

4.6.7 Ramp Grades and Transitions

It is recommended that ramp grades at the ground plane do not exceed 1:20 (5%). This is appropriate for commercial vehicle access without transitions (in accordance with AS2890.2-2002), with the manoeuvring area essentially flat. This will ensure grades also comply with the requirement for 1:20 for the first 6.0m into the site for pedestrians.

The ramps to the basement car parking levels are a maximum of 1:5 (20%) with transitions of a minimum of 2m in length at grades of 1:10 (10%). The length of ramp has correctly been measured as to the inside curve of the ramps. These grades are in accordance with the Australian Standard (AS / NZS2890.1-2004) and are therefore appropriate.

4.6.8 Height Clearances

A minimum height clearance of 2.3m is required within the basement and for any section of roadway leading to a car parking space. The plans indicate that this is achieved within, and on entry to, the basement areas.

4.6.9 Curved Roadway / Ramp

The curved sections of ramp are in accordance with the Australian Standard (AS / NZS2890.1-2004).

A swept path assessment has been provided at Appendix D to confirm accessibility of the entry to the basement car park. It is however recommended that line marking be incorporated at the entry to the basement car park in accordance with Appendix C of this report.

Within Level B3, there is currently a realignment of the access aisle. Recommendations are contained at Appendix C to improve the alignment and line mark to improve legibility of the area.

5. Integrated Transport Infrastructure

5.1 General

Section 2 of this report sets out the existing adjoining public transport facilities. There are numerous plans to upgrade and improve the existing public transport facilities in the vicinity of the site noting that part of the vision of the Northshore Hamilton UDA is to accommodate, promote and optimise use of public transport, walking and cycling. Future plans regarding alternative transport services and facilities are presented below.

5.2 Public Transport

5.2.1 Ferry Services

It is understood that the CityCat ferry terminal is proposed to be relocated from its present location to the end of Racecourse Road, bringing it to within 300m of the site⁵. In addition, the establishment of a new ferry stop is understood to be proposed at the centre of Hamilton Northshore⁶.

5.2.2 Bus Services

High quality bus based public transport facilities are proposed in close proximity to the development. These facilities will include an "interchange" or "terminal" like node, i.e. a higher quality facility than a "bus stop". In particular a bus terminal is proposed adjacent to the site in the new road link and in Harbour Road providing more direct and convenient access to bus services⁷.

Furthermore, it is understood that in previous discussions Queensland Transport has advised that as demand increases, more services will be brought on-line. One suggestion has been the potential to extend the current service between Racecourse Road and the City to service the site⁸. It is also understood that the ULDA is in discussions with Queensland Transport regarding the future form of mass transit in the area.

5.2.3 On-Site Facilities

The development has been designed to accommodate a potential shuttle bus service to the nearby Doomben or Ascot railway stations.

5.3 Pedestrian Infrastructure

The internal layout of the site is designed to primarily accommodate the needs of pedestrians, with connectivity proposed to the Hamilton Northshore area. Within the site, pedestrian connectivity is achieved by pedestrian paths along both sides of the internal roadway at the building line, in addition to pedestrian crossings of the internal roadway at key locations.

⁵ Information provided to GTA Consultants by Devine Limited, understood to be based on previous discussions between the project team, Brisbane City Council and Queensland Transport.

⁶ As above.

⁷ As above.

⁸ As above.

Pedestrian paths are a minimum of 1.8m wide to cater for predicted pedestrian demands. The requirements of AUSTROADS Part 13 (Pedestrians) for pedestrian facilities are as follows:

- preferred minimum width: 2.4m
- absolute minimum width: 1.8m.

As such, the provisions are appropriate. The internal pedestrian paths connect the site to Harbour Road and Hercules Street.

In addition to the above and the existing signalised pedestrian crossing locations in the vicinity of the site, signalised pedestrian crossings will be provided at the intersections of:

- Kingsford Smith Drive with the new link road
- the new link road and Hercules Street.

These facilities will provide further opportunities for pedestrians to cross key roads in the vicinity of the site and maintain safe connectivity to surrounding public transport opportunities and nearby parklands.

The preferred and recommended pedestrian route through the site is on the northern side of the internal street. As such, the addition of a pedestrian crossing at the basement entrance's intersection with the internal street is not required.

In summary, noting that pedestrians could cross at any location and low vehicle speeds anticipated on the internal street, the crossing provisions within the site represent logical desire lines and conflict points have been appropriately addressed.

