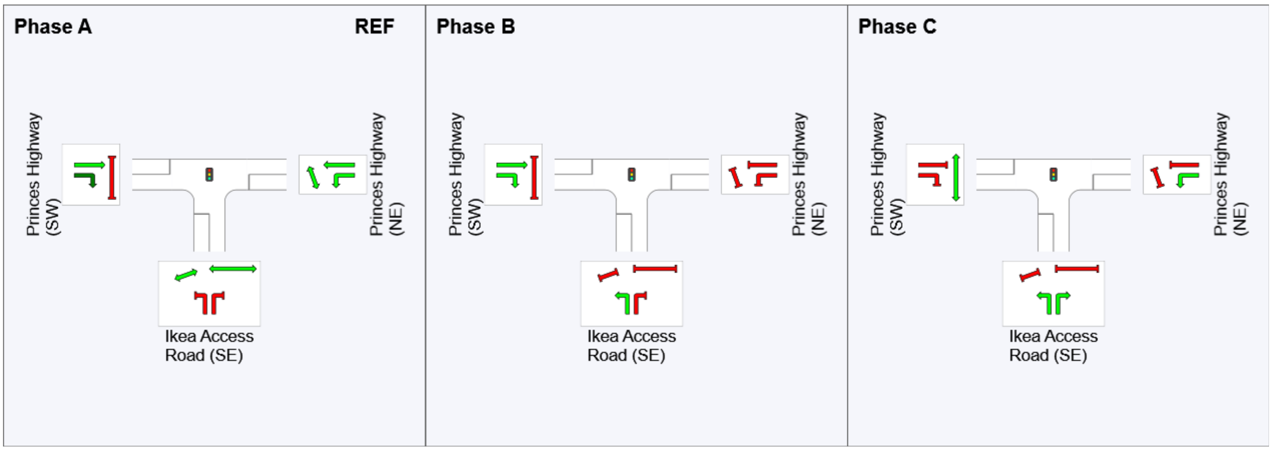
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	94	70	82
Green Time (sec)	90	6	6
Phase Time (sec)	96	12	12
Phase Split	80%	10%	10%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Movement Summaries

Site: 101 [101 PM APPROVED Princes Hwy, Smith St & Union St (Site Folder: Approved PM - Network)]

Network: 6 [Approved PM (Network Folder: Approved)]

Intersection: Princes Hwy, Smith St & Union St
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street (SE)														
1	L2	72	1.5	72	1.5	0.117	34.1	LOS C	2.9	20.4	0.73	0.72	0.73	21.9
2	T1	56	0.0	56	0.0	* 0.349	51.1	LOS D	5.1	35.7	0.95	0.75	0.95	22.9
3	R2	131	0.0	131	0.0	0.349	55.7	LOS D	5.1	35.7	0.95	0.77	0.95	13.8
Approach		258	0.4	258	0.4	0.349	48.7	LOS D	5.1	35.7	0.89	0.75	0.89	18.2
East: Princes Highway (NE)														
4	L2	84	5.0	84	5.0	0.180	36.3	LOS C	3.6	26.1	0.78	0.73	0.78	21.5
5	T1	2737	2.7	2737	2.7	* 0.840	22.8	LOS B	17.1	122.4	0.87	0.82	0.89	20.1
Approach		2821	2.8	2821	2.8	0.840	23.2	LOS B	17.1	122.4	0.86	0.81	0.88	20.2
West: Princes Highway (SW)														
10	L2	32	6.7	32	6.7	0.504	10.0	LOS A	9.7	70.0	0.34	0.33	0.34	44.2
11	T1	1260	3.3	1260	3.3	0.504	9.0	LOS A	13.7	98.0	0.43	0.39	0.43	25.7
12	R2	66	0.0	66	0.0	* 0.504	37.3	LOS C	13.7	98.0	0.88	0.78	0.88	23.3
Approach		1358	3.3	1358	3.3	0.504	10.4	LOS A	13.7	98.0	0.45	0.41	0.45	26.1
All Vehicles		4437	2.8	4437	2.8	0.840	20.8	LOS B	17.1	122.4	0.74	0.69	0.75	21.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 102 [102 PM APPROVED Princes Hwy & Brooklyn St (Site Folder: Approved PM - Network)]

Network: 6 [Approved PM (Network Folder: Approved)]

Intersection: Princes Hwy & Brooklyn St
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	2874	3.4	2874	3.4	0.502	0.0	LOS A	7.9	57.1	0.00	0.00	0.00	59.6
Approach		2874	3.4	2874	3.4	0.502	0.0	NA	7.9	57.1	0.00	0.00	0.00	59.6
North: Brooklyn Street (NW)														
7	L2	7	0.0	7	0.0	0.007	5.8	LOS A	0.0	0.2	0.36	0.53	0.36	43.0
Approach		7	0.0	7	0.0	0.007	5.8	LOS A	0.0	0.2	0.36	0.53	0.36	43.0
West: Princes Highway (SW)														
10	L2	13	8.3	13	8.3	0.179	4.9	LOS A	0.0	0.0	0.00	0.02	0.00	56.2
11	T1	1355	3.5	1355	3.5	0.179	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.4
Approach		1367	3.5	1367	3.5	0.179	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.2
All Vehicles		4248	3.4	4248	3.4	0.502	0.0	NA	7.9	57.1	0.00	0.00	0.00	59.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 103 [103 PM APPROVED Princes Hwy & Ikea (HV) DW (Site Folder: Approved PM - Network)]

Network: 6 [Approved PM (Network Folder: Approved)]

Intersection: Princes Hwy & Ikea (HV) DW
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea (HV) DW														
1	L2	1	0.0	1	0.0	0.004	6.6	LOS A	0.0	0.1	0.68	0.61	0.68	22.9
Approach		1	0.0	1	0.0	0.004	6.6	LOS A	0.0	0.1	0.68	0.61	0.68	22.9
East: Princes Highway (NE)														
4	L2	1	0.0	1	0.0	0.496	2.1	LOS A	1.1	8.2	0.00	0.00	0.00	56.6
5	T1	2837	3.4	2837	3.4	0.496	0.0	LOS A	1.1	8.2	0.00	0.00	0.00	59.5
Approach		2838	3.4	2838	3.4	0.496	0.0	NA	1.1	8.2	0.00	0.00	0.00	59.5
West: Princes Highway (SW)														
11	T1	1342	3.5	1342	3.5	0.235	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1342	3.5	1342	3.5	0.235	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		4181	3.4	4181	3.4	0.496	0.0	NA	1.1	8.2	0.00	0.00	0.00	58.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 104 [104 PM APPROVED Princes Hwy & Foreman St (Site Folder: Approved PM - Network)]

Network: 6 [Approved PM (Network Folder: Approved)]

Intersection: Princes Hwy & Foreman St
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	2829	3.5	2829	3.5	0.495	0.1	LOS A	18.3	132.1	0.00	0.00	0.00	59.6
Approach		2829	3.5	2829	3.5	0.495	0.1	NA	18.3	132.1	0.00	0.00	0.00	59.6
North: Foreman Street (NW)														
7	L2	21	0.0	21	0.0	0.023	6.4	LOS A	0.1	0.6	0.43	0.61	0.43	42.6
Approach		21	0.0	21	0.0	0.023	6.4	LOS A	0.1	0.6	0.43	0.61	0.43	42.6
West: Princes Highway (SW)														
11	T1	1342	3.5	1342	3.5	0.235	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1342	3.5	1342	3.5	0.235	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		4193	3.5	4193	3.5	0.495	0.1	NA	18.3	132.1	0.00	0.00	0.00	59.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 105 [105 PM APPROVED Princes Hwy & Ikea Access Road (Site Folder: Approved PM - Network)]

Network: 6 [Approved PM (Network Folder: Approved)]

Intersection: Princes Hwy & Ikea Access Road
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea Access Road (SE)														
1	L2	123	1.7	123	1.7	0.505	55.7	LOS D	6.8	48.3	0.96	0.79	0.96	5.6
3	R2	117	3.6	117	3.6	* 0.553	68.0	LOS E	3.6	25.7	1.00	0.76	1.03	12.6
Approach		240	2.6	240	2.6	0.553	61.7	LOS E	6.8	48.3	0.98	0.78	0.99	9.6
East: Princes Highway (NE)														
4	L2	125	1.7	125	1.7	0.079	7.0	LOS A	1.1	7.7	0.16	0.58	0.16	40.9
5	T1	2691	3.0	2691	3.0	* 0.772	8.4	LOS A	29.8	213.7	0.60	0.56	0.60	37.5
Approach		2816	3.0	2816	3.0	0.772	8.4	LOS A	29.8	213.7	0.58	0.56	0.58	37.7
West: Princes Highway (SW)														
11	T1	1354	3.0	1354	3.0	0.275	1.6	LOS A	4.8	34.2	0.20	0.18	0.20	56.0
12	R2	87	0.0	87	0.0	* 0.460	37.0	LOS C	5.0	35.2	0.97	0.86	0.97	16.6
Approach		1441	2.8	1441	2.8	0.460	3.8	LOS A	5.0	35.2	0.25	0.22	0.25	51.2
All Vehicles		4497	2.9	4497	2.9	0.772	9.8	LOS A	29.8	213.7	0.49	0.46	0.50	37.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 106v [106 PM APPROVED Princes Hwy & Bunnings Access (Site Folder: Approved PM - Network)]

Network: 6 [Approved PM (Network Folder: Approved)]

Intersection: Princes Hwy & Bunnings Access
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bunnings Access														
1	L2	44	0.0	44	0.0	0.184	11.8	LOS A	0.6	4.5	0.70	0.87	0.71	43.5
Approach		44	0.0	44	0.0	0.184	11.8	LOS A	0.6	4.5	0.70	0.87	0.71	43.5
East: Princes Highway (NE)														
5	T1	2837	3.4	2837	3.4	0.496	0.0	LOS A	0.9	6.5	0.00	0.00	0.00	59.6
Approach		2837	3.4	2837	3.4	0.496	0.0	NA	0.9	6.5	0.00	0.00	0.00	59.6
West: Princes Highway (SW)														
11	T1	1342	3.5	1342	3.5	0.235	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
12	R2	13	0.0	13	0.0	0.242	72.9	LOS F	0.6	4.3	0.97	1.00	1.02	13.6
Approach		1355	3.5	1355	3.5	0.242	0.7	NA	0.6	4.3	0.01	0.01	0.01	44.3
All Vehicles		4236	3.4	4236	3.4	0.496	0.3	NA	0.9	6.5	0.01	0.01	0.01	47.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study **Template: Phase Summaries**

Site: 101 [101 SAT APPROVED Princes Hwy, Smith St & Union St (Site Folder: Approved SAT - Network)] **Network: 9 [Approved SAT (Network Folder: Approved)]**

Intersection: Princes Hwy, Smith St & Union St
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

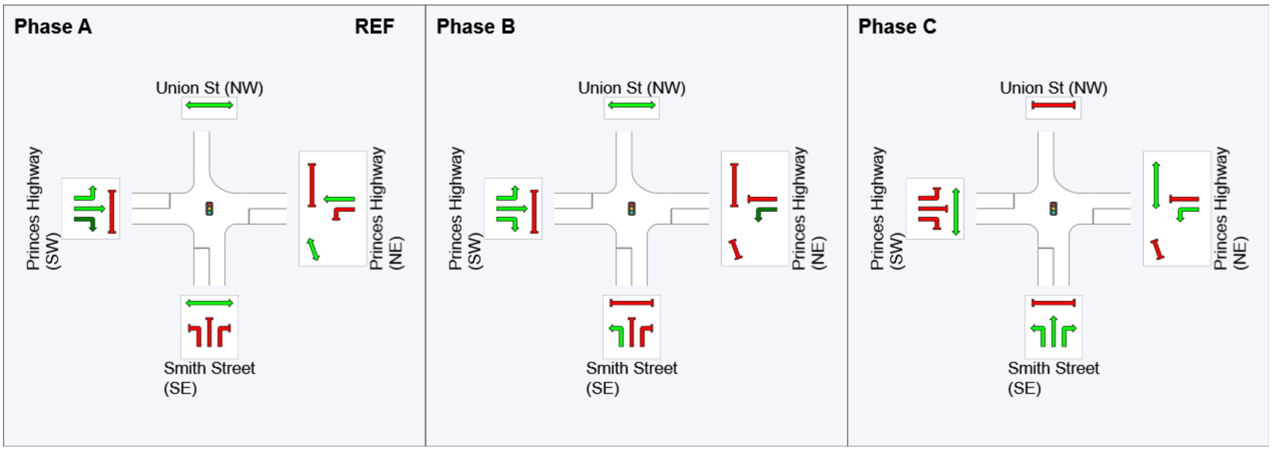
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	53	102
Green Time (sec)	47	43	12
Phase Time (sec)	53	49	18
Phase Split	44%	41%	15%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

Site: 105 [105 SAT APPROVED Princes Hwy & Ikea Access Road (Site Folder: Approved SAT - Network)]

Network: 9 [Approved SAT (Network Folder: Approved)]

Intersection: Princes Hwy & Ikea Access Road
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

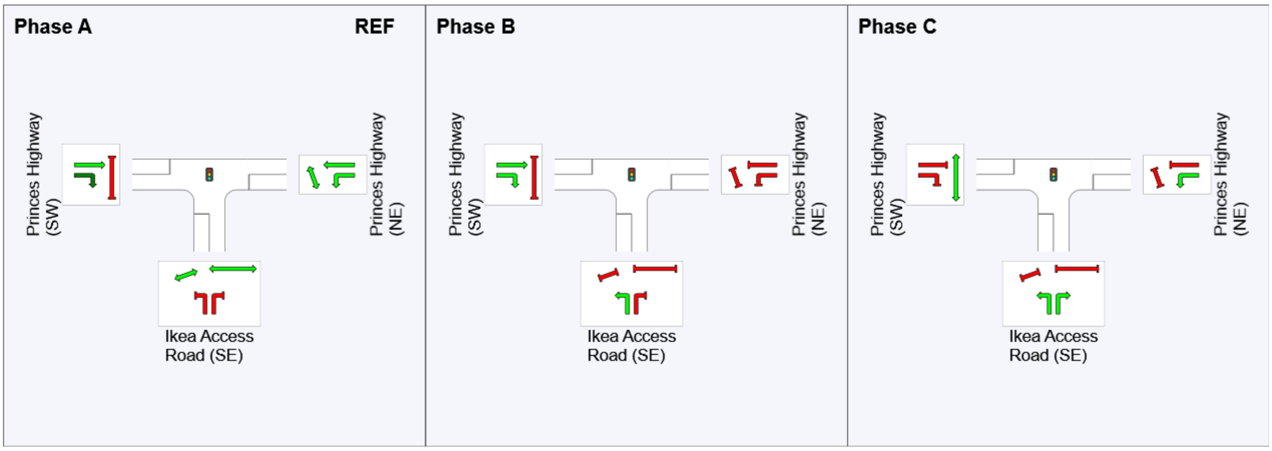
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

