

6. Pedestrian Capacity Assessment

6.1 Existing Footpath Capacity

An objective of this assessment was to assess whether the existing pedestrian footpaths and facilities surrounding the site will have sufficient capacity to accommodate the additional pedestrian volumes (under the proposed layout).

To understand the existing pedestrian activity in the Wheat Road area, immediately adjacent to the eastern alignment of the site, GTA Consultants undertook pedestrian surveys along the Harbour Street pedestrian path in November 2012 during the weekday AM, midday and PM peak periods as summarised in Table 6.1.

Table 6.1: Peak Hour Pedestrian Volumes – Wheat Road

Direction of Travel	8:00am-9:00am	12:30pm-1:30pm	5:00pm-6:00pm
Northbound	43	48	56
Southbound	25	40	79
Two-way	68	88	135

The results indicate that the two-way pedestrian volumes along the eastern boundary of the site peaked at 135 pedestrians during the PM peak hour. Further to this, on-site observations indicate that more pedestrians (up to two-thirds) have an origin-destination in Darling Harbour (west of the site) while the remainder arrive/ depart via Cockle Bay/ King Street Wharf and the pedestrian overpass north of the site. This is consistent during the AM and PM peaks, while the distribution is more evenly spread during the midday peak.

It is noted that the surveys were completed at a time when several small events were being held both within the existing building and in the vicinity and as such, the pedestrian volumes are considered typical and representative of the existing pedestrian movements in the vicinity of the site. Further to this, pedestrians use the area to meet and/ or wait for buses (Sydney Explorer) with no observed conflict between pedestrians at any time.

6.1.1 Background

To understand whether there is adequate capacity on existing footpaths to accommodate peak pedestrian demands while ensuring the safety and convenience for pedestrians, GTA Consultants has used Fruin Theory³ as reproduced in the '*Transit Capacity and Quality of Service Manual – 2nd Edition – Part 7*'⁴ which involves evaluating the pedestrian capacity and level of service (LOS) of an area.

To assess pedestrian LOS, GTA Consultants chose to use the criteria of 'Pedestrian Flow Rate'. Pedestrian flow rate, measured in pedestrians per metre per minute, is the number of pedestrians that pass a point during a specific period of time.

The width used in this assessment is the 'Effective Walkway Width'. The Transit Capacity and QSM, illustrates that the width of a walkway includes an unused buffer depending on walls and other

³ Fruin, John J. 1987 *Pedestrian Planning and Design – Revised Edition*

⁴ Transportation Research Board 2003 *Transit Capacity and Quality of Service Manual – 2nd Edition – Part 7*

obstruction and in general, 500mm is deducted from the overall width next to a wall or walkway edge and 300mm next to other obstructions, including walls up to about 1 metre high.

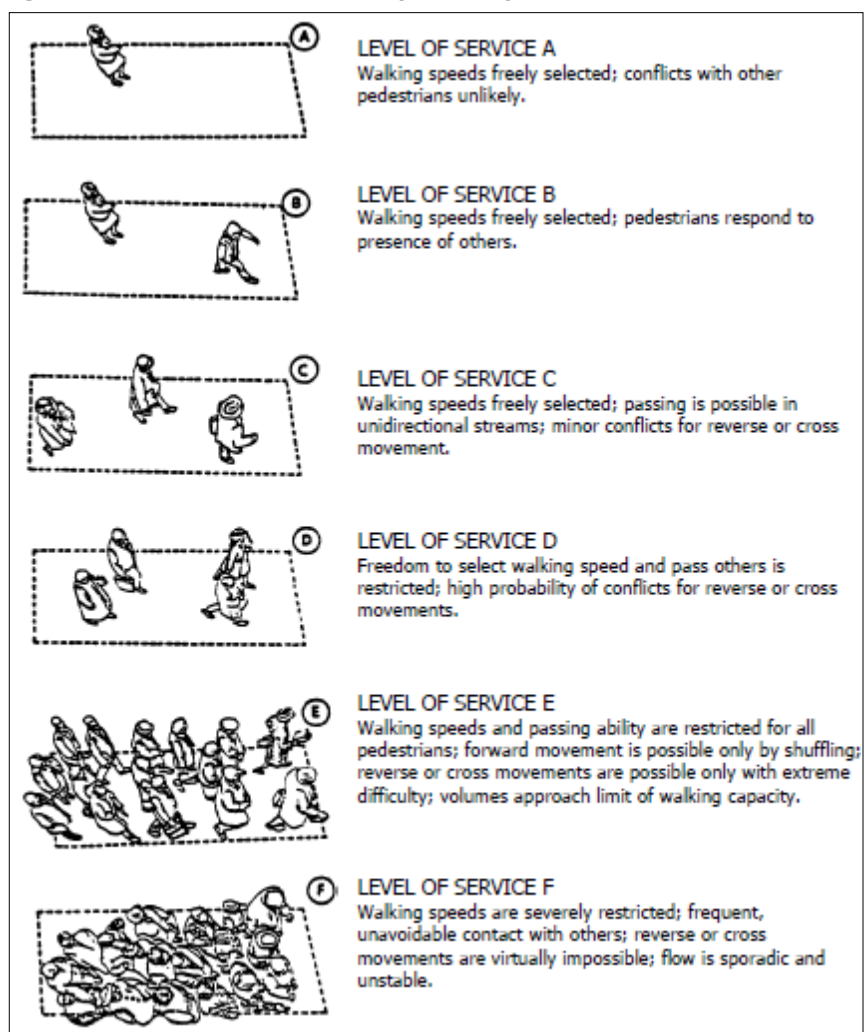
Table 6.2 presents the LOS criteria based on 'Pedestrian Flow Rate' and

Figure 6.1 presents a graphical representation of the walkway LOS.

Table 6.2: Pedestrian Level of Service on Walkways

LOS	Flow per Unit Width (p/ m/ min)
A	0-23
B	23-33
C	33-49
D	49-66
E	66-82
F	Variable

Figure 6.1: Illustration of Fruin Theory Walkway Levels of Service⁵



Source: Transportation Research Board 2003 Transit Capacity and Quality of Service Manual – 2nd Edition – Part 7

⁵ Fruin, John J. 1987 *Pedestrian Planning and Design – Revised Edition*

6.1.2 Assessment

Table 6.3 presents the results of the pedestrian LOS assessment for the study location under the existing layout. The assessment was undertaken for the peak fifteen minute intervals during the study hour. The walkway widths used are based on observations of whether pedestrians used the full footpath width or left a buffer to obstructions, such as avoiding a wall or other obstruction.

Table 6.3: Existing Pedestrian LOS Assessment – 1-hour Survey

Peak Pedestrian Volume (p)		Walkway Width (m)	Flow Rate [1] (p/ m/ min)	LOS
(p/ 15min)	(p/ min)			
55	3.7	4	1	A

[1] rounded up to the nearest whole number.

Table 6.3 indicates that based on existing pedestrian volumes the pedestrian LOS for the study location is 'A' and currently operates well over a 15 or 1 minute peak. Overall, existing footpaths operate well with no queuing or delay at any time or location.