5.4 Bicycle Infrastructure

5.4.1 End of Trip Requirements

The *Northshore Hamilton Urban Development Area Development Scheme* (Development Scheme) sets targets for bicycle provision. Table 5.1 has been prepared to set out the bicycle end of trip facilities required in accordance with the *Development Scheme*.

Table 5.1: Bicycle Parking Requirements (Based on Northshore Hamilton Urban Development Area Development Scheme)

Use	Size	Rate of Requirement		Calculated Requirement	
		Employee / Resident	Visitor / Customer	Employee / Resident	Visitor / Customer
Residential	647 Apartments (50,590sq.m)	1 space / dwelling	1 space / 400sq.m	647 spaces	127 spaces
Non-residential	22,030sq.m NLA [1]	1 space / 200sq.m NLA	1 space / 1,000sq.m NLA	111 spaces	22 spaces

[1] In this instance, NLA is assumed to be equivalent to 90% of GFA.

Table 5.1 indicates that, according to the *Development Scheme*, the proposed development requires a provision of:

- 647 resident bicycle spaces
- 111 employee bicycle spaces
- 149 visitor / customer bicycle spaces.

In addition, guidance on the appropriate provision of bicycle end-of-trip facilities has been sourced from Brisbane City Council's (BCC's) *Transport, Access, Parking and Servicing Code* (TAPS Code). Performance Criteria P10 and P11 of this document detail the bicycle end-of-trip facilities recommended for new developments.

There is no statutory requirement to provide bicycle facilities for a residential uses based on BCC's TAPS Code. The TAPS Code does, however, require shop or office developments with a GFA over 2,500sq.m provide adequate bicycle parking, shower cubicles and lockers.

Table 5.2 sets out the required facilities for cyclists associated with the proposed development, based on reference to the TAPS Code at Acceptable Solutions A11.1 – 11.3.

Table 5.2: Bicycle Parking Requirements (based on P11 of BCC's TAPS Code)

Use	Size	Rate of Requirement		Calculated Requirement	
		Employee	Visitor / Customer	Employee	Visitor / Customer
Residential	647 Apartments	None	None	None	None
Office	19,129sq.m	1 space / 500sq.m GFA	1 space / 750sq.m GFA	39 spaces	26 spaces
Shop / Gym	5,649sq.m [2]	1 space / 500sq.m GFA	1 space / 500sq.m GFA [1]	12 spaces	12 spaces
Total				51 spaces	38 spaces

[1] With a minimum of ten spaces.

[2] Includes restaurant area.

Table 5.2 indicates that, if assessed on the basis of the TAPS Code, the proposed development requires a provision of:

- 51 employee bicycle spaces
- 38 visitor / customer bicycle spaces.

Further to the above, Chapter 5 of the Brisbane City Plan requires the provision of one storage locker per two employee bicycle spaces and one shower cubicle (with change room) per ten bicycle spaces for employees of an office or shop. This equates to a requirement of some 26 lockers and five shower cubicles for the proposed development.

5.4.2 Connection to the External Network

Within the development, access to the bicycle facilities is proposed as follows:

- Employees will catch the lift from the ground level to the Basement 2 level for access to the bicycle end-of-trip facilities.
- Residents will catch the lift from the lobby of their building to the Basement 1 level for access to the bicycle parking facilities.
- Visitors will access the bicycle rails provided at ground level.

5.4.3 Suitability of Provision for Cyclists

The current provision for bicycles has been advised⁹ as follows:

- 310 resident bicycle spaces (approximately one spaces for every two apartments)
- 60 secure bicycle parking spaces, 64 lockers and six showers at B2 level for employee use
- 35 at-grade visitor bicycle parking rails.

In terms of resident bicycle parking, given that additional storage cages are provided and that bicycles could be stored within each apartment, the provision of 310 spaces is considered appropriate.

It is however recommended that the employee bicycle parking provision be increased to 111 spaces in accordance with the *Development Scheme*.

With regards to visitor parking, the requirement for 149 spaces would appear excessive. As the ability exists to readily retrofit additional visitor bicycle parking, it is recommended that the current proposal be implemented, with the developer to retrofit the full requirement for visitor parking should the need arise.

The security of resident bicycle spaces will be ensured by secure entry arrangements and other safety measures planned for access from the parking areas to the residential lift entry.

The proposed bicycle end-of-trip provisions meets the minimum required by the TAPS Code, noting that each end bicycle rail for visitors is technically capable of accommodating two bicycles.