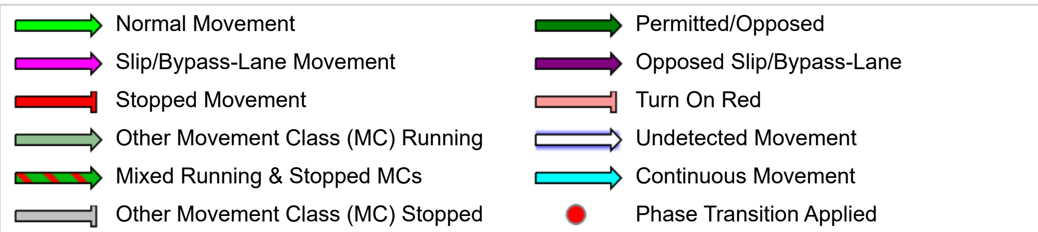
Phase	A	B	C
Phase Change Time (sec)	94	45	70
Green Time (sec)	65	19	18
Phase Time (sec)	71	25	24
Phase Split	59%	21%	20%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Movement Summaries

Site: 101 [101 SAT APPROVED Princes Hwy, Smith St & Union St (Site Folder: Approved SAT - Network)]

Network: 9 [Approved SAT (Network Folder: Approved)]

Intersection: Princes Hwy, Smith St & Union St
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street (SE)														
1	L2	131	0.8	131	0.8	0.137	20.5	LOS B	3.9	27.4	0.55	0.69	0.55	27.9
2	T1	61	0.0	61	0.0	* 0.863	66.0	LOS E	9.3	65.4	1.00	1.00	1.36	19.8
3	R2	249	0.4	249	0.4	0.863	70.7	LOS F	10.7	75.4	1.00	0.98	1.34	11.5
Approach		441	0.5	441	0.5	0.863	55.2	LOS D	10.7	75.4	0.87	0.90	1.11	16.0
East: Princes Highway (NE)														
4	L2	239	0.4	239	0.4	0.381	27.0	LOS B	9.0	63.6	0.73	0.77	0.73	25.4
5	T1	1716	3.3	1716	3.3	* 0.825	37.5	LOS C	17.0	122.4	0.93	0.89	1.00	14.1
Approach		1955	2.9	1955	2.9	0.825	36.2	LOS C	17.0	122.4	0.91	0.87	0.97	15.5
West: Princes Highway (SW)														
10	L2	21	0.0	21	0.0	0.681	9.1	LOS A	11.5	81.6	0.32	0.30	0.32	45.6
11	T1	1715	1.8	1715	1.8	0.681	8.7	LOS A	22.6	159.6	0.44	0.44	0.44	25.8
12	R2	223	0.0	223	0.0	* 0.681	32.6	LOS C	22.6	159.6	0.84	0.95	0.84	25.0
Approach		1959	1.6	1959	1.6	0.681	11.5	LOS A	22.6	159.6	0.48	0.50	0.48	25.9
All Vehicles		4355	2.1	4355	2.1	0.863	27.0	LOS B	22.6	159.6	0.71	0.71	0.76	18.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 102 [102 SAT APPROVED Princes Hwy & Brooklyn St (Site Folder: Approved SAT - Network)]

Network: 9 [Approved SAT (Network Folder: Approved)]

Intersection: Princes Hwy & Brooklyn St
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	1955	2.9	1955	2.9	0.340	0.0	LOS A	8.0	57.1	0.00	0.00	0.00	59.8
Approach		1955	2.9	1955	2.9	0.340	0.0	NA	8.0	57.1	0.00	0.00	0.00	59.8
North: Brooklyn Street (NW)														
7	L2	8	0.0	8	0.0	0.009	6.5	LOS A	0.0	0.2	0.45	0.58	0.45	42.5
Approach		8	0.0	8	0.0	0.009	6.5	LOS A	0.0	0.2	0.45	0.58	0.45	42.5
West: Princes Highway (SW)														
10	L2	4	0.0	4	0.0	0.255	5.0	LOS A	0.0	0.0	0.00	0.01	0.00	57.1
11	T1	1960	1.7	1960	1.7	0.255	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach		1964	1.7	1964	1.7	0.255	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
All Vehicles		3927	2.3	3927	2.3	0.340	0.0	NA	8.0	57.1	0.00	0.00	0.00	59.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 103 [103 SAT APPROVED Princes Hwy & Ikea (HV) DW (Site Folder: Approved SAT - Network)]

Network: 9 [Approved SAT (Network Folder: Approved)]

Intersection: Princes Hwy & Ikea (HV) DW
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea (HV) DW														
1	L2	1	0.0	1	0.0	0.001	3.7	LOS A	0.0	0.0	0.50	0.41	0.50	23.8
Approach		1	0.0	1	0.0	0.001	3.7	LOS A	0.0	0.0	0.50	0.41	0.50	23.8
East: Princes Highway (NE)														
4	L2	1	0.0	1	0.0	0.321	2.1	LOS A	0.0	0.0	0.00	0.00	0.00	56.7
5	T1	1839	3.1	1839	3.1	0.321	0.0	LOS A	1.1	8.2	0.00	0.00	0.00	59.7
Approach		1840	3.1	1840	3.1	0.321	0.0	NA	1.1	8.2	0.00	0.00	0.00	59.7
West: Princes Highway (SW)														
11	T1	1921	1.7	1921	1.7	0.332	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1921	1.7	1921	1.7	0.332	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles		3762	2.4	3762	2.4	0.332	0.0	NA	1.1	8.2	0.00	0.00	0.00	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 104 [104 SAT APPROVED Princes Hwy & Foreman St (Site Folder: Approved SAT - Network)]

Network: 9 [Approved SAT (Network Folder: Approved)]

Intersection: Princes Hwy & Foreman St
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	1836	2.5	1836	2.5	0.319	0.0	LOS A	7.7	54.9	0.00	0.00	0.00	59.8
Approach		1836	2.5	1836	2.5	0.319	0.0	NA	7.7	54.9	0.00	0.00	0.00	59.8
North: Foreman Street (NW)														
7	L2	19	5.6	19	5.6	0.028	7.9	LOS A	0.1	0.7	0.53	0.70	0.53	41.2
Approach		19	5.6	19	5.6	0.028	7.9	LOS A	0.1	0.7	0.53	0.70	0.53	41.2
West: Princes Highway (SW)														
11	T1	1958	2.0	1958	2.0	0.339	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1958	2.0	1958	2.0	0.339	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles		3813	2.3	3813	2.3	0.339	0.1	NA	7.7	54.9	0.00	0.00	0.00	59.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 105 [105 SAT APPROVED Princes Hwy & Ikea Access Road (Site Folder: Approved SAT - Network)]

Network: 9 [Approved SAT (Network Folder: Approved)]

Intersection: Princes Hwy & Ikea Access Road
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea Access Road (SE)														
1	L2	203	0.5	203	0.5	0.412	34.2	LOS C	8.6	60.8	0.77	0.76	0.77	8.6
3	R2	311	1.4	311	1.4	* 0.570	55.6	LOS D	9.2	65.1	0.97	0.80	0.97	14.6
Approach		514	1.0	514	1.0	0.570	47.2	LOS D	9.2	65.1	0.89	0.79	0.89	13.0
East: Princes Highway (NE)														
4	L2	414	1.0	414	1.0	0.296	10.7	LOS A	7.6	53.6	0.35	0.65	0.35	36.2
5	T1	1633	2.8	1633	2.8	* 0.581	18.3	LOS B	23.4	167.4	0.69	0.62	0.69	26.1
Approach		2046	2.4	2046	2.4	0.581	16.7	LOS B	23.4	167.4	0.62	0.62	0.62	28.1
West: Princes Highway (SW)														
11	T1	1649	2.4	1649	2.4	0.378	5.2	LOS A	10.6	76.0	0.37	0.33	0.37	49.2
12	R2	308	0.0	308	0.0	* 0.686	42.9	LOS D	15.7	109.7	0.97	1.02	0.97	15.0
Approach		1958	2.0	1958	2.0	0.686	11.1	LOS A	15.7	109.7	0.46	0.44	0.46	39.5
All Vehicles		4518	2.1	4518	2.1	0.686	17.8	LOS B	23.4	167.4	0.58	0.56	0.58	29.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 106v [106 SAT APPROVED Princes Hwy & Bunnings Access (Site Folder: Approved SAT - Network)]

Network: 9 [Approved SAT (Network Folder: Approved)]

Intersection: Princes Hwy & Bunnings Access
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bunnings Access														
1	L2	105	0.0	105	0.0	0.169	7.9	LOS A	0.4	3.1	0.48	0.73	0.48	47.8
Approach		105	0.0	105	0.0	0.169	7.9	LOS A	0.4	3.1	0.48	0.73	0.48	47.8
East: Princes Highway (NE)														
5	T1	1839	3.1	1839	3.1	0.353	0.0	LOS A	0.9	6.5	0.00	0.00	0.00	59.8
Approach		1839	3.1	1839	3.1	0.353	0.0	NA	0.9	6.5	0.00	0.00	0.00	59.8
West: Princes Highway (SW)														
11	T1	1921	1.7	1921	1.7	0.332	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
12	R2	47	0.0	47	0.0	0.327	31.5	LOS C	1.0	7.0	0.92	1.00	1.06	19.0
Approach		1968	1.7	1968	1.7	0.332	0.8	NA	1.0	7.0	0.02	0.02	0.03	40.0
All Vehicles		3912	2.3	3912	2.3	0.353	0.6	NA	1.0	7.0	0.02	0.03	0.03	44.0

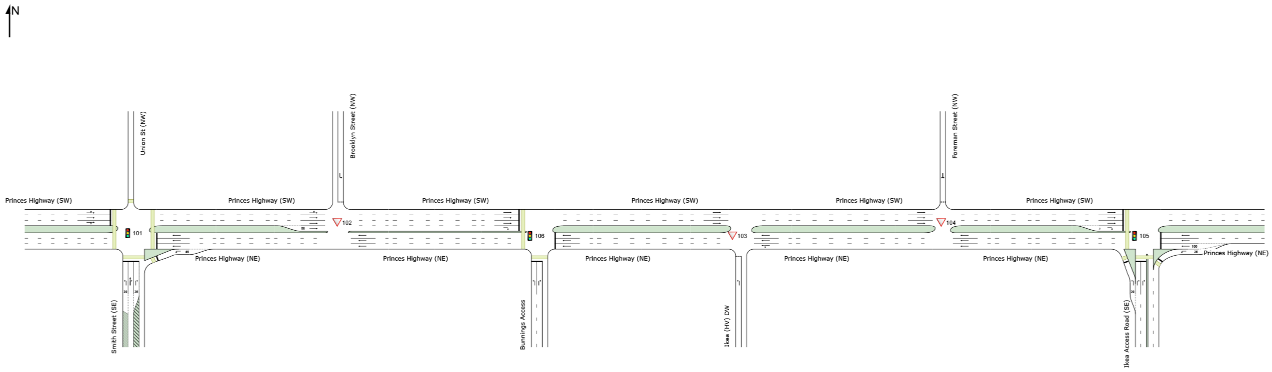
Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and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

NETWORK LAYOUT

Network: N101 [DEV AM Network (Network Folder: Proposed)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	101 AM DEV Princes Hwy, Smith St & Union St
102	NA	102 AM DEV Princes Hwy & Brooklyn St
103	NA	103 AM DEV Princes Hwy & Ikea (HV) DW
104	NA	104 AM DEV Princes Hwy & Foreman St
105	NA	105 AM DEV Princes Hwy & Ikea Access Road
106	NA	106 AM DEV Princes Hwy & Bunnings Access

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Phase Summaries

Site: 101 [101 AM DEV Princes Hwy, Smith St & Union St (Site Folder: Proposed AM - Network)]

Network: 3 [DEV AM Network (Network Folder: Proposed)]

Intersection: Princes Hwy, Smith St & Union St
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network Optimum Cycle Time - Minimum Delay)

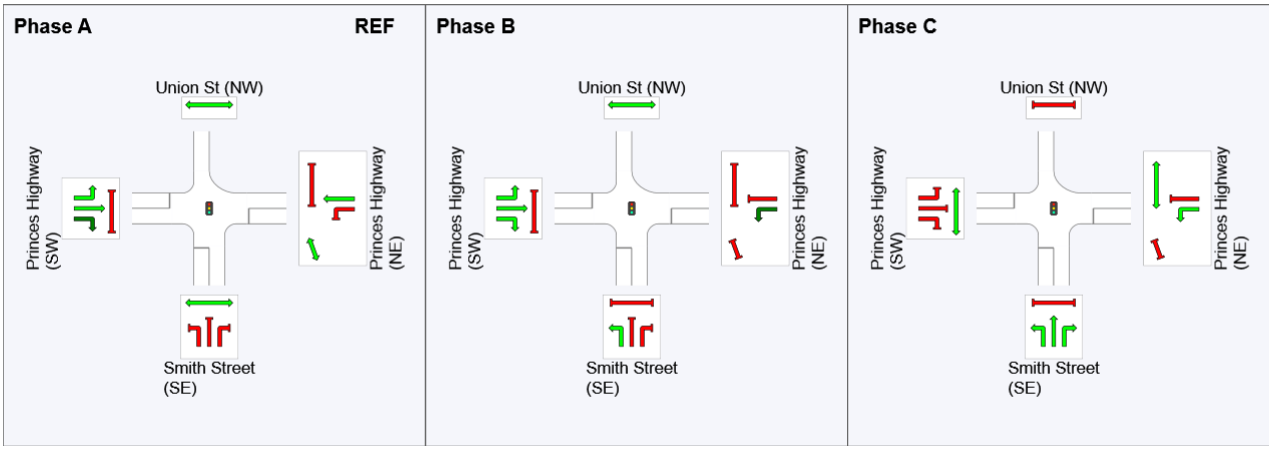
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

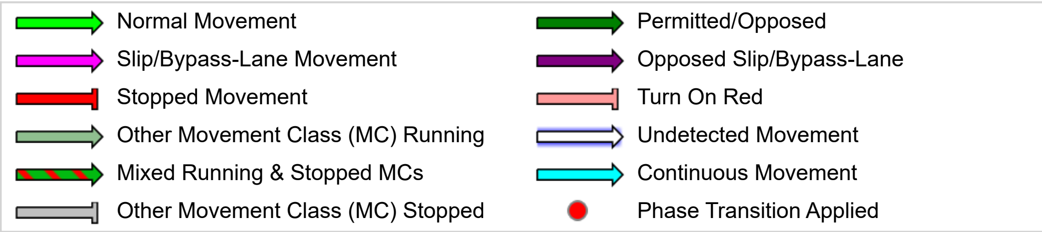
Phase	A	B	C
Phase Change Time (sec)	0	35	116
Green Time (sec)	29	75	18
Phase Time (sec)	35	81	24
Phase Split	25%	58%	17%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase


Normal Movement
Permitted/Opposed
Slip/Bypass-Lane Movement
Opposed Slip/Bypass-Lane
Stopped Movement
Turn On Red
Other Movement Class (MC) Running
Undetected Movement
Mixed Running & Stopped MCs
Continuous Movement
Other Movement Class (MC) Stopped
Phase Transition Applied

Site: 105 [105 AM DEV Princes Hwy & Ikea Access Road (Site Folder: Proposed AM - Network)]

Network: 3 [DEV AM Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Ikea Access Road
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network Optimum Cycle Time - Minimum Delay)

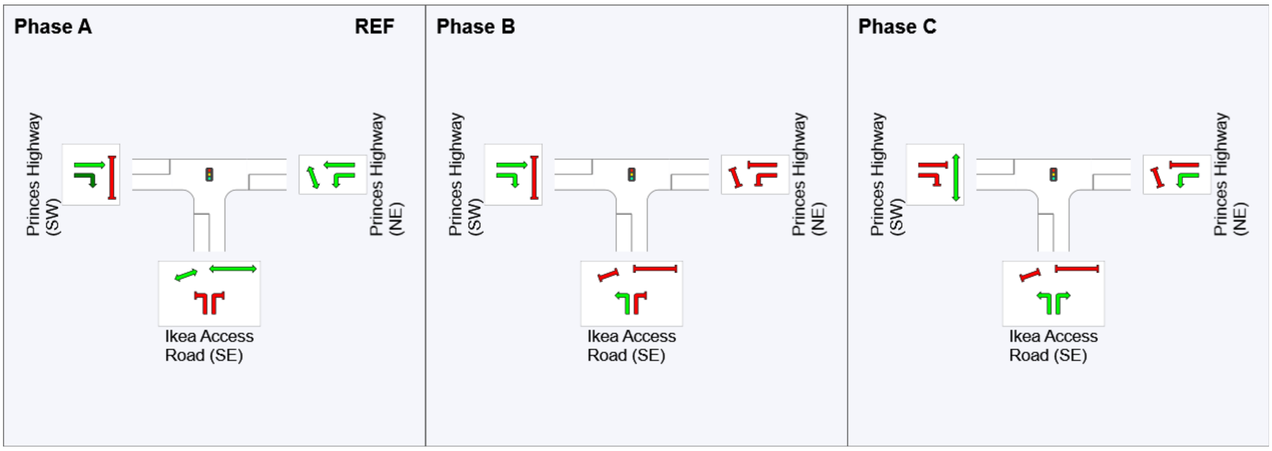
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

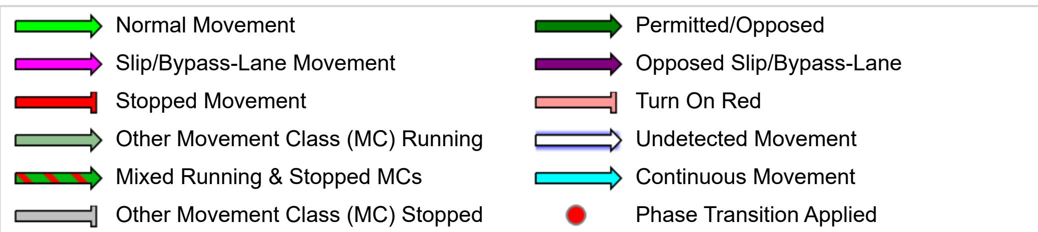
Phase	A	B	C
Phase Change Time (sec)	26	135	14
Green Time (sec)	103	13	6
Phase Time (sec)	109	19	12
Phase Split	78%	14%	9%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Site: 106 [106 AM DEV Princes Hwy & Bunnings Access (Site Folder: Proposed AM - Network)]

Network: 3 [DEV AM Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Bunnings Access
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 140 seconds (Network Optimum Cycle Time - Minimum Delay)

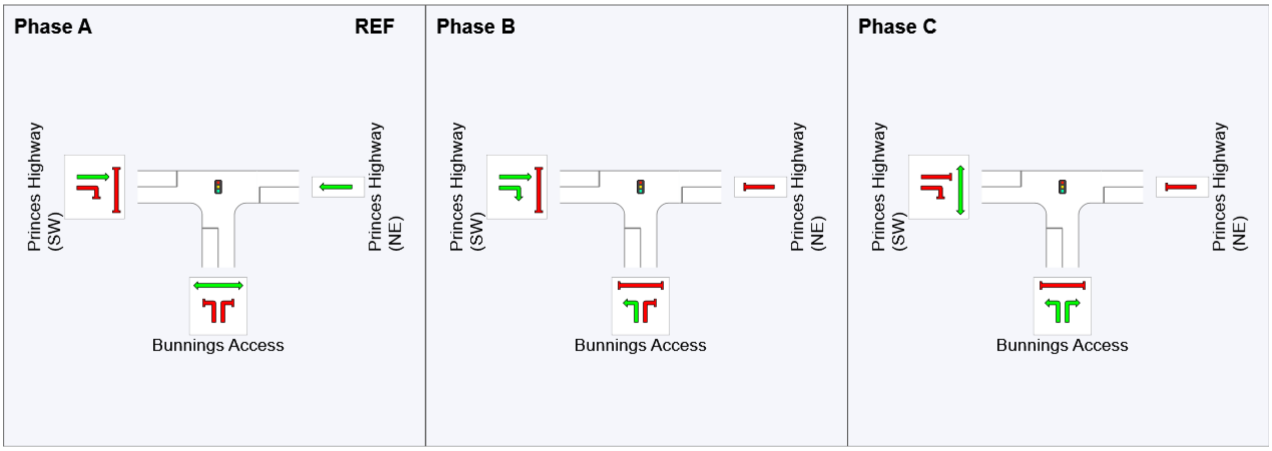
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Proposed Sequence
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	11	109	124
Green Time (sec)	92	9	21
Phase Time (sec)	98	15	27
Phase Split	70%	11%	19%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Movement Summaries

Site: 101 [101 AM DEV Princes Hwy, Smith St & Union St (Site Folder: Proposed AM - Network)]

Network: 3 [DEV AM Network (Network Folder: Proposed)]

Intersection: Princes Hwy, Smith St & Union St
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 140 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street (SE)														
1	L2	15	14.3	15	14.3	0.012	10.7	LOS A	0.3	2.2	0.30	0.59	0.30	34.5
2	T1	8	0.0	8	0.0	* 0.105	57.6	LOS E	1.5	11.2	0.91	0.69	0.91	21.3
3	R2	39	13.5	39	13.5	0.105	62.9	LOS E	1.5	11.2	0.91	0.70	0.91	12.6
Approach		62	11.9	62	11.9	0.105	49.8	LOS D	1.5	11.2	0.77	0.67	0.77	17.0
East: Princes Highway (NE)														
4	L2	51	0.0	51	0.0	0.048	12.9	LOS A	1.3	9.4	0.47	0.66	0.47	34.8
5	T1	813	0.0	813	0.0	* 0.662	44.9	LOS D	16.1	112.7	0.89	0.76	0.89	12.2
Approach		863	0.0	863	0.0	0.662	43.0	LOS D	16.1	112.7	0.87	0.75	0.87	13.1
West: Princes Highway (SW)														
10	L2	33	3.2	33	3.2	0.680	12.4	LOS A	30.5	221.8	0.49	0.47	0.49	41.7
11	T1	2966	4.7	2966	4.7	0.680	7.2	LOS A	30.5	222.2	0.50	0.47	0.50	29.2
12	R2	25	0.0	25	0.0	* 0.680	13.5	LOS A	29.0	210.9	0.52	0.47	0.52	39.9
Approach		3024	4.7	3024	4.7	0.680	7.3	LOS A	30.5	222.2	0.50	0.47	0.50	29.7
All Vehicles		3949	3.8	3949	3.8	0.680	15.8	LOS B	30.5	222.2	0.59	0.53	0.59	21.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 102 [102 AM DEV Princes Hwy & Brooklyn St (Site Folder: Proposed AM - Network)]

Network: 3 [DEV AM Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Brooklyn St
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	974	10.1	974	10.1	0.310	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach		974	10.1	974	10.1	0.310	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
North: Brooklyn Street (NW)														
7	L2	24	4.3	24	4.3	0.052	8.4	LOS A	0.1	1.0	0.56	0.73	0.56	40.8
Approach		24	4.3	24	4.3	0.052	8.4	LOS A	0.1	1.0	0.56	0.73	0.56	40.8
West: Princes Highway (SW)														
10	L2	18	11.8	18	11.8	0.569	5.0	LOS A	0.0	0.0	0.00	0.01	0.00	55.6
11	T1	2991	4.9	2991	4.9	0.569	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	58.9
Approach		3008	4.9	3008	4.9	0.569	0.1	NA	0.0	0.0	0.00	0.00	0.00	58.8
All Vehicles		4006	6.1	4006	6.1	0.569	0.1	NA	0.1	1.0	0.00	0.01	0.00	57.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 103 [103 AM DEV Princes Hwy & Ikea (HV) DW (Site Folder: Proposed AM - Network)]

Network: 3 [DEV AM Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Ikea (HV) DW
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea (HV) DW														
1	L2	1	0.0	1	0.0	0.002	3.0	LOS A	0.0	0.1	0.45	0.38	0.45	24.0
Approach		1	0.0	1	0.0	0.002	3.0	LOS A	0.0	0.1	0.45	0.38	0.45	24.0
East: Princes Highway (NE)														
4	L2	1	0.0	1	0.0	0.258	2.1	LOS A	1.1	8.2	0.00	0.00	0.00	56.8
5	T1	942	10.4	942	10.4	0.258	0.0	LOS A	1.1	8.2	0.00	0.00	0.00	59.6
Approach		943	10.4	943	10.4	0.258	0.0	NA	1.1	8.2	0.00	0.00	0.00	59.5
West: Princes Highway (SW)														
11	T1	2991	4.9	2991	4.9	0.527	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach		2991	4.9	2991	4.9	0.527	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.5
All Vehicles		3935	6.2	3935	6.2	0.527	0.0	NA	1.1	8.2	0.00	0.00	0.00	58.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 104 [104 AM DEV Princes Hwy & Foreman St (Site Folder: Proposed AM - Network)]

Network: 3 [DEV AM Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Foreman St
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	942	10.4	942	10.4	0.172	0.0	LOS A	6.2	47.1	0.00	0.00	0.00	59.9
Approach		942	10.4	942	10.4	0.172	0.0	NA	6.2	47.1	0.00	0.00	0.00	59.9
North: Foreman Street (NW)														
7	L2	31	3.4	31	3.4	0.073	11.8	LOS A	0.2	1.6	0.73	0.87	0.73	38.0
Approach		31	3.4	31	3.4	0.073	11.8	LOS A	0.2	1.6	0.73	0.87	0.73	38.0
West: Princes Highway (SW)														
11	T1	2991	4.9	2991	4.9	0.527	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach		2991	4.9	2991	4.9	0.527	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.5
All Vehicles		3963	6.2	3963	6.2	0.527	0.1	NA	6.2	47.1	0.01	0.01	0.01	57.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 105 [105 AM DEV Princes Hwy & Ikea Access Road (Site Folder: Proposed AM - Network)]

Network: 3 [DEV AM Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Ikea Access Road
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea Access Road (SE)														
1	L2	9	0.0	9	0.0	0.032	54.5	LOS D	0.5	3.7	0.85	0.66	0.85	5.8
3	R2	13	41.7	13	41.7	* 0.088	77.0	LOS F	0.4	4.1	0.98	0.66	0.98	10.9
Approach		22	23.8	22	23.8	0.088	67.3	LOS E	0.5	4.1	0.92	0.66	0.92	9.3
East: Princes Highway (NE)														
4	L2	22	28.6	22	28.6	0.017	8.1	LOS A	0.3	2.2	0.18	0.56	0.18	39.2
5	T1	932	11.5	932	11.5	0.230	5.8	LOS A	6.4	49.2	0.33	0.29	0.33	42.4
Approach		954	11.9	954	11.9	0.230	5.9	LOS A	6.4	49.2	0.33	0.30	0.33	42.3
West: Princes Highway (SW)														
11	T1	2962	5.0	2962	5.0	* 0.604	2.3	LOS A	17.2	125.7	0.28	0.26	0.28	54.7
12	R2	43	0.0	43	0.0	0.128	8.1	LOS A	0.5	3.8	0.23	0.61	0.23	35.2
Approach		3005	4.9	3005	4.9	0.604	2.3	LOS A	17.2	125.7	0.28	0.27	0.28	54.4
All Vehicles		3981	6.7	3981	6.7	0.604	3.6	LOS A	17.2	125.7	0.29	0.28	0.29	51.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 106 [106 AM DEV Princes Hwy & Bunnings Access (Site Folder: Proposed AM - Network)]

Network: 3 [DEV AM Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Bunnings Access
Period: AM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 140 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Proposed Sequence
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bunnings Access														
1	L2	32	0.0	32	0.0	0.064	46.4	LOS D	1.6	11.1	0.78	0.71	0.78	24.0
3	R2	32	0.0	32	0.0	* 0.108	60.1	LOS E	1.9	13.0	0.89	0.72	0.89	20.4
Approach		63	0.0	63	0.0	0.108	53.3	LOS D	1.9	13.0	0.84	0.72	0.84	22.1
East: Princes Highway (NE)														
5	T1	889	11.0	889	11.0	0.245	9.9	LOS A	0.9	6.5	0.43	0.37	0.43	5.7
Approach		889	11.0	889	11.0	0.245	9.9	LOS A	0.9	6.5	0.43	0.37	0.43	5.7
West: Princes Highway (SW)														
11	T1	2959	4.9	2959	4.9	* 0.677	1.5	LOS A	7.7	56.1	0.12	0.11	0.12	39.4
12	R2	32	0.0	32	0.0	0.238	72.0	LOS F	2.1	14.8	0.98	0.72	0.98	13.8
Approach		2991	4.9	2991	4.9	0.677	2.3	LOS A	7.7	56.1	0.13	0.12	0.13	32.7
All Vehicles		3943	6.2	3943	6.2	0.677	4.8	LOS A	7.7	56.1	0.21	0.18	0.21	22.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Phase Summaries

Site: 101 [101 PM DEV Princes Hwy, Smith St & Union St (Site Folder: Proposed PM - Network)]

Network: 4 [DEV PM Network (Network Folder: Proposed)]