6.2 Future Footpath Capacity

Although the extent of future pedestrian activity associated with the proposed development remains uncertain, an assessment has been made and based on GTA Consultants pedestrian analysis, particularly as it relates to studies completed in 2011 for Commonwealth Bank Place (CBP) (55,100m² NLA), located south of the site, and Darling Park Tower 1 (51,000m² NLA), located north-east of the site.

Assuming that the 41,900m² NLA of commercial space will accommodate between 3,500 and 4,000 staff with a building density of 1 person per 10-12m² (similar to CBP), the proposed development may generate between 260 and 310 pedestrians during a 5 minute interval peak between 8:30am and 9:00am on any typical weekday⁶.

Combined with the existing pedestrian environment (up to 20 pedestrians/ 5 min.), there could be 320 to 370 pedestrians within the area adjacent to the eastern boundary of the site, in the vicinity of the redesigned Wheat Road set-down/ pick-up area. The design plans indicate that the narrowest point in this area will be minimum 7m, resulting in a LOS as detailed in Table 6.4.

Table 6.4: Future Pedestrian LOS Assessment

Peak Pedestrian Volume (p)		Walkway Width (m)	Flow Rate [1] (p/ m/ min)	LOS
(p/ 5min)	(p/ min)			
260	52	7	8	A
310	62	7	9	A

[1] rounded up to the nearest whole number.

Table 6.4 indicates that based on existing pedestrian generation associated with comparable CBD commercial buildings, the pedestrian LOS for the study location will continue to operate at LOS 'A' with far greater positive activation of the area.

⁶ Based on pedestrian surveys at Darling Park Tower 1 in August 2011 with a theoretical 5 minute maximum of 310 pedestrians (two-way) in the period 8:30am-9:00am.

It should be noted that based on industry information and first-principles calculations, the processing rate for any one revolving door is approximately 45 persons per minute. Based on this, the revolving door would need to accommodate between 52 and 62 people per minute to ensure no queuing on entry. As a result, minor queuing could be expected during the 30 minute period prior to 9:00am in the area immediately adjacent to the revolving doors and could result in minor disruption to pedestrians walking through the area.

6.3 Pedestrian Amenity

The development plans show that one of the real improvements is gained through the provision of an activated site frontage along the northern boundary and how this space interacts with the entertainment and tourist areas surrounding Darling Harbour and Cockle Bay.

The proposal includes a building frontage in approximately the same location as the existing, however with the removal of the existing grade change and stairs leading to the main pedestrianised zone. Greater capacity has thus been gained through the design to maintain pedestrian thoroughfare and meets the demand associated with high pedestrian activity during major events.

Overall, the pedestrian areas in the vicinity of the site will function well, with improved amenity, activation and interaction throughout the area.

7. Loading Facilities

7.1 Loading Requirements

The City of Sydney provided the most relevant comparison for requirements for loading for the proposed development. DCP 2012 sets out rates for loading facilities for different development types. A review of these rates and the floor area schedule results in a requirement as summarised in Table 7.1.

Table 7.1: Draft DCP 2012 Loading Requirements

Use	Size (GFA)	Loading Rate	Loading Requirement
Commercial (excl. SHFA)	63,194m ²	1 loading space per 3,300m ² GFA	19 spaces
Other Uses	10,969m ²	1 loading space per 1,750m ² GFA or to meet needs	6
Total			25

Based on the above, the proposed development is required to provide up to 25 loading spaces under the City of Sydney's DCP.

7.2 Proposed Loading Arrangements

It is proposed to provide a total of three dedicated loading bays in combination with use of up to five courier bays located on the ground level with access via Harbour Street/ Wheat Road for a total of eight loading spaces. Loading for these areas would largely be utilised during off-peak times (particularly the function centre) while the three loading bays would accommodate the ground floor tenancies and commercial space during typical weekday times.

In addition and given the opportunity for the proposed development to provide for a single anchor tenant or a limited number of large tenants for predominantly commercial office use only, combined with a dock management system designed to make efficient use of the available space, the proposed loading arrangements are expected to be capable of supporting the servicing requirements of the site.

7.3 Wheat Road Layout

The existing bus facilities, including Sydney Explorer bus stop located within Wheat Road adjacent to the eastern boundary of the site is expected to be maintained, albeit with a redesigned layout, as part of the proposed development.

The bus zone and set-down/ pick-up arrangements will be formalised to accommodate any future additional demand and includes removal of the loading zone, kerb re-alignment, bus zone relocation combined with a courier/ passenger set-down/ pick-up area. It is noted that the building design allows for minimum 4.6m height clearances offset 600mm from the bollards to ensure appropriate access by a double decker bus.

These changes are expected to improve the operation of the area and will allow heavy vehicles to pass a stationary 14.5m long bus, a scenario which is not currently possible.

8. Traffic Impact Assessment

8.1 Traffic Generation

8.1.1 Design Rates

The City of Sydney LEP and DCP seeks to restrict car parking provisions with the objective of reducing the traffic generation potential of the site.

The RMS guidelines⁷ specify traffic generation rates for various land uses and associated parking provisions. Based on the RMS guidelines traffic generation rates per parking space provided can be derived for the proposed development mix and equates to 0.8 trips/ space. For the proposed development of 86 car spaces, this equates to 69 vehicle trips per peak hour.

Traffic generation estimates for the proposed development have been developed assuming turnover of the proposed 86 car spaces. As discussed in Section 2, the site's current use generates up to 15 vehicles in any peak hour.

It is reasonable to assume the arrival/ departure profile of the development will see the majority arriving during the weekday AM peak period and departing during the PM peak period. Therefore, and for the purposes of assessing the arrival profile and resultant worst-case queuing impacts, it has been assumed that up to 80% of vehicles will arrive to the site during the AM peak hour.