5.4.4 Cyclist Parking Design

The secure bicycle spaces at Basement 2 have been designed as '*Ned Kelly bicycle parking rails*' in accordance with '*The Bicycle Parking Handbook*' produced by Bicycle Victoria. Given that Bicycle Victoria is regarded as an expert authority in bicycle infrastructure and facilities, adoption of this bicycle storage design is considered a suitable alternative to the relevant Australian Standard.

⁹ As advised by Mr Shayne Dyer of Cox Rayner to Ms Angela Crawford of GTA Consultants on 26 November 2009.

6. Loading Facilities

6.1 Requirements

To determine the likely loading demand of the proposed development, considering its mix of retail and commercial uses, surveys were undertaken at a similar development known as Freshwater Place in Southbank, Melbourne.

In selecting a comparable facility for surveying the anticipated loading requirements, a Brisbane based development of a similar development mix, intensity and location to that of the proposed development could not be found. As such, the most comparable development known to GTA Consultants was in Melbourne. For this reason, Freshwater Place was selected as a reference for the purpose of determining loading facility requirements for Hamilton Harbour, which is considered appropriate.

The Freshwater Place development includes the following uses:

- 55,000sq.m of office development
- 3,500sq.m of retail uses
- 530 residential units.

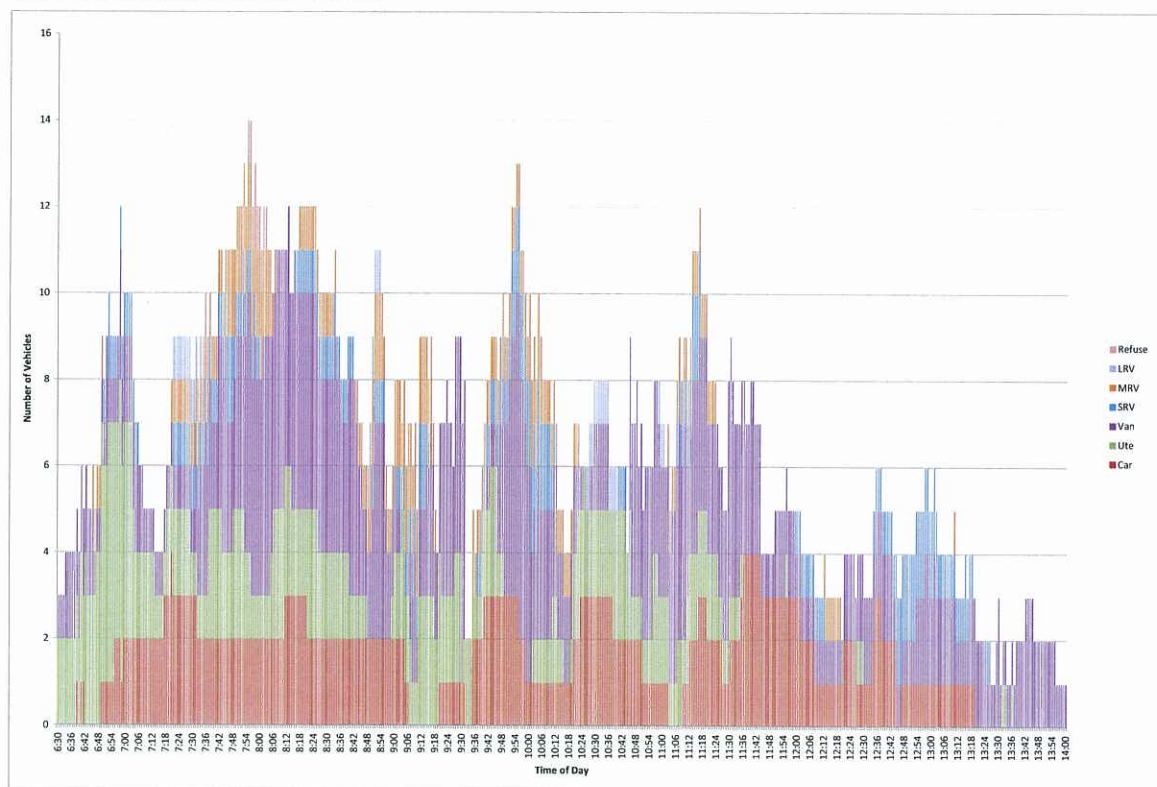
On the basis of the above, the loading demands generated by Freshwater Place are considered to be an appropriate comparison from which to determine the loading demands for Hamilton Harbour. It is, however, important to note that Freshwater Place is over double the size of the proposed development.