Intersection: Princes Hwy, Smith St & Union St
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network Optimum Cycle Time - Minimum Delay)

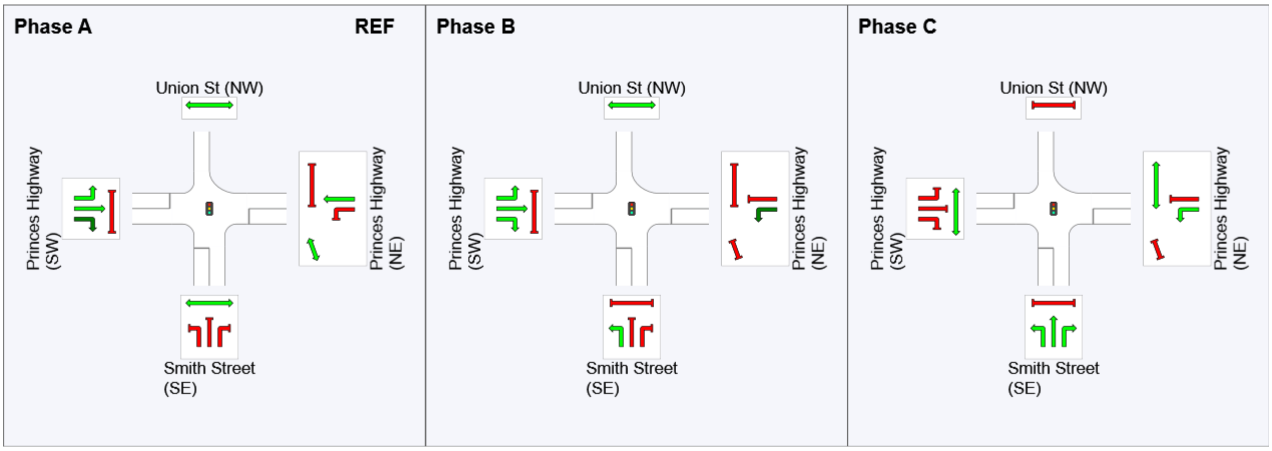
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	93	107
Green Time (sec)	87	8	17
Phase Time (sec)	93	14	23
Phase Split	72%	11%	18%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase


Normal Movement
Permitted/Opposed
Slip/Bypass-Lane Movement
Opposed Slip/Bypass-Lane
Stopped Movement
Turn On Red
Other Movement Class (MC) Running
Undetected Movement
Mixed Running & Stopped MCs
Continuous Movement
Other Movement Class (MC) Stopped
Phase Transition Applied

Site: 105 [105 PM DEV Princes Hwy & Ikea Access Road (Site Folder: Proposed PM - Network)]

Network: 4 [DEV PM Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Ikea Access Road
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network Optimum Cycle Time - Minimum Delay)

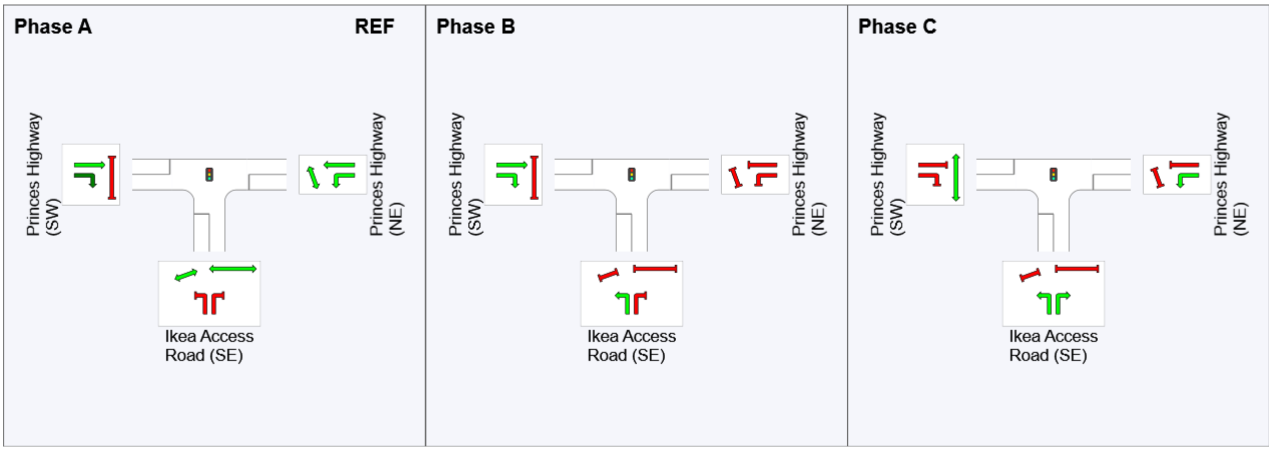
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

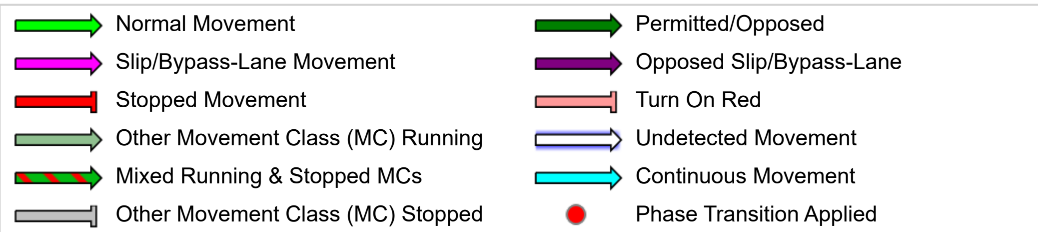
Phase	A	B	C
Phase Change Time (sec)	104	80	92
Green Time (sec)	100	6	6
Phase Time (sec)	106	12	12
Phase Split	82%	9%	9%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



Site: 106 [106 PM DEV Princes Hwy & Bunnings Access (Site Folder: Proposed PM - Network)]

Network: 4 [DEV PM Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Bunnings Access
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network Optimum Cycle Time - Minimum Delay)

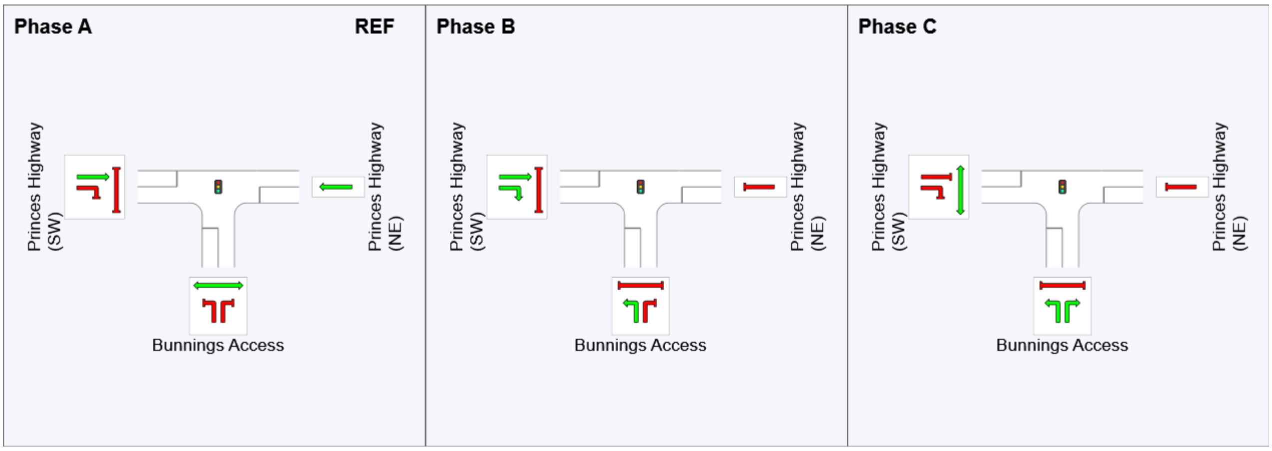
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Proposed Sequence
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	120	81	93
Green Time (sec)	85	6	21
Phase Time (sec)	91	12	27
Phase Split	70%	9%	21%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Movement Summaries

Site: 101 [101 PM DEV Princes Hwy, Smith St & Union St (Site Folder: Proposed PM - Network)]

Network: 4 [DEV PM Network (Network Folder: Proposed)]

Intersection: Princes Hwy, Smith St & Union St
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street (SE)														
1	L2	27	3.8	27	3.8	0.062	44.6	LOS D	1.3	9.5	0.80	0.70	0.80	29.2
2	T1	36	0.0	36	0.0	* 0.148	53.5	LOS D	2.2	15.7	0.92	0.69	0.92	22.8
3	R2	42	0.0	42	0.0	0.148	58.2	LOS E	2.2	15.7	0.91	0.72	0.91	13.3
Approach		105	1.0	105	1.0	0.148	53.1	LOS D	2.2	15.7	0.88	0.70	0.88	21.3
East: Princes Highway (NE)														
4	L2	91	4.7	91	4.7	0.259	58.5	LOS E	5.6	40.5	1.00	0.78	1.00	15.8
5	T1	2791	2.7	2791	2.7	* 0.717	2.0	LOS A	9.5	68.4	0.14	0.13	0.14	56.9
Approach		2881	2.7	2881	2.7	0.717	3.7	LOS A	9.5	68.4	0.16	0.15	0.16	54.1
West: Princes Highway (SW)														
10	L2	32	6.7	32	6.7	0.378	9.8	LOS A	8.3	59.8	0.31	0.30	0.31	50.6
11	T1	1313	3.2	1313	3.2	0.378	4.3	LOS A	8.3	59.8	0.32	0.30	0.32	52.4
12	R2	7	0.0	7	0.0	* 0.378	10.2	LOS A	8.0	57.7	0.35	0.31	0.35	51.2
Approach		1352	3.3	1352	3.3	0.378	4.5	LOS A	8.3	59.8	0.32	0.30	0.32	52.3
All Vehicles		4338	2.9	4338	2.9	0.717	5.2	LOS A	9.5	68.4	0.23	0.21	0.23	51.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 102 [102 PM DEV Princes Hwy & Brooklyn St (Site Folder: Proposed PM - Network)]

Network: 4 [DEV PM Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Brooklyn St
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	2934	3.3	2934	3.3	0.512	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach		2934	3.3	2934	3.3	0.512	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
North: Brooklyn Street (NW)														
7	L2	7	0.0	7	0.0	0.010	5.7	LOS A	0.0	0.2	0.35	0.53	0.35	43.1
Approach		7	0.0	7	0.0	0.010	5.7	LOS A	0.0	0.2	0.35	0.53	0.35	43.1
West: Princes Highway (SW)														
10	L2	13	8.3	13	8.3	0.234	4.9	LOS A	0.0	0.0	0.00	0.02	0.00	56.1
11	T1	1319	3.6	1319	3.6	0.234	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.3
Approach		1332	3.6	1332	3.6	0.234	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.1
All Vehicles		4273	3.4	4273	3.4	0.512	0.0	NA	0.0	0.2	0.00	0.00	0.00	59.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 103 [103 PM DEV Princes Hwy & Ikea (HV) DW (Site Folder: Proposed PM - Network)]

Network: 4 [DEV PM Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Ikea (HV) DW
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea (HV) DW														
1	L2	1	0.0	1	0.0	0.004	6.5	LOS A	0.0	0.3	0.67	0.61	0.67	23.0
Approach		1	0.0	1	0.0	0.004	6.5	LOS A	0.0	0.3	0.67	0.61	0.67	23.0
East: Princes Highway (NE)														
4	L2	1	0.0	1	0.0	0.490	2.1	LOS A	1.1	8.2	0.00	0.00	0.00	56.6
5	T1	2843	3.4	2805	3.4	0.490	0.0	LOS A	1.1	8.2	0.00	0.00	0.00	59.6
Approach		2844	3.4	2806 N1	3.4	0.490	0.0	NA	1.1	8.2	0.00	0.00	0.00	59.5
West: Princes Highway (SW)														
11	T1	1352	3.5	1352	3.5	0.236	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1352	3.5	1352	3.5	0.236	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		4197	3.4	4158 N1	3.4	0.490	0.0	NA	1.1	8.2	0.00	0.00	0.00	58.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 104 [104 PM DEV Princes Hwy & Foreman St (Site Folder: Proposed PM - Network)]

Network: 4 [DEV PM Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Foreman St
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	2836	3.5	2707	3.5	0.473	0.1	LOS A	35.1	253.0	0.00	0.00	0.00	59.6
Approach		2836	3.5	2707 N1	3.5	0.473	0.1	NA	35.1	253.0	0.00	0.00	0.00	59.6
North: Foreman Street (NW)														
7	L2	21	0.0	21	0.0	0.024	6.4	LOS A	0.1	0.6	0.44	0.61	0.44	42.6
Approach		21	0.0	21	0.0	0.024	6.4	LOS A	0.1	0.6	0.44	0.61	0.44	42.6
West: Princes Highway (SW)														
11	T1	1352	3.5	1352	3.5	0.236	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1352	3.5	1352	3.5	0.236	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		4208	3.5	4080 N1	3.6	0.473	0.1	NA	35.1	253.0	0.00	0.00	0.00	59.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

N1 Arrival Flow value is reduced due to capacity constraint at oversaturated upstream lanes.