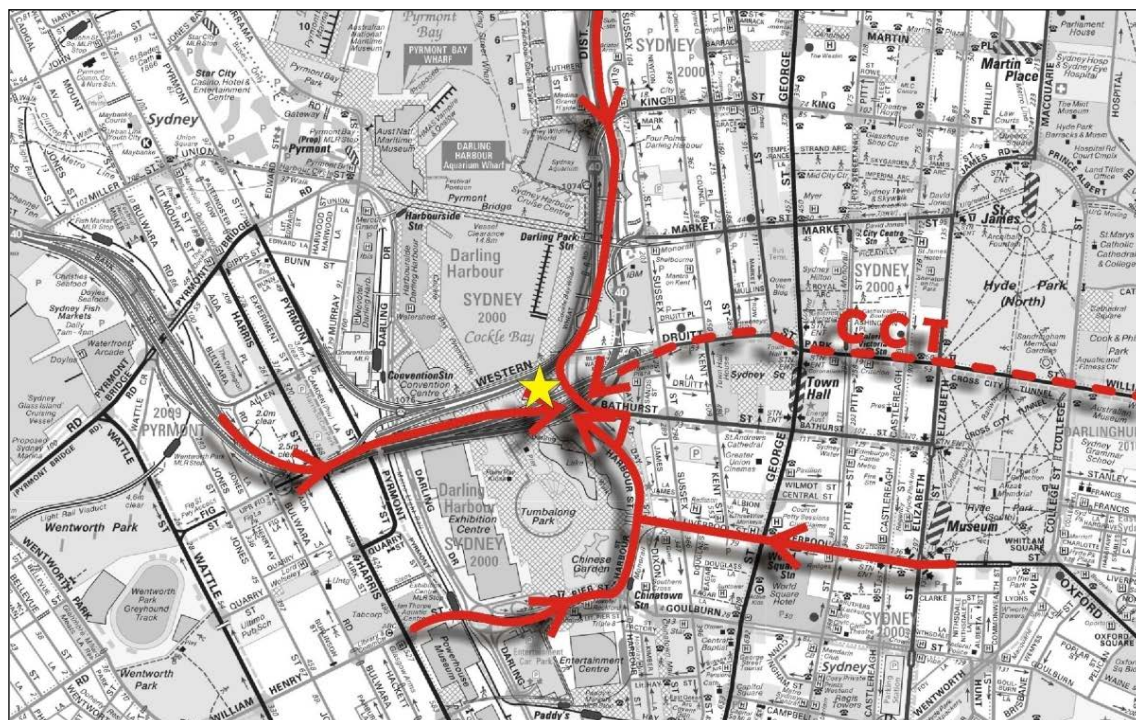
8.2 Distribution and Assignment

Although the directional distribution and assignment of traffic generated by the proposed development will be influenced by a number of factors, most notably the configuration of access points to the site and the configuration of the arterial road network in the immediate vicinity of the site, all vehicles will approach via Harbour Street (south) and exit the site via Wheat Road to the north.

Having consideration for the above and for the purposes of estimating vehicle movements, an even split between all approach and departure routes has been assumed. The review of the typical approach and departure routes is illustrated in Figure 8.1 and Figure 8.2.

⁷ Guide to Traffic Generating Developments (RMS, 2002)

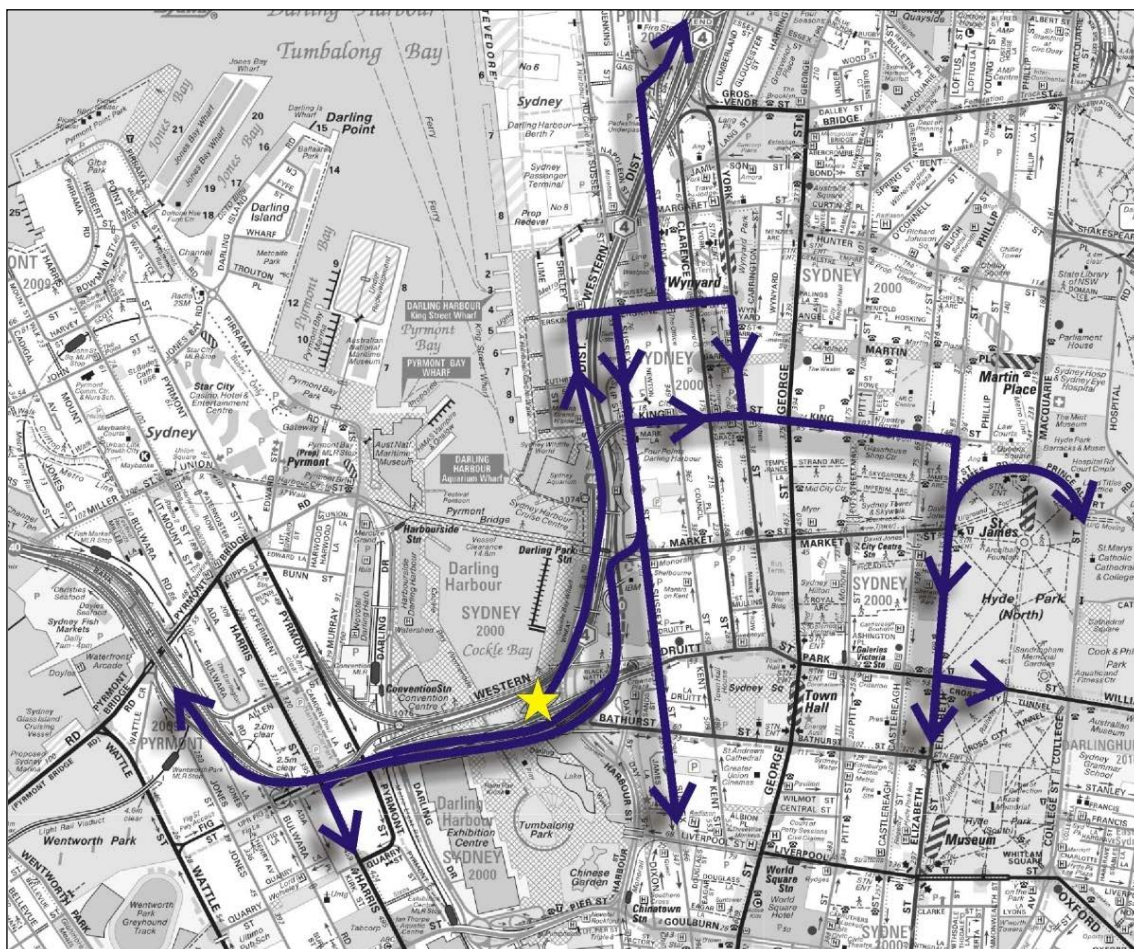
Figure 8.1: Vehicle Arrival Routes



The site is generally well located to provide efficient access by all vehicles on approach with the arterial road network surrounding the site generally providing access for all vehicles. This is particularly the case for the northern approach (SHB, Western Distributor and Harbour Street), western approach (Western Distributor) and eastern approach (CCT).

The departure routes are more complex however vehicles are able to generally keep to the arterial road network. Wheat Road will carry all vehicles exiting the site with the only exit route available via the north to Shelley Street and Erskine Street. Sussex Street, King Street, Elizabeth Street and the Western Distributor are all key roads in the vicinity and will combine to dissipate traffic on exit from the site.

Figure 8.2: Vehicle Departure Routes



During the AM peak hour, Harbour Street (south of Wheat Road) is expected to carry between 50-60 additional vehicles and Wheat Road (north of site) is expected to carry between 50-60 additional vehicles during the PM peak hour.

In addition, there is expected to be an increase in the set-down/ pick-up of staff within Wheat Road by both taxis and private vehicles. Referencing the JTW data as discussed in Section 3.8, 3% of staff will arrive/ depart in this manner, resulting in approximately 120 vehicles arriving and departing the area via Wheat Road.

As a result, it is anticipated that up approximately 170-180 additional vehicles will arrive and depart the area (via Harbour Street and Wheat Road) during the AM and PM peak hours. On departing the site, vehicles will be required to use Wheat Road to Shelley Street and into Erskine Street. These vehicles will dissipate the further they travel away from the site given the several available routes.