The observed peak loading demand of the above development was a total of 14 vehicles, including the following vehicle types:

- one refuse collection vehicle
- two medium rigid vehicles
- one small rigid vehicle
- six vans
- two standard cars
- two utility vehicles.

The peak number of vehicles larger than a van (including small, medium and large rigid vehicles and refuse collection vehicles) was four vehicles. A graph of the variations in the loading demands over a typical day is shown in Figure 6.1.

Figure 6.1: Loading Demand Summary



The above Figure highlights that the peak loading demand occurs in the early morning.

Adjusting the peak demand to reflect the fact that Freshwater Place is some 2.3 times the size of the proposed development, the peak demand associated with the proposed development could be expected to be in the order of six to seven vehicles.

6.2 Loading Provision

6.2.1 Quantum

On the basis of the surveys conducted at Freshwater Place, the current loading dock provision for three large rigid vehicles is expected to meet the demand for large vehicles generated by the development.

To accommodate the estimated peak demand of two to three additional van / passenger / utility vehicles (adjusting for the smaller size of the proposed development), it is noted that there are two dedicated van spaces within the loading area. In addition, these vehicles types are also capable of utilising typical car parking spaces and the at-grade car park includes spaces which are restricted to 15 minute parking which can be used for this purpose.

This restriction is expected to ensure a high turnover of these spaces, with the restriction suitable for the purpose of the majority of loading needs.

6.2.2 Accessibility

To confirm the accessibility of the central loading area by the various service vehicles, an assessment has been undertaken in AutoTURN. This assessment indicates that the dock is accessibly by three large rigid vehicles, independently of each other, whilst entering and exiting the site in a forward direction.

A copy of the swept path assessments are provided at Appendix D.

A minimum height clearance of 4.5m is provided in the loading docks. This is appropriate, noting that to enable overhead clearance for bin collection, vehicles will reverse to the open area behind the loading dock, where there is unrestricted height available.

It is also noted that each loading dock is connected to the lift core through a service corridor, which is considered appropriate.

6.3 Refuse Storage

Advice on waste storage requirements has been provided by WasteTech.

The residential waste will be stored in Basement 1 of the residential towers, near the lift lobbies. This waste will be transferred on tailor made bin transfer vehicles to the central loading area for collection.

Commercial waste will be stored and collected from the central loading area, where refuse storage areas are located adjacent to each dock.

7. Traffic Impact Assessment

7.1 Scope of Assessment

Due to the current planning for the Northshore Hamilton UDA, it is appropriate to have regard to the anticipated future (rather than current) traffic flows. To this end, advice has been sought from the transport consultant engaged on the Hamilton Northshore master planning project regarding future traffic flows on Harbour Road.

7.2 Base Traffic Flows

7.2.1 Through Traffic

Whilst the information is not yet finalised, GTA Consultants has been advised by Parsons Brinckerhoff²⁰ that Hercules Street south of the new road link will carry some 1,700 vehicles per hour, with 1,000 vehicles per hour in the peak direction.

Assuming an equal split of traffic between the new road link and Harbour Road, it is reasonable to assume 500 vehicles per hour in the peak direction and 350 vehicles per hour in the non-peak direction on Harbour Road in each of the road network peak hours. This value includes traffic generated by the subject development and, as such, this has been considered in estimating the through traffic flows in the following assessment²¹.

7.2.2 Apartment Traffic: Western Access

The proposed western access to the development is located opposite an access to existing residential apartments. GTA Consultants conducted turning movement surveys at this location, as detailed in Section 2 of this report. These surveyed traffic volumes are considered in the following assessment of the site access operation.

7.3 Traffic Generation

7.3.1 Design Rates

Guidance on the likely traffic generation of the proposed development has generally been sourced from the Roads and Traffic Authority's 'Guide to Traffic Generation Developments', the Department of Main Roads (DMR) 'Road Planning and Design Manual' and traffic surveys undertaken by GTA Consultants and others at various developments.

Given the proposed car parking provision, particularly the adoption of a parking limitation strategy, and considering that car parking provision and traffic generation are intrinsically linked, there was a need to reconsider typical traffic generation rates applicable to the proposed land uses of this development. In this regard, the abovementioned references were consulted to establish the traffic generation rates appropriate for each of the proposed land uses.