Site: 105 [105 PM DEV Princes Hwy & Ikea Access Road (Site Folder: Proposed PM - Network)]

Network: 4 [DEV PM Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Ikea Access Road
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea Access Road (SE)														
1	L2	123	1.7	123	1.7	* 1.030	139.4	LOS F	12.7	90.1	1.00	1.31	1.96	2.4
3	R2	117	3.6	117	3.6	0.599	74.1	LOS F	3.9	28.1	1.00	0.78	1.06	11.7
Approach		240	2.6	240	2.6	1.030	107.6	LOS F	12.7	90.1	1.00	1.05	1.53	5.9
East: Princes Highway (NE)														
4	L2	125	1.7	125	1.7	0.078	6.9	LOS A	1.1	7.6	0.15	0.57	0.15	41.0
5	T1	2697	3.0	2697	3.0	* 1.229	267.6	LOS F	151.7	1089.1	1.00	2.16	2.51	3.0
Approach		2822	2.9	2822	2.9	1.229	256.0	LOS F	151.7	1089.1	0.96	2.09	2.41	3.1
West: Princes Highway (SW)														
11	T1	1363	3.0	1363	3.0	0.273	1.5	LOS A	4.8	34.5	0.19	0.17	0.19	56.3
12	R2	87	0.0	87	0.0	0.543	69.6	LOS E	5.6	39.2	1.00	0.83	1.00	10.4
Approach		1451	2.8	1451	2.8	0.543	5.6	LOS A	5.6	39.2	0.23	0.21	0.23	47.9
All Vehicles		4513	2.9	4513	2.9	1.229	167.6	LOS F	151.7	1089.1	0.73	1.43	1.66	5.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 106 [106 PM DEV Princes Hwy & Bunnings Access (Site Folder: Proposed PM - Network)]

Network: 4 [DEV PM Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Bunnings Access
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 130 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Proposed Sequence
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bunnings Access														
1	L2	98	0.0	98	0.0	0.202	45.6	LOS D	4.8	33.7	0.82	0.76	0.82	24.2
3	R2	98	0.0	98	0.0	* 0.311	57.1	LOS E	5.5	38.5	0.92	0.77	0.92	21.1
Approach		196	0.0	196	0.0	0.311	51.4	LOS D	5.5	38.5	0.87	0.77	0.87	22.6
East: Princes Highway (NE)														
5	T1	2843	3.4	2843	3.4	* 0.751	15.6	LOS B	0.9	6.5	0.73	0.68	0.73	3.7
Approach		2843	3.4	2843	3.4	0.751	15.6	LOS B	0.9	6.5	0.73	0.68	0.73	3.7
West: Princes Highway (SW)														
11	T1	1254	3.8	1254	3.8	0.291	4.9	LOS A	6.9	49.7	0.28	0.25	0.28	22.3
12	R2	65	0.0	65	0.0	* 0.653	73.5	LOS F	4.4	30.7	1.00	0.80	1.11	13.6
Approach		1319	3.6	1319	3.6	0.653	8.3	LOS A	6.9	49.7	0.31	0.27	0.32	18.0
All Vehicles		4358	3.3	4358	3.3	0.751	15.0	LOS B	6.9	49.7	0.61	0.56	0.61	10.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study | **Template: Phase Summaries**

Site: 101 [101 SAT DEV Princes Hwy, Smith St & Union St (Site Folder: Proposed SAT - Network)]

Network: 8 [DEV SAT Network (Network Folder: Proposed)]

Intersection: Princes Hwy, Smith St & Union St
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

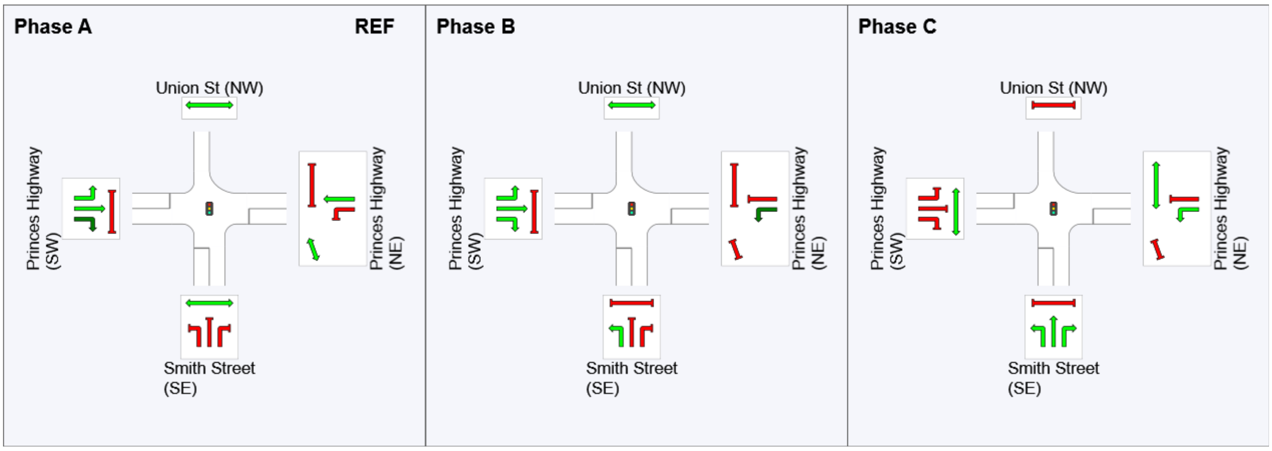
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	71	108
Green Time (sec)	65	31	6
Phase Time (sec)	71	37	12
Phase Split	59%	31%	10%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

Site: 105 [105 SAT DEV Princes Hwy & Ikea Access Road (Site Folder: Proposed SAT - Network)]

Network: 8 [DEV SAT Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Ikea Access Road
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

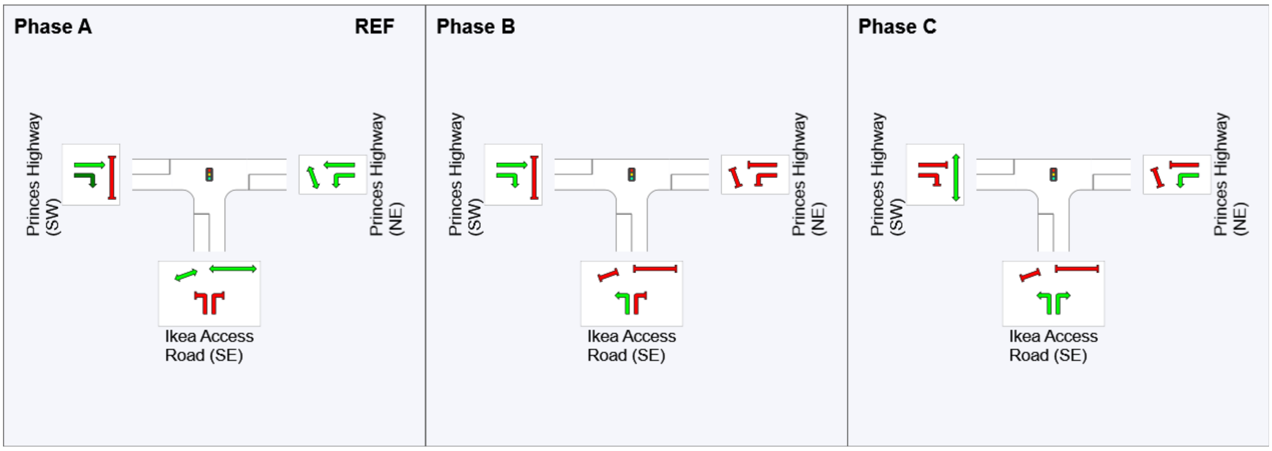
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	94	47	71
Green Time (sec)	67	18	17
Phase Time (sec)	73	24	23
Phase Split	61%	20%	19%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

- Normal Movement
- Slip/Bypass-Lane Movement
- Stopped Movement
- Other Movement Class (MC) Running
- Mixed Running & Stopped MCs
- Other Movement Class (MC) Stopped
- Permitted/Opposed
- Opposed Slip/Bypass-Lane
- Turn On Red
- Undetected Movement
- Continuous Movement
- Phase Transition Applied

Site: 106 [106 SAT DEV Princes Hwy & Bunnings Access (Site Folder: Proposed SAT - Network)]

Network: 8 [DEV SAT Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Bunnings Access
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

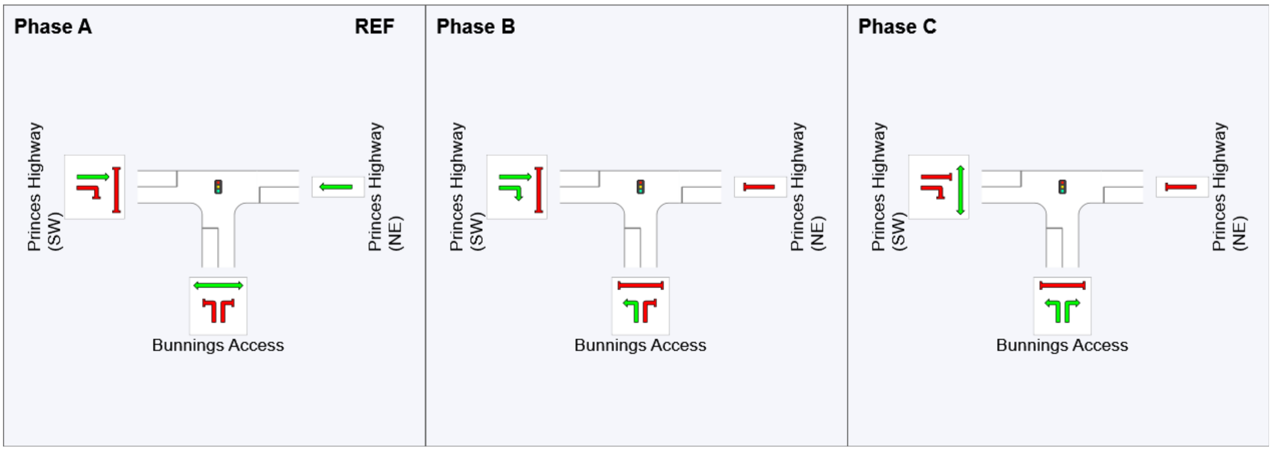
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Proposed Sequence
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	110	56	84
Green Time (sec)	60	22	20
Phase Time (sec)	66	28	26
Phase Split	55%	23%	22%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Movement Summaries

Site: 101 [101 SAT DEV Princes Hwy, Smith St & Union St (Site Folder: Proposed SAT - Network)]

Network: 8 [DEV SAT Network (Network Folder: Proposed)]

Intersection: Princes Hwy, Smith St & Union St
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street (SE)														
1	L2	25	4.2	25	4.2	0.038	30.4	LOS C	0.9	6.8	0.67	0.67	0.67	34.1
2	T1	14	0.0	14	0.0	0.243	61.3	LOS E	1.6	11.2	0.99	0.71	0.99	20.8
3	R2	39	2.7	39	2.7	0.243	66.0	LOS E	1.6	11.2	0.99	0.71	0.99	12.2
Approach		78	2.7	78	2.7	0.243	53.6	LOS D	1.6	11.2	0.88	0.70	0.88	20.6
East: Princes Highway (NE)														
4	L2	263	0.4	263	0.4	* 0.682	46.1	LOS D	13.8	96.7	1.00	0.84	1.00	18.6
5	T1	1845	3.0	1845	3.0	* 0.597	4.6	LOS A	10.9	78.0	0.24	0.21	0.24	53.1
Approach		2107	2.7	2107	2.7	0.682	9.8	LOS A	13.8	96.7	0.33	0.29	0.33	46.1
West: Princes Highway (SW)														
10	L2	21	0.0	21	0.0	0.438	7.4	LOS A	7.8	55.1	0.23	0.22	0.23	52.9
11	T1	1902	1.7	1902	1.7	0.438	2.0	LOS A	8.8	62.7	0.24	0.22	0.24	56.2
12	R2	13	0.0	13	0.0	* 0.438	7.7	LOS A	8.8	62.7	0.27	0.24	0.27	53.6
Approach		1936	1.6	1936	1.6	0.438	2.1	LOS A	8.8	62.7	0.24	0.22	0.24	56.1
All Vehicles		4121	2.2	4121	2.2	0.682	7.0	LOS A	13.8	96.7	0.30	0.27	0.30	49.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 102 [102 SAT DEV Princes Hwy & Brooklyn St (Site Folder: Proposed SAT - Network)]

Network: 8 [DEV SAT Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Brooklyn St
Period: PM Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	2107	2.7	2107	2.7	0.414	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach		2107	2.7	2107	2.7	0.414	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
North: Brooklyn Street (NW)														
7	L2	8	0.0	8	0.0	0.019	6.5	LOS A	0.1	0.5	0.44	0.61	0.44	42.5
Approach		8	0.0	8	0.0	0.019	6.5	LOS A	0.1	0.5	0.44	0.61	0.44	42.5
West: Princes Highway (SW)														
10	L2	4	0.0	4	0.0	0.252	5.0	LOS A	3.8	27.2	0.00	0.01	0.00	57.1
11	T1	1936	1.7	1936	1.7	0.252	0.0	LOS A	4.7	33.7	0.00	0.00	0.00	59.7
Approach		1941	1.7	1941	1.7	0.252	0.0	NA	4.7	33.7	0.00	0.00	0.00	59.7
All Vehicles		4056	2.2	4056	2.2	0.414	0.0	NA	4.7	33.7	0.00	0.00	0.00	59.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 103 [103 SAT DEV Princes Hwy & Ikea (HV) DW (Site Folder: Proposed SAT - Network)]

Network: 8 [DEV SAT Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Ikea (HV) DW
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea (HV) DW														
1	L2	1	0.0	1	0.0	0.003	3.8	LOS A	0.0	0.3	0.51	0.43	0.51	23.8
Approach		1	0.0	1	0.0	0.003	3.8	LOS A	0.0	0.3	0.51	0.43	0.51	23.8
East: Princes Highway (NE)														
4	L2	1	0.0	1	0.0	0.325	2.1	LOS A	1.1	8.2	0.00	0.00	0.00	56.7
5	T1	1863	3.1	1863	3.1	0.325	0.0	LOS A	1.1	8.2	0.00	0.00	0.00	59.7
Approach		1864	3.0	1864	3.0	0.325	0.0	NA	1.1	8.2	0.00	0.00	0.00	59.7
West: Princes Highway (SW)														
11	T1	1945	1.7	1945	1.7	0.336	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1945	1.7	1945	1.7	0.336	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles		3809	2.3	3809	2.3	0.336	0.0	NA	1.1	8.2	0.00	0.00	0.00	58.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 104 [104 SAT DEV Princes Hwy & Foreman St (Site Folder: Proposed SAT - Network)]

Network: 8 [DEV SAT Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Foreman St
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	1859	2.5	1859	2.5	0.469	0.1	LOS A	24.7	176.9	0.00	0.00	0.00	59.5
Approach		1859	2.5	1859	2.5	0.469	0.1	NA	24.7	176.9	0.00	0.00	0.00	59.5
North: Foreman Street (NW)														
7	L2	19	5.6	19	5.6	0.028	8.0	LOS A	0.1	0.7	0.53	0.70	0.53	41.2
Approach		19	5.6	19	5.6	0.028	8.0	LOS A	0.1	0.7	0.53	0.70	0.53	41.2
West: Princes Highway (SW)														
11	T1	1982	2.0	1982	2.0	0.343	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1982	2.0	1982	2.0	0.343	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles		3860	2.2	3860	2.2	0.469	0.1	NA	24.7	176.9	0.00	0.00	0.00	58.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 105 [105 SAT DEV Princes Hwy & Ikea Access Road (Site Folder: Proposed SAT - Network)]