8.3 Traffic Impact

Given that all traffic generated by the development will enter the site from Harbour Street (northbound) and exit the site via Wheat Road (northbound), the impact on the operation of the intersections of Harbour Street/ Bathurst Street and Shelley Street/ Erskine Street is expected to be minimal, with site generated traffic typically being evenly distributed amongst the surrounding road network.

Against existing traffic volumes in the vicinity of the site, the additional traffic generated by the proposed development could not be expected to compromise the safety or function of the surrounding road network.

8.4 Car Stacker Queuing Analysis

As discussed, the on-site car spaces are to be provided within a car stacker capable of parking 86 vehicles. An additional combined courier/ disabled space will be located external to the car stacker and within the ground floor loading area with a further three dedicated motorbike spaces. The car stacker includes provision of three transfer cabins to move vehicles to/ from the car stacker spaces and, to ensure that the transfer cabins are able to service the anticipated traffic generated by the site, an assessment has been undertaken to determine the likely queues and delays that may be experienced by users of the site during peak flow conditions. The equation for calculating queue lengths is detailed in Figure 8.3 with a summary of the analysis presented below.

Figure 8.3: Equation for Calculating Queue Lengths

Equation 17-37 is used to calculate the 95th-percentile queue.

$$Q_{95} \approx 900T \left[\frac{v_x}{c_{m,x}} - 1 + \sqrt{\left(\frac{v_x}{c_{m,x}} - 1 \right)^2 + \frac{\left(\frac{3600}{c_{m,x}} \right) \left(\frac{v_x}{c_{m,x}} \right)}{150T}} \right] \left(\frac{c_{m,x}}{3600} \right)$$

where

- Q_{95} = 95th-percentile queue (veh),
- v_x = flow rate for movement x (veh/h),
- $c_{m,x}$ = capacity of movement x (veh/h), and
- T = analysis time period (h) ($T = 0.25$ for a 15-min period).

Source: Highway Capacity Manual 2000

The service rate of the car stacker has been determined using information provided in consultation with equipment supplier Wohr. Using equation 17-37 in Figure 8.3 and adopting an effective service rate for the transfer cabins of 90 veh/ hr ($C_{m,x}$) and a vehicle arrival rate (V_x) of 52-69 veh/ hr, (based on 60% and 80% arrival of all spaces) results in a 95th percentile queue of 4-8 vehicles (or 25m-50m). With up to 8 vehicles in a queue, this is equal to approximately the maximum distance available to queue in advance of the first transfer cabin (via Harbour Street), suggesting that queuing can be expected to occur within the site and Wheat Road without impacting through traffic on Harbour Street.

It is also worth noting that under a worst case scenario where 80% of the on-site car parks supply was to arrive during the AM peak hour; there would be an 8% probability of a queue exceeding 7 vehicles.

It should be noted that the car stacker and associated 3 transfer cabins have considered the need to prevent queuing back onto Harbour Street and as such have been slightly oversized. The additional courier spaces outside of the car stacker are also available for use during peak arrival periods, assuming the area (loading dock and car stacker) to be under appropriate management (valet service and dock management system). This allows for rare incidents of inefficiency, breakdowns and service rate delay caused by users. The above combines to limit the chance for queuing beyond that detailed above.

8.4.1 Site Access Management

A site access management plan would further assist in providing an efficient system and would outline access and operating arrangements for the car park and loading areas. The management plan could include the following:

- car stacker service rates and operational capacity
- site access management for car stacker and loading dock access
- AM and PM peak period management procedures
- bicycle parking access arrangements.

8.4.2 Emergency Site Access Management Plan

In the event that the car stacker breaks down and becomes inaccessible, an emergency traffic management plan is to be put into effect. Details of the plan and its execution are to be developed during the detailed design stage.

9. Conclusion

Based on the analysis and discussions presented within this report, the following conclusions are made:

- i The proposed development is located at the southern end of the Darling Harbour on the western fringe of the CBD and is well served by a combination of existing public transport services (CBD train and bus services) and an extensive pedestrian network.
- ii The development generates a City of Sydney LEP 2012 parking requirement of a maximum 90 spaces.
- iii The proposed supply of 86 spaces is appropriate given the proximity of the site to various public transport services and active travel facilities.
- iv The proposed ground level site access driveway, loading facilities and parking layout is consistent with the dimensional requirements as set out in the Australian Standard for Off Street Car Parking (AS/NZS2890.1:2004).
- v The provision for bicycle facilities (combined approximately 330 spaces) and end of trip facilities is considered appropriate with consideration to the requirements of NSW Planning Guidelines. It is recommended that the proposed development also include options for visitor bicycle parking to be located adjacent to building within the surrounding Darling Harbour pedestrian precinct.
- vi The implementation of a Green Travel Plan (and associated Transport Access Guide) will further reduce reliance on the private vehicles for staff and visitors.
- vii Pedestrian modelling (using Fruin LOS) indicates that a LOS A will be maintained along the eastern building alignment. Some queuing at the revolving doors is anticipated during the AM peak period; however the impact of this would be minimal.
- viii The northern frontage of the site improves the pedestrian amenity while providing an at-grade activated space.
- ix The provision of loading facilities accommodating up to eight vehicles within three dedicated loading bays (up to 8.8m medium rigid vehicles) and courier spaces with access provided via Harbour Street/ wheat Road is appropriate given the anticipated loading requirements of the site together with complimentary uses/ dock management, waste management and minimisation services provided by the proposed development.
- x The site is expected to generate less than 70 vehicle movements in any peak hour with an additional 120 vehicles associated with passenger set-down/ pick-up in Wheat Road.
- xi There is adequate capacity in the surrounding road network to cater for the traffic generated by the proposed development. The majority of traffic will remain on the arterial road network on approach and departure, with the exception of Wheat Road.
- xii The design allows for 7-8 vehicles to queue without impacting on northbound traffic on Harbour Street. This is appropriate based on queuing analysis assuming an AM peak hour arrival of 60%-80% of all on-site car parking spaces.
- xiii Provision is made for all access arrangements to operate safely and efficiently with the design of the Wheat Road area to ensure no direct access to Harbour Street for exiting vehicles.
- xiv The operational efficiency of the Harbour Street/ Wheat Road intersections in the vicinity of the site are to be maintained at all times. Minor mitigating road improvement works as part of the development are recommended to minimise any impacts and retain, within practical

Conclusion

limitations, the level of safety and operational efficiency that would have existed without the development.

- xv A construction traffic management plan will be prepared for the development prior to commencement of work.

Appendix A

Survey Results

COUNT REDUCTION PROGRAM

LOCATION: Harbour Street, Darling Harbour

JOB NUMBER: 12S9018000

DAY & DATE: 9-May-12

WEATHER: Fine

SURVEYORS NAME(S): BHR

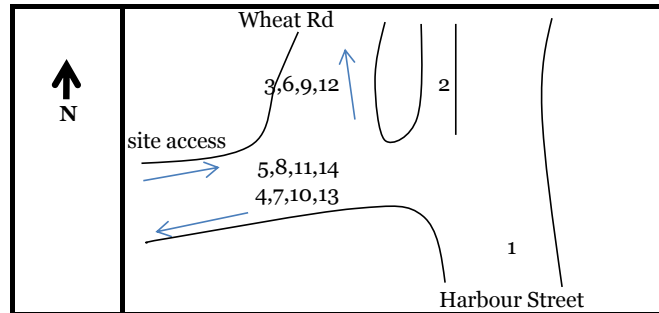
COMMENTS: Morning Peak Period

START TIME 7:30

FINISH TIME 9:15

MOVEMENTS 15

MINS/INCREMENT 15



All vehicles 1-2, northbound only

Cars 3-5

Taxi 6-8

Trucks 9-11

Buses 12-14

CUMULATIVE FLOWS

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45	298	9	1	1	0	4	0	0	1	1	0	0	0	0	0
8:00	621	17	2	2	1	6	0	0	2	1	0	0	0	0	1
8:15	981	27	3	4	2	6	0	0	3	1	0	0	0	0	2
8:30	1381	34	3	6	2	6	0	0	4	1	1	0	0	0	2
8:45	1819	48	5	7	3	6	0	0	4	1	1	1	0	0	2
9:00	2145	60	7	9	4	9	0	0	4	2	2	2	0	0	2
9:15	2386	73	8	9	4	9	0	0	6	3	3	2	0	0	2

INCREMENTAL FLOWS

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL	HOURLY
7:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:45	298	9	1	1	0	4	0	0	1	1	0	0	0	0	0	315	
8:00	323	8	1	1	1	2	0	0	1	0	0	0	0	0	1	338	
8:15	360	10	1	2	1	0	0	0	1	0	0	0	0	0	1	376	
8:30	400	7	0	2	0	0	0	0	1	0	1	0	0	0	0	411	1440
8:45	438	14	2	1	1	0	0	0	0	0	0	1	0	0	0	457	1582
9:00	326	12	2	2	1	3	0	0	0	1	1	1	0	0	0	349	1593
9:15	241	13	1	0	0	0	0	0	2	1	1	0	0	0	0	259	1476
TOTAL	2386	73	8	9	4	9	0	0	6	3	3	2	0	0	2	2505	

HOURLY FLOWS

PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
7:30 - 8:30	1381	34	3	6	2	6	0	0	4	1	1	0	0	0	2	1440
7:45 - 8:45	1521	39	4	6	3	2	0	0	3	0	1	1	0	0	2	1582
8:00 - 9:00	1524	43	5	7	3	3	0	0	2	1	2	2	0	0	1	1593
8:15 - 9:15	1405	46	5	5	2	3	0	0	3	2	3	2	0	0	0	1476

COUNT REDUCTION PROGRAM

LOCATION: Harbour Street, Darling Harbour

JOB NUMBER: 12S9018000

DAY & DATE: 9-May-12

WEATHER: Fine

SURVEYORS NAME(S): BHR

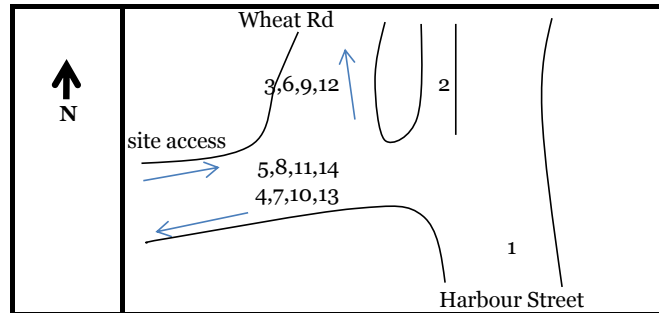
COMMENTS: Afternoon Peak Period

START TIME 16:30

FINISH TIME 18:30

MOVEMENTS 15

MINS/INCREMENT 15



All vehicles 1-2, northbound only

Cars 3-5

Taxi 6-8

Trucks 9-11

Buses 12-14

CUMULATIVE FLOWS

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
16:45	354	13	2	0	0	8	0	0	0	0	0	1	0	0	0
17:00	716	30	3	2	0	20	0	0	0	0	0	1	0	0	2
17:15	1087	49	4	2	0	29	0	0	0	0	0	2	0	0	2
17:30	1482	67	5	3	0	40	0	0	0	0	0	3	0	0	3
17:45	1832	85	7	5	0	56	0	0	0	0	0	5	0	0	3
18:00	2221	100	7	5	0	73	0	0	0	0	0	6	0	0	4
18:15	2556	119	9	5	0	87	0	0	0	0	0	6	0	0	4
18:30	2910	139	9	5	0	102	0	0	0	0	0	7	0	0	6

INCREMENTAL FLOWS

TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL	HOURLY
16:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
16:45	354	13	2	0	0	8	0	0	0	0	0	1	0	0	0	378	
17:00	362	17	1	2	0	12	0	0	0	0	0	0	0	0	2	396	
17:15	371	19	1	0	0	9	0	0	0	0	0	1	0	0	0	401	
17:30	395	18	1	1	0	11	0	0	0	0	0	1	0	0	1	428	1603
17:45	350	18	2	2	0	16	0	0	0	0	0	2	0	0	0	390	1615
18:00	389	15	0	0	0	17	0	0	0	0	0	1	0	0	1	423	1642
18:15	335	19	2	0	0	14	0	0	0	0	0	0	0	0	0	370	1611
18:30	354	20	0	0	0	15	0	0	0	0	0	1	0	0	2	392	1575
TOTAL	2910	139	9	5	0	102	0	0	0	0	0	7	0	0	6	3178	

HOURLY FLOWS

PERIOD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	TOTAL
16:30 - 17:30	1482	67	5	3	0	40	0	0	0	0	0	3	0	0	3	1603
16:45 - 17:45	1478	72	5	5	0	48	0	0	0	0	0	4	0	0	3	1615
17:00 - 18:00	1505	70	4	3	0	53	0	0	0	0	0	5	0	0	2	1642
17:15 - 18:15	1469	70	5	3	0	58	0	0	0	0	0	4	0	0	2	1611
17:30 - 18:30	1428	72	4	2	0	62	0	0	0	0	0	4	0	0	3	1575