Network: 8 [DEV SAT Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Ikea Access Road
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea Access Road (SE)														
1	L2	203	0.5	203	0.5	0.540	37.4	LOS C	9.3	65.5	0.82	0.79	0.82	8.0
3	R2	311	1.4	311	1.4	* 0.612	56.8	LOS E	9.5	67.1	0.98	0.81	0.98	14.4
Approach		514	1.0	514	1.0	0.612	49.1	LOS D	9.5	67.1	0.92	0.80	0.92	12.6
East: Princes Highway (NE)														
4	L2	414	1.0	414	1.0	0.293	10.4	LOS A	7.3	51.8	0.33	0.65	0.33	36.5
5	T1	1656	2.7	1656	2.7	* 0.594	17.5	LOS B	24.3	173.8	0.68	0.62	0.68	26.8
Approach		2070	2.4	2070	2.4	0.594	16.1	LOS B	24.3	173.8	0.61	0.62	0.61	28.7
West: Princes Highway (SW)														
11	T1	1673	2.3	1673	2.3	0.379	4.8	LOS A	10.5	74.8	0.36	0.32	0.36	49.7
12	R2	308	0.0	308	0.0	* 0.713	45.3	LOS D	16.2	113.7	0.98	1.04	1.01	14.4
Approach		1982	2.0	1982	2.0	0.713	11.1	LOS A	16.2	113.7	0.45	0.43	0.46	39.4
All Vehicles		4565	2.1	4565	2.1	0.713	17.6	LOS B	24.3	173.8	0.58	0.56	0.58	29.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 106 [106 SAT DEV Princes Hwy & Bunnings Access (Site Folder: Proposed SAT - Network)]

Network: 8 [DEV SAT Network (Network Folder: Proposed)]

Intersection: Princes Hwy & Bunnings Access
Period: SAT Peak Hour
Scenario: Exisitng + Development
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: Proposed Sequence
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Bunnings Access														
1	L2	234	0.0	234	0.0	0.309	31.1	LOS C	9.2	64.3	0.72	0.77	0.72	29.9
3	R2	234	0.0	234	0.0	* 0.721	58.1	LOS E	13.5	94.4	1.00	0.86	1.06	20.9
Approach		468	0.0	468	0.0	0.721	44.6	LOS D	13.5	94.4	0.86	0.81	0.89	24.6
East: Princes Highway (NE)														
5	T1	1863	3.1	1863	3.1	* 0.639	22.8	LOS B	0.9	6.5	0.79	0.71	0.79	2.6
Approach		1863	3.1	1863	3.1	0.639	22.8	LOS B	0.9	6.5	0.79	0.71	0.79	2.6
West: Princes Highway (SW)														
11	T1	1711	1.9	1711	1.9	0.399	5.9	LOS A	8.0	57.1	0.39	0.35	0.39	19.7
12	R2	234	0.0	234	0.0	* 0.658	52.5	LOS D	8.2	57.1	0.98	0.83	0.98	15.9
Approach		1945	1.7	1945	1.7	0.658	11.5	LOS A	8.2	57.1	0.46	0.41	0.46	17.2
All Vehicles		4276	2.1	4276	2.1	0.721	20.1	LOS B	13.5	94.4	0.65	0.58	0.65	14.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

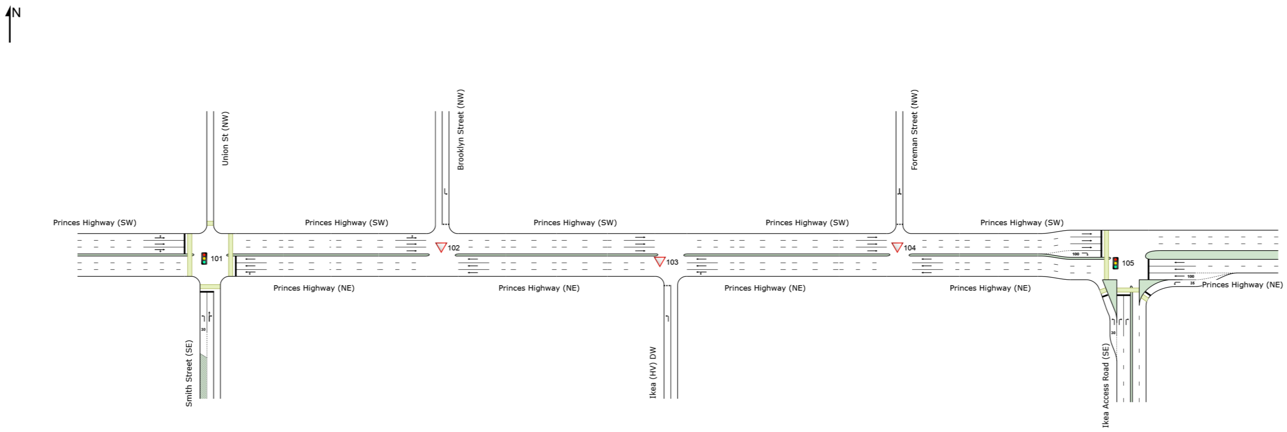
* Critical Movement (Signal Timing)

NETWORK LAYOUT

Network: N101 [Ex AM Network (Network Folder: Existing)]

New Network
Network Category: (None)

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	101 AM EX Princes Hwy, Smith St & Union St
102	NA	102 AM EX Princes Hwy & Brooklyn St
103	NA	103 AM EX Princes Hwy & Ikea (HV) DW
104	NA	104 AM EX Princes Hwy & Foreman St
105	NA	105 AM EX Princes Hwy & Ikea Access Road

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Phase Summaries

Site: 101 [101 AM EX Princes Hwy, Smith St & Union St (Site Folder: Existing AM - Network)]

Network: 1 [Ex AM Network (Network Folder: Existing)]

Intersection: Princes Hwy, Smith St & Union St
Period: AM Peak Hour
Scenario: Exisitng
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

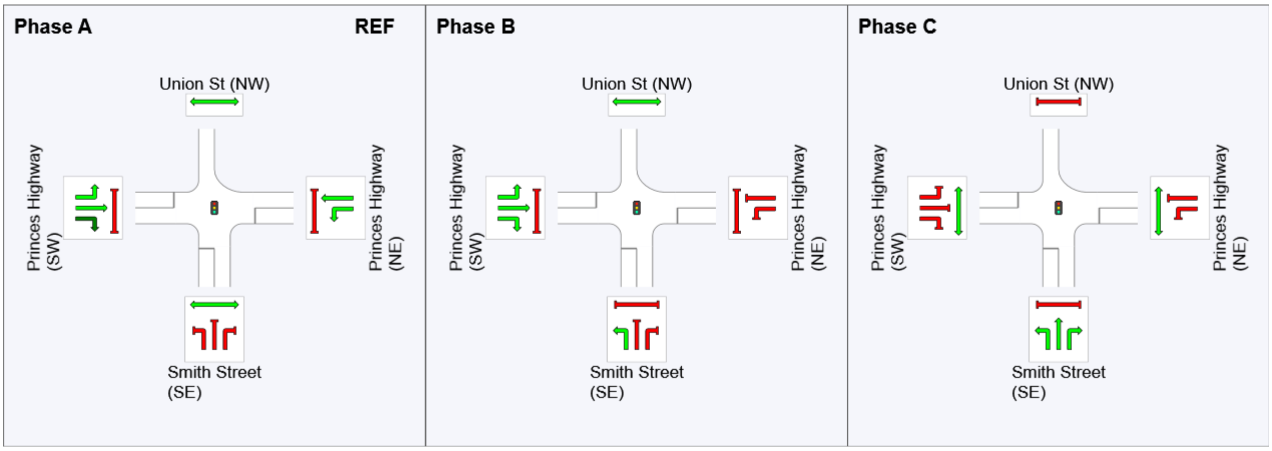
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	30	100
Green Time (sec)	24	64	14
Phase Time (sec)	30	70	20
Phase Split	25%	58%	17%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

Site: 105 [105 AM EX Princes Hwy & Ikea Access Road (Site Folder: Existing AM - Network)]

Network: 1 [Ex AM Network (Network Folder: Existing)]

Intersection: Princes Hwy & Ikea Access Road
Period: AM Peak Hour
Scenario: Exisitng
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

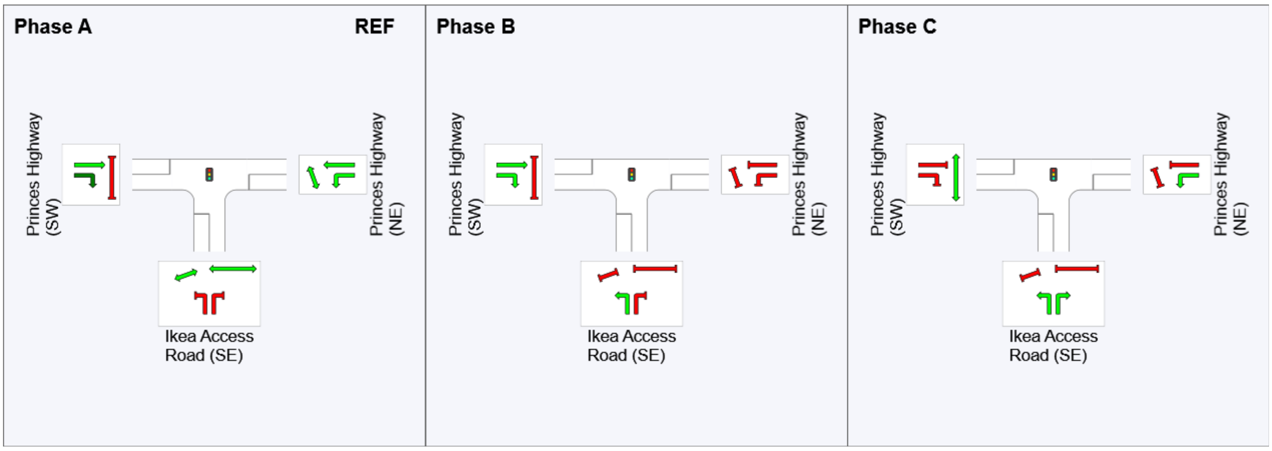
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

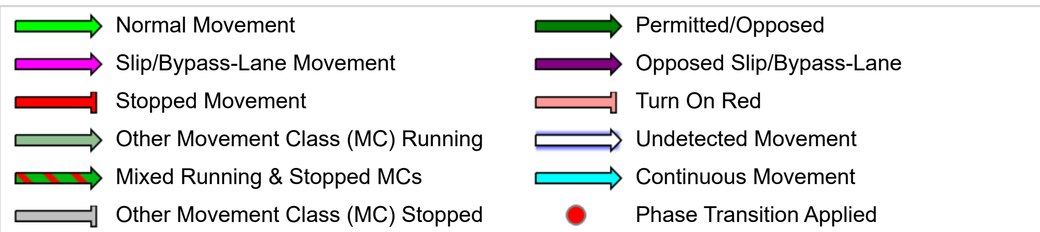
Phase	**A**	**B**	**C**
Phase Change Time (sec)	23	114	11
Green Time (sec)	85	11	6
Phase Time (sec)	91	17	12
Phase Split	76%	14%	10%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



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Project: T:\Synergy\Projects\22\22.256\Modelling\22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study.sip9

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Movement Summaries

Site: 101 [101 AM EX Princes Hwy, Smith St & Union St (Site Folder: Existing AM - Network)]

Network: 1 [Ex AM Network (Network Folder: Existing)]

Intersection: Princes Hwy, Smith St & Union St
Period: AM Peak Hour
Scenario: Exisitng
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street (SE)														
1	L2	15	14.3	15	14.3	0.012	10.0	LOS A	0.2	1.9	0.31	0.59	0.31	35.1
2	T1	8	0.0	8	0.0	* 0.230	52.4	LOS D	2.6	19.7	0.94	0.74	0.94	22.1
3	R2	39	13.5	39	13.5	0.230	57.0	LOS E	2.6	19.7	0.94	0.74	0.94	13.5
Approach		62	11.9	62	11.9	0.230	45.2	LOS D	2.6	19.7	0.79	0.70	0.79	18.0
East: Princes Highway (NE)														
4	L2	19	0.0	19	0.0	* 0.658	52.4	LOS D	14.4	101.1	0.97	0.82	0.97	17.6
5	T1	781	0.0	781	0.0	0.658	47.5	LOS D	14.5	101.6	0.97	0.82	0.97	11.5
Approach		800	0.0	800	0.0	0.658	47.6	LOS D	14.5	101.6	0.97	0.82	0.97	11.7
West: Princes Highway (SW)														
10	L2	33	3.2	33	3.2	0.674	11.4	LOS A	25.8	187.9	0.49	0.47	0.49	42.6
11	T1	2935	4.8	2935	4.8	0.674	6.2	LOS A	25.8	188.2	0.50	0.46	0.50	30.9
12	R2	25	0.0	25	0.0	* 0.674	12.4	LOS A	24.5	178.3	0.52	0.46	0.52	40.6
Approach		2993	4.7	2993	4.7	0.674	6.3	LOS A	25.8	188.2	0.50	0.46	0.50	31.4
All Vehicles		3855	3.9	3855	3.9	0.674	15.5	LOS B	25.8	188.2	0.60	0.54	0.60	20.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 102 [102 AM EX Princes Hwy & Brooklyn St (Site Folder: Existing AM - Network)]

Network: 1 [Ex AM Network (Network Folder: Existing)]

Intersection: Princes Hwy & Brooklyn St
Period: AM Peak Hour
Scenario: Exisitng
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	911	10.8	911	10.8	0.247	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		911	10.8	911	10.8	0.247	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
North: Brooklyn Street (NW)														
7	L2	24	4.3	24	4.3	0.049	10.9	LOS A	0.2	1.2	0.68	0.84	0.68	38.7
Approach		24	4.3	24	4.3	0.049	10.9	LOS A	0.2	1.2	0.68	0.84	0.68	38.7
West: Princes Highway (SW)														
10	L2	18	11.8	18	11.8	0.525	5.0	LOS A	0.0	0.0	0.00	0.01	0.00	55.8
11	T1	2959	4.9	2959	4.9	0.525	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.2
Approach		2977	5.0	2977	5.0	0.525	0.1	NA	0.0	0.0	0.00	0.00	0.00	59.1
All Vehicles		3912	6.3	3912	6.3	0.525	0.1	NA	0.2	1.2	0.00	0.01	0.00	58.0

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.

Delay Model: SIDRA Standard (Geometric Delay is included).