COUNT REDUCTION PROGRAM

LOCATION: Harbour Street, Darling Harbour

JOB NUMBER: 12S9018000

DAY & DATE: 15-Nov-12

WEATHER: Fine

SURVEYORS NAME(S): BHR

COMMENTS: Morning Peak Period

START TIME	8:00
FINISH TIME	9:00
MOVEMENTS	2
MINS/INCREMENT	15

CUMULATIVE FLOWS

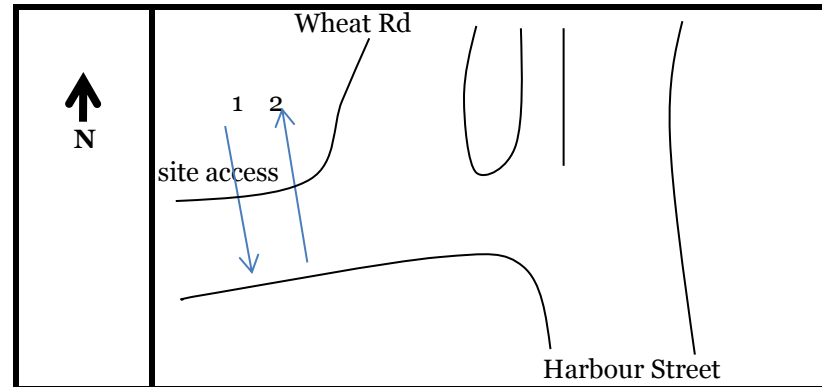
TIME	1	2
8:00	0	0
8:15	10	3
8:30	17	9
8:45	32	14
9:00	43	25

INCREMENTAL FLOWS

TIME	1	2	TOTAL	HOURLY
8:00	0	0	0	
8:15	10	3	13	
8:30	7	6	13	
8:45	15	5	20	
9:00	11	11	22	68
TOTAL	43	25	68	

HOURLY FLOWS

PERIOD	1	2	TOTAL
8:00 - 9:00	43	25	68



COUNT REDUCTION PROGRAM

LOCATION: Harbour Street, Darling Harbour

JOB NUMBER: 12S9018000

DAY & DATE: 15-Nov-12

WEATHER: Fine

SURVEYORS NAME(S): BHR

COMMENTS: Midday Peak Period

START TIME	12:30
FINISH TIME	13:30
MOVEMENTS	2
MINS/INCREMENT	15

CUMULATIVE FLOWS

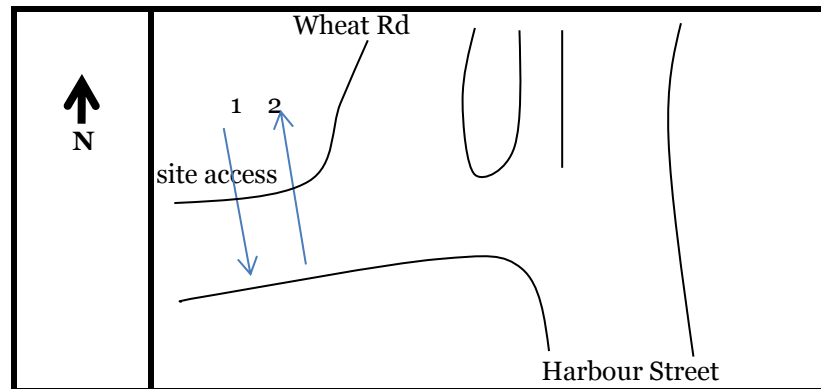
TIME	1	2
12:30	0	0
12:45	18	7
13:00	30	16
13:15	39	36
13:30	48	40

INCREMENTAL FLOWS

TIME	1	2	TOTAL	HOURLY
12:30	0	0	0	
12:45	18	7	25	
13:00	12	9	21	
13:15	9	20	29	
13:30	9	4	13	88
TOTAL	48	40	88	

HOURLY FLOWS

PERIOD	1	2	TOTAL
12:30 13:30	48	40	88



COUNT REDUCTION PROGRAM

LOCATION: Harbour Street, Darling Harbour

JOB NUMBER: 12S9018000

DAY & DATE: 15-Nov-12

WEATHER: Fine

SURVEYORS NAME(S): BHR

COMMENTS: Afternoon Peak Period

START TIME	17:00
FINISH TIME	18:00
MOVEMENTS	2
MINS/INCREMENT	15

CUMULATIVE FLOWS

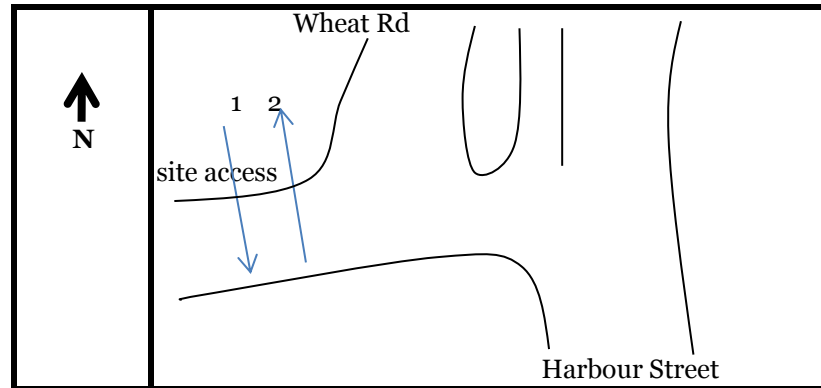
TIME	1	2
17:00	0	0
17:15	8	19
17:30	18	34
17:45	38	43
18:00	56	79