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

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

Site: 103 [103 AM EX Princes Hwy & Ikea (HV) DW (Site Folder: Existing AM - Network)]

Network: 1 [Ex AM Network (Network Folder: Existing)]

Intersection: Princes Hwy & Ikea (HV) DW
Period: AM Peak Hour
Scenario: Exisitng
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea (HV) DW														
1	L2	1	0.0	1	0.0	0.001	2.2	LOS A	0.0	0.0	0.35	0.30	0.35	24.2
Approach		1	0.0	1	0.0	0.001	2.2	LOS A	0.0	0.0	0.35	0.30	0.35	24.2
East: Princes Highway (NE)														
4	L2	1	0.0	1	0.0	0.167	2.1	LOS A	0.0	0.0	0.00	0.00	0.00	56.8
5	T1	911	10.8	911	10.8	0.167	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach		912	10.7	912	10.7	0.167	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
West: Princes Highway (SW)														
11	T1	2959	4.9	2959	4.9	0.522	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach		2959	4.9	2959	4.9	0.522	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.5
All Vehicles		3872	6.3	3872	6.3	0.522	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 104 [104 AM EX Princes Hwy & Foreman St (Site Folder: Existing AM - Network)]

Network: 1 [Ex AM Network (Network Folder: Existing)]

Intersection: Princes Hwy & Foreman St
Period: AM Peak Hour
Scenario: Exisitng
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	911	10.8	911	10.8	0.167	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		911	10.8	911	10.8	0.167	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
North: Foreman Street (NW)														
7	L2	26	4.0	26	4.0	0.935	234.3	LOS F	3.6	25.6	0.98	1.30	2.00	5.2
9	R2	4	0.0	4	0.0	0.935	849.6	LOS F	3.6	25.6	0.98	1.30	2.00	5.2
Approach		31	3.4	31	3.4	0.935	319.2	LOS F	3.6	25.6	0.98	1.30	2.00	5.2
West: Princes Highway (SW)														
11	T1	2959	4.9	2959	4.9	0.522	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach		2959	4.9	2959	4.9	0.522	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.5
All Vehicles		3900	6.3	3900	6.3	0.935	2.5	NA	3.6	25.6	0.01	0.01	0.02	33.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 105 [105 AM EX Princes Hwy & Ikea Access Road (Site Folder: Existing AM - Network)]

Network: 1 [Ex AM Network (Network Folder: Existing)]

Intersection: Princes Hwy & Ikea Access Road
Period: AM Peak Hour
Scenario: Exisitng
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Green Split Priority has been specified
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea Access Road (SE)														
1	L2	9	0.0	9	0.0	0.029	45.9	LOS D	0.4	3.1	0.83	0.66	0.83	6.7
3	R2	13	41.7	13	41.7	* 0.076	65.5	LOS E	0.4	3.5	0.97	0.66	0.97	12.2
Approach		22	23.8	22	23.8	0.076	57.1	LOS E	0.4	3.5	0.91	0.66	0.91	10.6
East: Princes Highway (NE)														
4	L2	22	28.6	22	28.6	0.017	8.0	LOS A	0.2	2.0	0.19	0.56	0.19	39.3
5	T1	900	11.9	900	11.9	0.231	6.1	LOS A	5.8	44.9	0.36	0.32	0.36	41.9
Approach		922	12.3	922	12.3	0.231	6.1	LOS A	5.8	44.9	0.36	0.32	0.36	41.8
West: Princes Highway (SW)														
11	T1	2931	5.1	2931	5.1	* 0.603	2.6	LOS A	16.4	119.7	0.32	0.30	0.32	54.0
12	R2	43	0.0	43	0.0	0.070	8.3	LOS A	0.5	3.6	0.26	0.62	0.26	34.9
Approach		2974	5.0	2974	5.0	0.603	2.7	LOS A	16.4	119.7	0.32	0.30	0.32	53.7
All Vehicles		3918	6.8	3918	6.8	0.603	3.8	LOS A	16.4	119.7	0.33	0.31	0.33	50.7

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Phase Summaries

Site: 101 [101 PM EX Princes Hwy, Smith St & Union St (Site Folder: Existing PM - Network)]

Network: 2 [Ex PM Network (Network Folder: Existing)]

Intersection: Princes Hwy, Smith St & Union St
Period: PM Peak Hour
Scenario: Exisitng
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 130 seconds (Network Optimum Cycle Time - Minimum Delay)

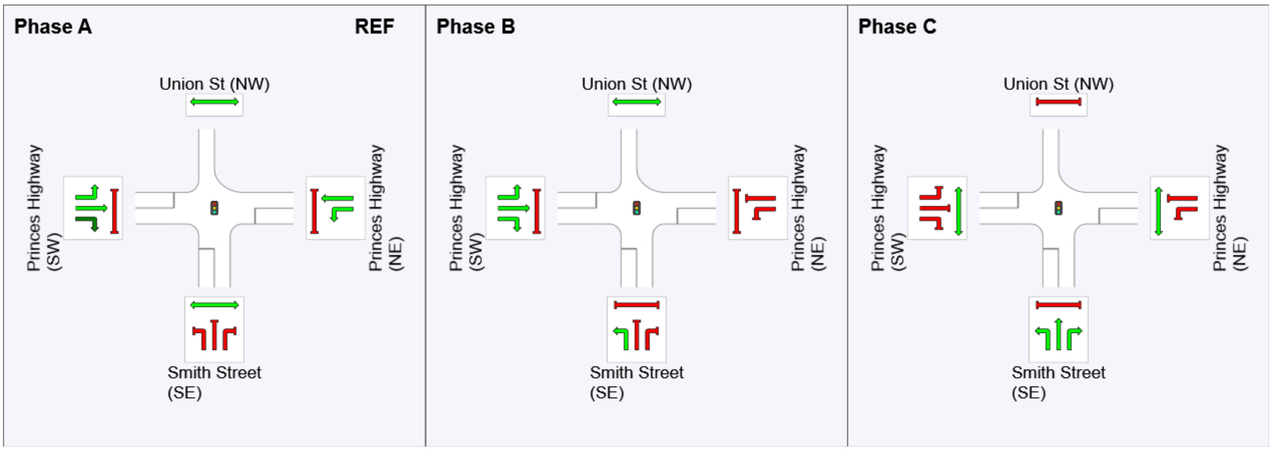
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	97	109
Green Time (sec)	91	6	15
Phase Time (sec)	97	12	21
Phase Split	75%	9%	16%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

Site: 105 [105 PM EX Princes Hwy & Ikea Access Road (Site Folder: Existing PM - Network)]

Network: 2 [Ex PM Network (Network Folder: Existing)]

Intersection: Princes Hwy & Ikea Access Road
Period: PM Peak Hour
Scenario: Exisitng
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 130 seconds (Network Optimum Cycle Time - Minimum Delay)

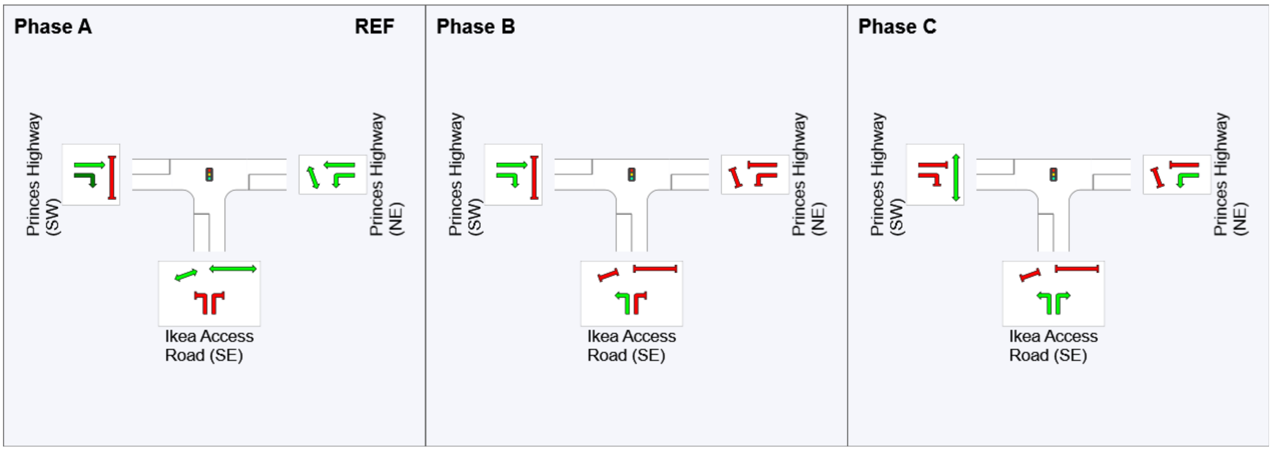
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	106	80	94
Green Time (sec)	98	8	6
Phase Time (sec)	104	14	12
Phase Split	80%	11%	9%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Movement Summaries

Site: 101 [101 PM EX Princes Hwy, Smith St & Union St (Site Folder: Existing PM - Network)]

Network: 2 [Ex PM Network (Network Folder: Existing)]

Intersection: Princes Hwy, Smith St & Union St
Period: PM Peak Hour
Scenario: Exisitng
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street (SE)														
1	L2	27	3.8	27	3.8	0.070	48.1	LOS D	1.4	9.9	0.83	0.70	0.83	31.2
2	T1	36	0.0	36	0.0	* 0.333	57.3	LOS E	4.6	32.3	0.96	0.75	0.96	27.6
3	R2	42	0.0	42	0.0	0.333	61.9	LOS E	4.6	32.3	0.96	0.75	0.96	19.2
Approach		105	1.0	105	1.0	0.333	56.8	LOS E	4.6	32.3	0.92	0.74	0.92	25.7
East: Princes Highway (NE)														
4	L2	25	16.7	25	16.7	* 0.681	16.2	LOS B	17.0	122.4	0.61	0.58	0.61	39.3
5	T1	2739	2.7	2739	2.7	0.681	11.3	LOS A	17.1	122.4	0.61	0.57	0.61	45.4
Approach		2764	2.9	2764	2.9	0.681	11.3	LOS A	17.1	122.4	0.61	0.57	0.61	45.4
West: Princes Highway (SW)														
10	L2	32	6.7	32	6.7	0.337	9.2	LOS A	7.6	54.9	0.29	0.28	0.29	50.9
11	T1	1294	3.3	1294	3.3	0.337	4.1	LOS A	8.0	57.7	0.31	0.28	0.31	52.7
12	R2	7	0.0	7	0.0	* 0.337	10.9	LOS A	8.0	57.7	0.36	0.32	0.36	50.2
Approach		1333	3.3	1333	3.3	0.337	4.3	LOS A	8.0	57.7	0.31	0.28	0.31	52.6
All Vehicles		4202	3.0	4202	3.0	0.681	10.2	LOS A	17.1	122.4	0.52	0.49	0.52	45.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 102 [102 PM EX Princes Hwy & Brooklyn St (Site Folder: Existing PM - Network)]

Network: 2 [Ex PM Network (Network Folder: Existing)]

Intersection: Princes Hwy & Brooklyn St
Period: PM Peak Hour
Scenario: Exisitng
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	2817	3.5	2817	3.5	0.492	0.0	LOS A	10.2	73.4	0.00	0.00	0.00	59.6
Approach		2817	3.5	2817	3.5	0.492	0.0	NA	10.2	73.4	0.00	0.00	0.00	59.6
North: Brooklyn Street (NW)														
7	L2	7	0.0	7	0.0	0.008	6.2	LOS A	0.0	0.2	0.42	0.56	0.42	42.8
Approach		7	0.0	7	0.0	0.008	6.2	LOS A	0.0	0.2	0.42	0.56	0.42	42.8
West: Princes Highway (SW)														
10	L2	13	8.3	13	8.3	0.230	4.9	LOS A	0.0	0.0	0.00	0.02	0.00	56.2
11	T1	1300	3.6	1300	3.6	0.230	0.0	LOS A	0.0	0.0	0.00	0.01	0.00	59.4
Approach		1313	3.7	1313	3.7	0.230	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.2
All Vehicles		4137	3.5	4137	3.5	0.492	0.0	NA	10.2	73.4	0.00	0.00	0.00	59.1

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 103 [103 PM EX Princes Hwy & Ikea (HV) DW (Site Folder: Existing PM - Network)]

Network: 2 [Ex PM Network (Network Folder: Existing)]

Intersection: Princes Hwy & Ikea (HV) DW
Period: PM Peak Hour
Scenario: Exisitng
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea (HV) DW														
1	L2	1	0.0	1	0.0	0.004	6.6	LOS A	0.0	0.0	0.68	0.61	0.68	23.0
Approach		1	0.0	1	0.0	0.004	6.6	LOS A	0.0	0.0	0.68	0.61	0.68	23.0
East: Princes Highway (NE)														
4	L2	1	0.0	1	0.0	0.494	2.1	LOS A	1.1	8.2	0.00	0.00	0.00	56.6
5	T1	2824	3.4	2824	3.4	0.494	0.0	LOS A	1.1	8.2	0.00	0.00	0.00	59.5
Approach		2825	3.4	2825	3.4	0.494	0.0	NA	1.1	8.2	0.00	0.00	0.00	59.5
West: Princes Highway (SW)														
11	T1	1300	3.6	1300	3.6	0.227	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1300	3.6	1300	3.6	0.227	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		4126	3.5	4126	3.5	0.494	0.0	NA	1.1	8.2	0.00	0.00	0.00	59.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 104 [104 PM EX Princes Hwy & Foreman St (Site Folder: Existing PM - Network)]

Network: 2 [Ex PM Network (Network Folder: Existing)]

Intersection: Princes Hwy & Foreman St
Period: PM Peak Hour
Scenario: Exisitng
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	2817	3.5	2817	3.5	0.492	0.1	LOS A	3.9	28.0	0.00	0.00	0.00	59.6
Approach		2817	3.5	2817	3.5	0.492	0.1	NA	3.9	28.0	0.00	0.00	0.00	59.6
North: Foreman Street (NW)														
7	L2	15	0.0	15	0.0	1.090	442.5	LOS F	4.3	29.9	1.00	1.55	2.48	3.1
9	R2	6	0.0	6	0.0	1.090	818.2	LOS F	4.3	29.9	1.00	1.55	2.48	3.1
Approach		21	0.0	21	0.0	1.090	555.2	LOS F	4.3	29.9	1.00	1.55	2.48	3.1
West: Princes Highway (SW)														
11	T1	1300	3.6	1300	3.6	0.227	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
Approach		1300	3.6	1300	3.6	0.227	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.9
All Vehicles		4138	3.5	4138	3.5	1.090	2.9	NA	4.3	29.9	0.01	0.01	0.01	42.5

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 105 [105 PM EX Princes Hwy & Ikea Access Road (Site Folder: Existing PM - Network)]

Network: 2 [Ex PM Network (Network Folder: Existing)]

Intersection: Princes Hwy & Ikea Access Road
Period: PM Peak Hour
Scenario: Exisitng
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 130 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea Access Road (SE)														
1	L2	123	1.7	123	1.7	0.468	58.9	LOS E	7.2	51.4	0.95	0.79	0.95	11.3
3	R2	117	3.6	117	3.6	* 0.599	74.1	LOS F	3.9	28.1	1.00	0.78	1.06	21.7
Approach		240	2.6	240	2.6	0.599	66.3	LOS E	7.2	51.4	0.98	0.79	1.01	17.6
East: Princes Highway (NE)														
4	L2	125	1.7	125	1.7	0.079	7.2	LOS A	1.2	8.5	0.17	0.58	0.17	50.2
5	T1	2678	3.0	2678	3.0	* 0.645	7.3	LOS A	27.2	195.7	0.49	0.45	0.49	48.6
Approach		2803	3.0	2803	3.0	0.645	7.3	LOS A	27.2	195.7	0.47	0.46	0.47	48.7
West: Princes Highway (SW)														
11	T1	1312	3.1	1311	3.1	0.263	1.5	LOS A	4.6	32.8	0.18	0.16	0.18	57.8
12	R2	87	0.0	87	0.0	* 0.411	28.6	LOS C	5.0	35.2	0.90	0.85	0.90	25.6
Approach		1399	2.9	1399	2.9	0.411	3.2	LOS A	5.0	35.2	0.23	0.21	0.23	55.3
All Vehicles		4442	2.9	4442	2.9	0.645	9.2	LOS A	27.2	195.7	0.42	0.40	0.43	46.9

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Phase Summaries

Site: 101 [101 SAT EX Princes Hwy, Smith St & Union St (Site Folder: Existing SAT - Network)]

Network: 7 [Ex SAT Network (Network Folder: Existing)]

Intersection: Princes Hwy, Smith St & Union St
Period: SAT Peak Hour
Scenario: Exisitng
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

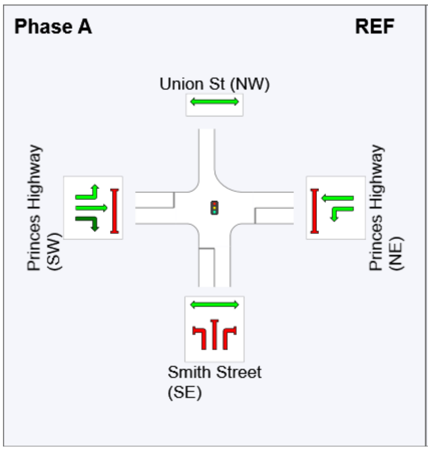
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

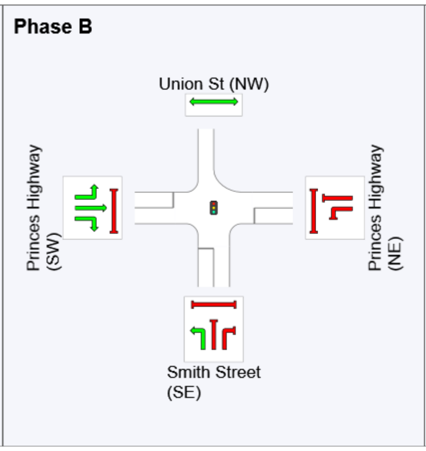
Phase Timing Summary

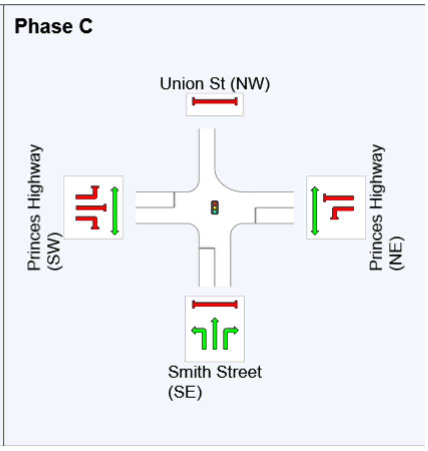
Phase	A	B	C
Phase Change Time (sec)	0	92	107
Green Time (sec)	86	9	7
Phase Time (sec)	92	15	13
Phase Split	77%	13%	11%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence







REF: Reference Phase
VAR: Variable Phase

Normal Movement	Permitted/Opposed
Slip/Bypass-Lane Movement	Opposed Slip/Bypass-Lane
Stopped Movement	Turn On Red
Other Movement Class (MC) Running	Undetected Movement
Mixed Running & Stopped MCs	Continuous Movement
Other Movement Class (MC) Stopped	Phase Transition Applied

Site: 105 [105 SAT EX Princes Hwy & Ikea Access Road (Site Folder: Existing SAT - Network)]

Network: 7 [Ex SAT Network (Network Folder: Existing)]

Intersection: Princes Hwy & Ikea Access Road
Period: SAT Peak Hour
Scenario: Exisitng
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

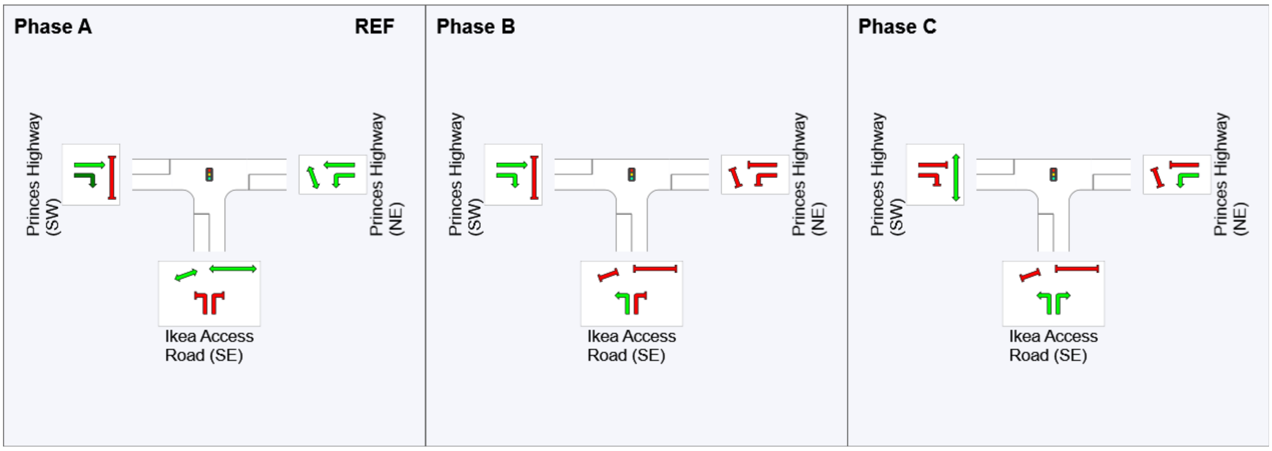
Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	23	93	119
Green Time (sec)	64	20	18
Phase Time (sec)	70	26	24
Phase Split	58%	22%	20%

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase

- Normal Movement
- Slip/Bypass-Lane Movement
- Stopped Movement
- Other Movement Class (MC) Running
- Mixed Running & Stopped MCs
- Other Movement Class (MC) Stopped
- Permitted/Opposed
- Opposed Slip/Bypass-Lane
- Turn On Red
- Undetected Movement
- Continuous Movement
- Phase Transition Applied

USER REPORT FOR NETWORK SITE

All Movement Classes

Project: 22.256m01v03 TRAFFIX Bunnings Tempe Feasibility Study

Template: Movement Summaries

Site: 101 [101 SAT EX Princes Hwy, Smith St & Union St (Site Folder: Existing SAT - Network)]

Network: 7 [Ex SAT Network (Network Folder: Existing)]

Intersection: Princes Hwy, Smith St & Union St
Period: SAT Peak Hour
Scenario: Exisitng
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Smith Street (SE)														
1	L2	25	4.2	25	4.2	0.073	47.4	LOS D	1.2	8.8	0.85	0.70	0.85	31.4
2	T1	14	0.0	14	0.0	* 0.426	61.2	LOS E	3.1	22.3	1.00	0.75	1.00	26.6
3	R2	39	2.7	39	2.7	0.426	65.8	LOS E	3.1	22.3	1.00	0.75	1.00	18.3
Approach		78	2.7	78	2.7	0.426	59.0	LOS E	3.1	22.3	0.95	0.73	0.95	24.5
East: Princes Highway (NE)														
4	L2	28	3.7	28	3.7	* 0.425	11.8	LOS A	13.3	96.0	0.43	0.41	0.43	43.0
5	T1	1735	3.2	1735	3.2	0.425	6.9	LOS A	13.4	96.3	0.43	0.39	0.43	50.1
Approach		1763	3.2	1763	3.2	0.425	7.0	LOS A	13.4	96.3	0.43	0.39	0.43	50.0
West: Princes Highway (SW)														
10	L2	21	0.0	21	0.0	0.420	7.6	LOS A	7.6	54.0	0.24	0.23	0.24	52.3
11	T1	1792	1.8	1792	1.8	0.420	2.2	LOS A	8.4	59.7	0.25	0.23	0.25	55.8
12	R2	13	0.0	13	0.0	* 0.420	8.1	LOS A	8.4	59.7	0.28	0.25	0.28	52.2
Approach		1825	1.7	1825	1.7	0.420	2.3	LOS A	8.4	59.7	0.25	0.23	0.25	55.6
All Vehicles		3666	2.5	3666	2.5	0.426	5.8	LOS A	13.4	96.3	0.35	0.32	0.35	50.8

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)

Site: 102 [102 SAT EX Princes Hwy & Brooklyn St (Site Folder: Existing SAT - Network)]

Network: 7 [Ex SAT Network (Network Folder: Existing)]

Intersection: Princes Hwy & Brooklyn St
Period: SAT Peak Hour
Scenario: Exisitng
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	1763	3.2	1763	3.2	0.425	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach		1763	3.2	1763	3.2	0.425	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
North: Brooklyn Street (NW)														
7	L2	8	0.0	8	0.0	0.011	7.2	LOS A	0.0	0.3	0.50	0.63	0.50	41.9
Approach		8	0.0	8	0.0	0.011	7.2	LOS A	0.0	0.3	0.50	0.63	0.50	41.9
West: Princes Highway (SW)														
10	L2	4	0.0	4	0.0	0.317	5.0	LOS A	0.0	0.0	0.00	0.00	0.00	57.0
11	T1	1826	1.8	1826	1.8	0.317	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach		1831	1.8	1831	1.8	0.317	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.6
All Vehicles		3602	2.5	3602	2.5	0.425	0.0	NA	0.0	0.3	0.00	0.00	0.00	59.2

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 103 [103 SAT EX Princes Hwy & Ikea (HV) DW (Site Folder: Existing SAT - Network)]

Network: 7 [Ex SAT Network (Network Folder: Existing)]

Intersection: Princes Hwy & Ikea (HV) DW
Period: SAT Peak Hour
Scenario: Exisitng
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea (HV) DW														
1	L2	1	0.0	1	0.0	0.001	3.6	LOS A	0.0	0.0	0.49	0.40	0.49	23.9
Approach		1	0.0	1	0.0	0.001	3.6	LOS A	0.0	0.0	0.49	0.40	0.49	23.9
East: Princes Highway (NE)														
4	L2	1	0.0	1	0.0	0.306	2.1	LOS A	0.0	0.0	0.00	0.00	0.00	56.7
5	T1	1753	3.2	1753	3.2	0.306	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
Approach		1754	3.2	1754	3.2	0.306	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.7
West: Princes Highway (SW)														
11	T1	1835	1.8	1835	1.8	0.317	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1835	1.8	1835	1.8	0.317	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles		3589	2.5	3589	2.5	0.317	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 104 [104 SAT EX Princes Hwy & Foreman St (Site Folder: Existing SAT - Network)]

Network: 7 [Ex SAT Network (Network Folder: Existing)]

Intersection: Princes Hwy & Foreman St
Period: SAT Peak Hour
Scenario: Exisitng
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
East: Princes Highway (NE)														
5	T1	1749	2.6	1749	2.6	0.304	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1749	2.6	1749	2.6	0.304	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
North: Foreman Street (NW)														
7	L2	16	6.7	16	6.7	0.273	16.6	LOS B	0.7	5.1	0.90	0.98	0.98	19.7
9	R2	3	0.0	3	0.0	0.273	260.3	LOS F	0.7	5.1	0.90	0.98	0.98	19.7
Approach		19	5.6	19	5.6	0.273	57.2	LOS E	0.7	5.1	0.90	0.98	0.98	19.7
West: Princes Highway (SW)														
11	T1	1872	2.1	1872	2.1	0.324	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
Approach		1872	2.1	1872	2.1	0.324	0.0	NA	0.0	0.0	0.00	0.00	0.00	59.8
All Vehicles		3640	2.4	3640	2.4	0.324	0.3	NA	0.7	5.1	0.00	0.01	0.01	56.4

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

Site: 105 [105 SAT EX Princes Hwy & Ikea Access Road (Site Folder: Existing SAT - Network)]

Network: 7 [Ex SAT Network (Network Folder: Existing)]

Intersection: Princes Hwy & Ikea Access Road
Period: SAT Peak Hour
Scenario: Exisitng
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Coordinated   Cycle Time = 120 seconds (Network Optimum Cycle Time - Minimum Delay)

Timings based on settings in the Network Timing dialog
Phase Times determined by the program
Downstream lane blockage effects included in determining phase times
Phase Sequence: TCS
Reference Phase: Phase A
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C

Vehicle Movement Performance

Mov ID	Turn	DEMAND FLOWS [Total veh/h	HV] %	ARRIVAL FLOWS [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE [Veh. veh	Dist] m	Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
South: Ikea Access Road (SE)														
1	L2	203	0.5	203	0.5	0.401	33.4	LOS C	8.5	59.9	0.76	0.76	0.76	17.0
3	R2	311	1.4	311	1.4	* 0.572	55.6	LOS D	9.2	65.3	0.97	0.80	0.97	25.5
Approach		514	1.0	514	1.0	0.572	46.9	LOS D	9.2	65.3	0.89	0.79	0.89	23.5
East: Princes Highway (NE)														
4	L2	414	1.0	414	1.0	0.300	11.0	LOS A	7.9	55.5	0.36	0.66	0.36	46.8
5	T1	1546	2.9	1546	2.9	* 0.559	18.6	LOS B	22.0	157.7	0.69	0.61	0.69	37.6
Approach		1960	2.5	1960	2.5	0.559	17.0	LOS B	22.0	157.7	0.62	0.62	0.62	39.8
West: Princes Highway (SW)														
11	T1	1563	2.5	1563	2.5	0.358	5.1	LOS A	9.9	70.6	0.36	0.32	0.36	53.3
12	R2	308	0.0	308	0.0	* 0.649	40.0	LOS C	15.4	107.9	0.95	1.00	0.95	21.3
Approach		1872	2.1	1872	2.1	0.649	10.8	LOS A	15.4	107.9	0.46	0.43	0.46	46.2
All Vehicles		4345	2.2	4345	2.2	0.649	17.9	LOS B	22.0	157.7	0.58	0.56	0.58	39.3

Site Level of Service (LOS) Method: Delay (RTA NSW). Site LOS Method is specified in the Network Data dialog (Network 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.
Delay Model: SIDRA Standard (Geometric Delay is included).
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

* Critical Movement (Signal Timing)