INCREMENTAL FLOWS

TIME	1	2	TOTAL	HOURLY
17:00	0	0	0	
17:15	8	19	27	
17:30	10	15	25	
17:45	20	9	29	
18:00	18	36	54	135
TOTAL	56	79	135	

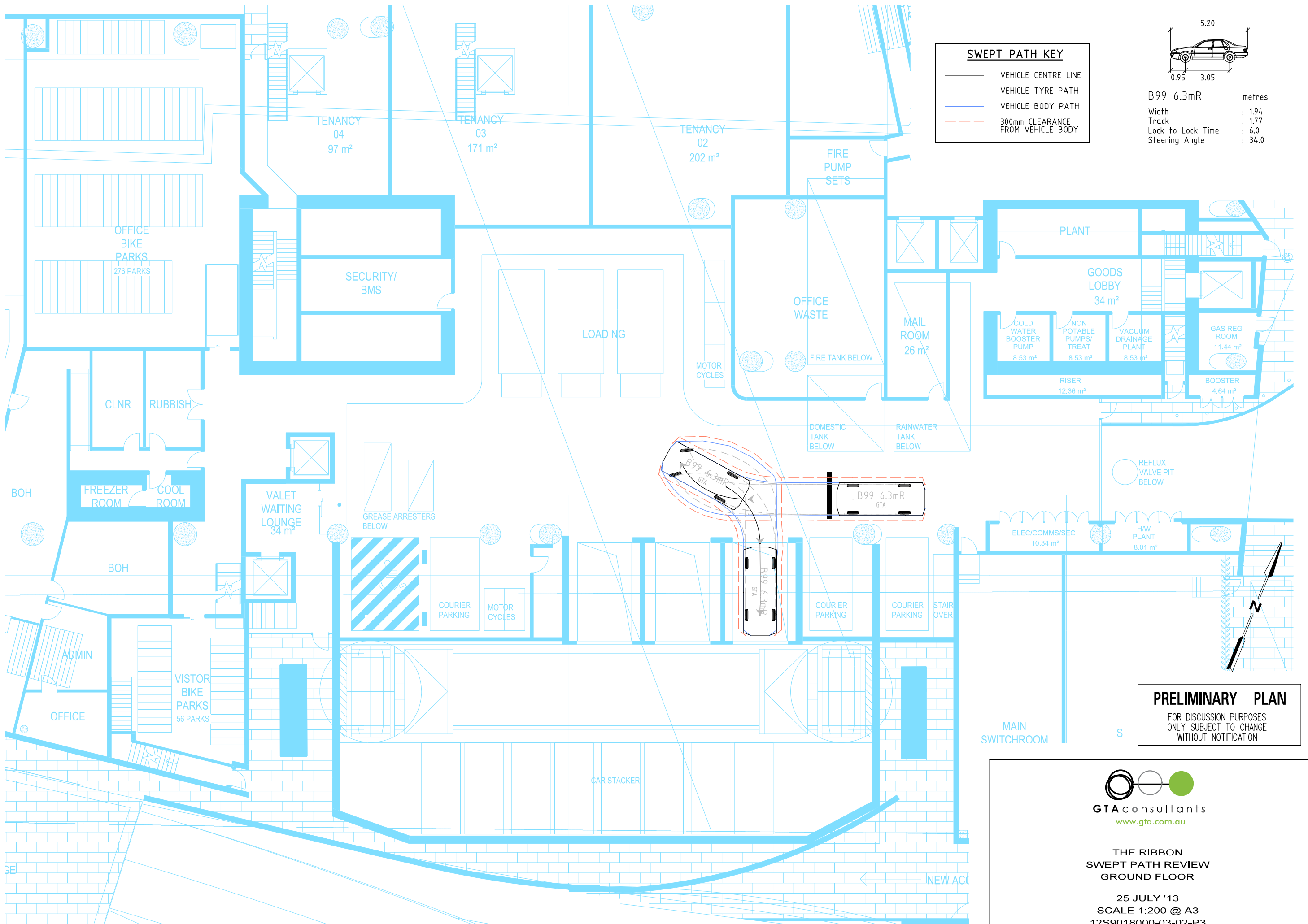
HOURLY FLOWS

PERIOD	1	2	TOTAL
17:00 - 18:00	56	79	135



Appendix B

Site Access and Loading Area Swept Paths

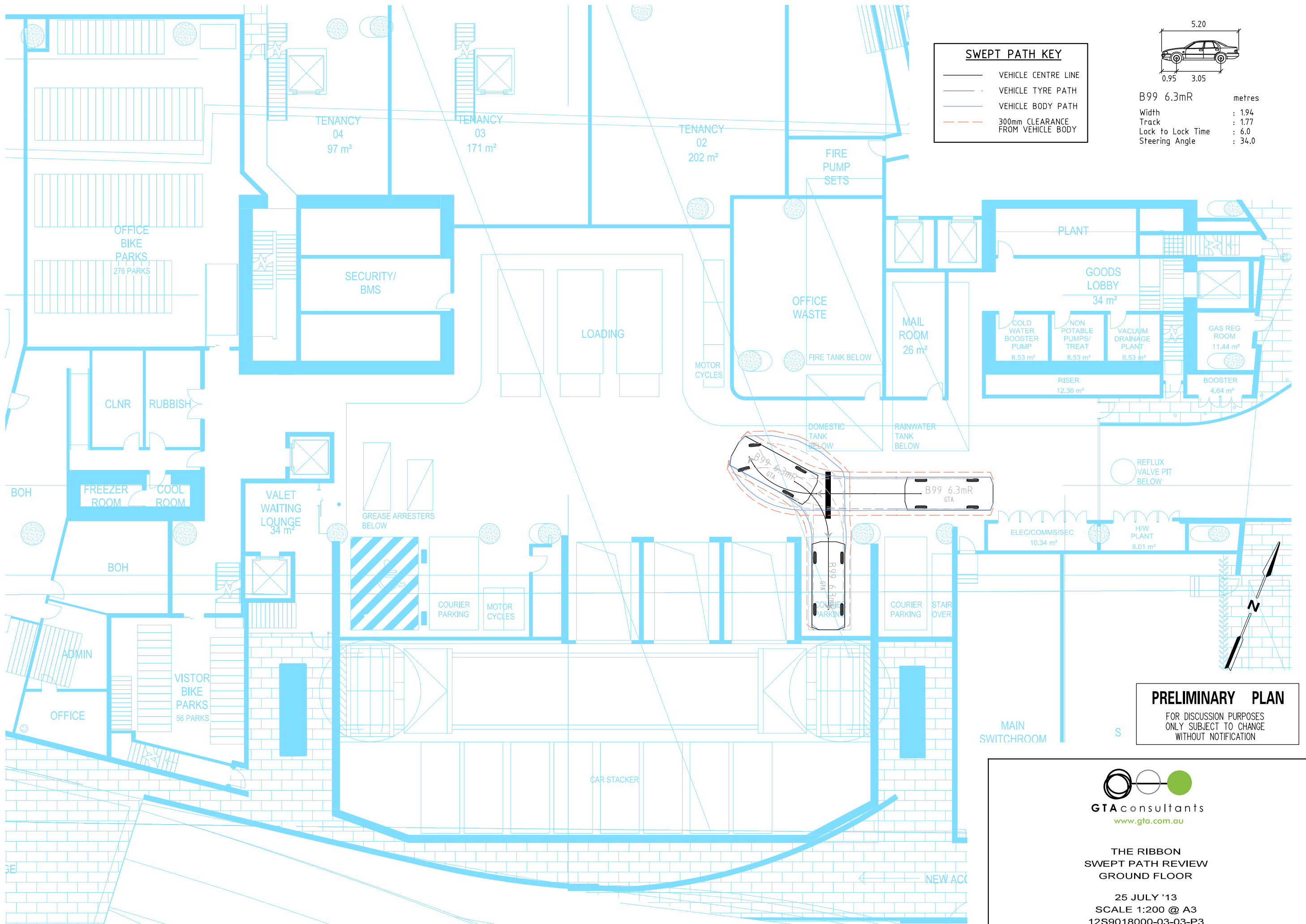


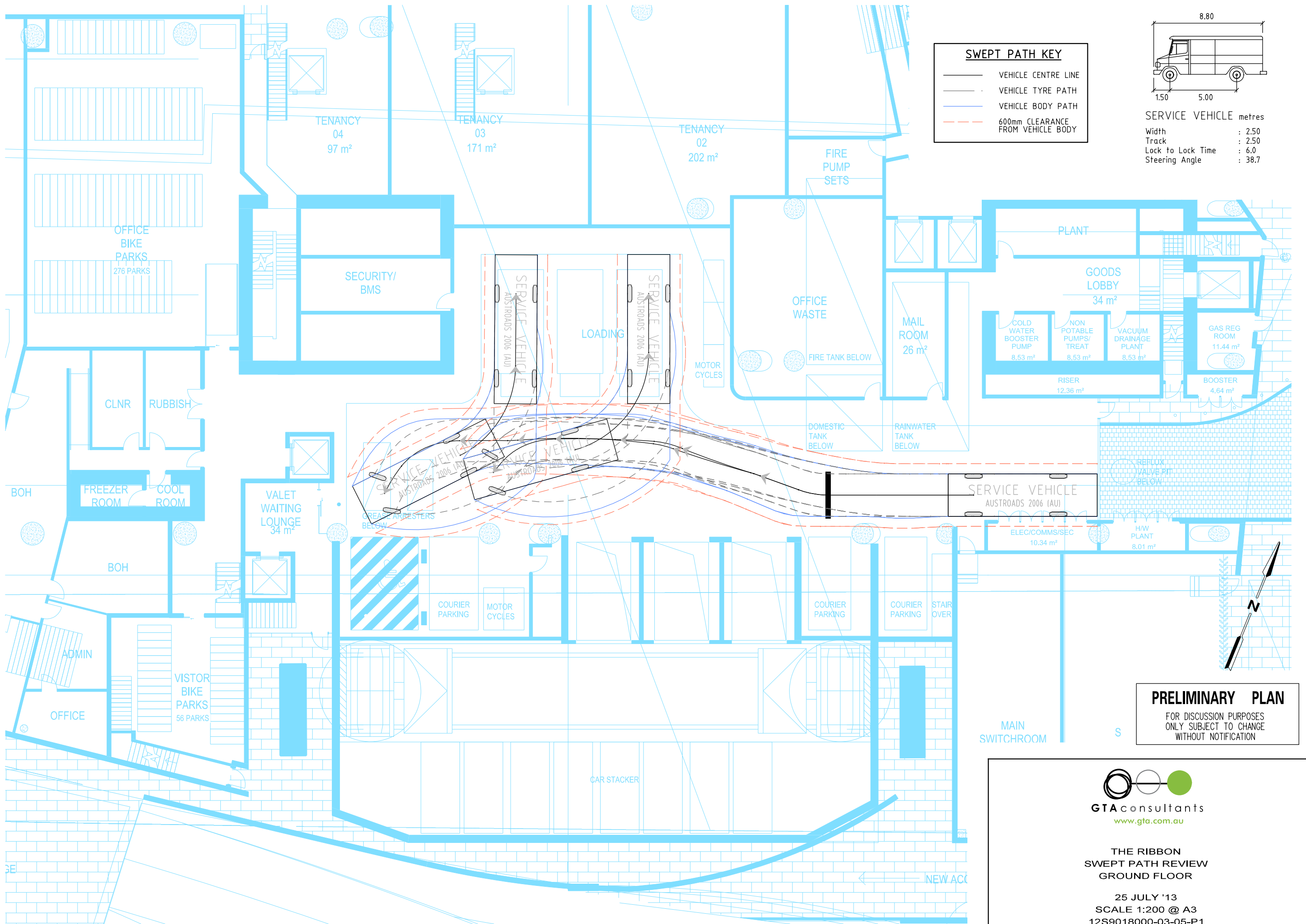
PRELIMINARY PLAN
FOR DISCUSSION PURPOSES
ONLY SUBJECT TO CHANGE
WITHOUT NOTIFICATION

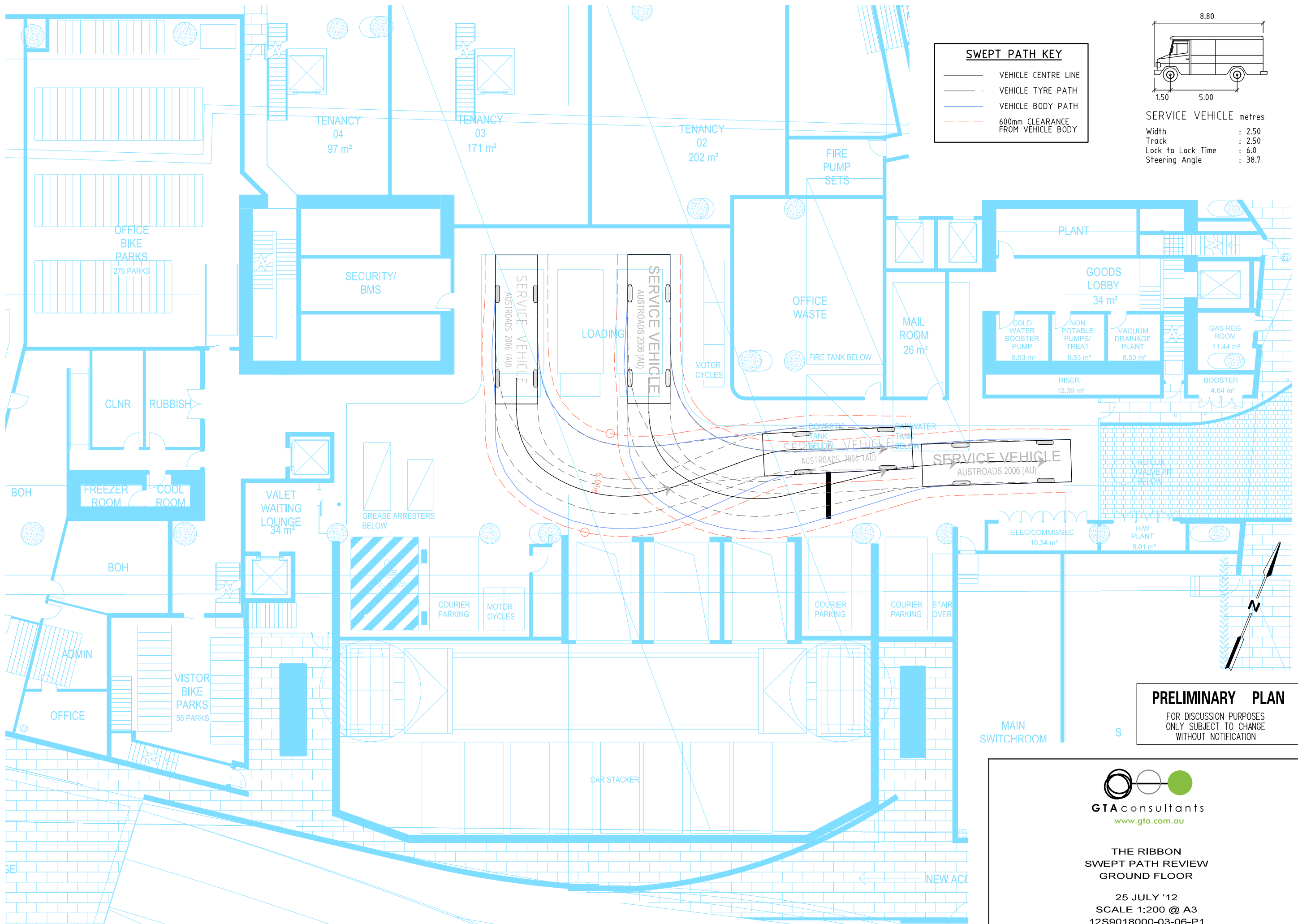


**THE RIBBON
SWEPT PATH REVIEW
GROUND FLOOR**

25 JULY '13
SCALE 1:200 @ A3
12S9018000-03-02-P3







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