²⁰ Email from Les Chandra at Parsons Brinckerhoff to Beth Whelan of GTA Consultants on 20 August 2008.

²¹ The assumed traffic flows at the western site access are conservative and result in a minimum of 500 vehicles per hour in each direction to the north of the access point on Harbour Road.

The traffic generation rates adopted were derived through consideration of the referenced sources, the overall car parking demand, and the number of trips reasonably expected to be generated by the development.

In summary, the traffic generation rates were adopted on the basis of GTA Consultants' engineering judgement. In particular the adopted generation rates give consideration to the ultimate road network within Hamilton Northshore, increased public transport accessibility, reduced car parking provision and reduced reliance on the private vehicle for travel to / from Hamilton Harbour¹².

7.3.2 Traffic Generation Estimate

An estimate of peak hour traffic volumes resulting from the proposal are set out in Table 7.1.

Table 7.1: Traffic Generation Estimates

Use	Size	Traffic Generation Rates		Volume	
		AM Peak Hour	PM Peak Hour	AM Peak Hour	PM Peak Hour
Office	19,129sq.m GFA [1]	1 trip / 100sq.m	1 trip / 100sq.m	191 vph	191 vph
Residential	647 apartments	0.4 trips / dwelling	0.4 trips / dwelling	259 vph	259 vph
Shop	2,301sq.m GFA	1.25 trips / 100sq.m	5 trips / 100sq.m	29 vph	115 vph
Restricted Retail	1,715sq.m GFA	0.5 trips / 100sq.m	2 trips / 100sq.m	9 vph	34 vph
Gymnasium	332sq.m GFA	2 trips / 100sq.m	2 trips / 100sq.m	7 vph	7 vph
Restaurant	1,301sq.m GFA	1 trip / 100sq.m	5 trips / 100sq.m	13 vph	65 vph
		Total		508vph	671 vph

[1] Including strata filled office.

Table 7.1 indicates that the site could potentially generate some 508 and 671 vehicle movements in the AM and PM peak hour respectively.

It is noted that the following assessment is based on a previous schedule of uses, which resulted in a higher traffic generation estimate, i.e. 559 vehicles and 678 vehicles movements in the AM and PM peak hours respectively. As such, the following assessment remains relevant and if anything overstates the impact of the development on the surrounding road network.

¹² It has been considered that, as a maximum, each car parking space would generate one vehicle movement in the road network peak periods.

7.3.3 Distribution and Assignment

The directional distribution and assignment of traffic generated by the proposed development will be influenced by a number of factors, including:

- i the configuration of the arterial road network in the immediate vicinity of the site
- ii the operation of intersections providing access between to the arterial road network
- iii the distribution of households in the vicinity of the site
- iv the surrounding employment centres in relation to the site
- v the likely distribution of employees residences in relation to the site
- vi the configuration of access points to the site.

Having consideration to the above, for the purpose of estimating vehicle movements the following directional distributions have been assumed:

- 40% of traffic will be to / from the north
- 40% of traffic will be to / from the south
- 20% of traffic will be to / from the west.

These directions are broad directions, relating to location of suburbs of origin / destination. Further discussion on how this relates to movements is provided below.

Based on the above distributions, and consideration of the external road network connections to the above origins / destinations, Table 7.2 sets out the traffic distribution adopted for the development.

Table 7.2: Adopted Traffic Distribution at the Site Access Points

Origin / Destination	Western Access				Eastern Access			
	In		Out		In		Out	
	Left	Right	Left	Right	Left	Right	Left	Right
To / From East	95%	Nil	5%	15%	5%	Nil	80%	Nil
To / From West	95%	Nil	Nil	80%	5%	Nil	10%	10%

In addition, Table 7.3 illustrates the directional split of traffic (i.e. the ratio between the inbound and outbound traffic movements) that has been adopted for each of the proposed uses.

Table 7.3: Adopted In / Out Split

Use	AM Peak Hour		PM Peak Hour	
	In	Out	In	Out
Office	95%	5%	10%	90%
Residential	20%	80%	60%	40%
Retail [1]	95%	5%	50%	50%
Restaurant	80%	20%	60%	40%

[1] Including showroom, noting this is based on a previous development without a gymnasium.

Based on the above and by adding the development traffic to the base traffic flows, the post development traffic volumes have been calculated. These are outlined in Figures 7.1 to 7.4.

Figure 7.1: AM Peak Hour Traffic Volumes Eastern Access

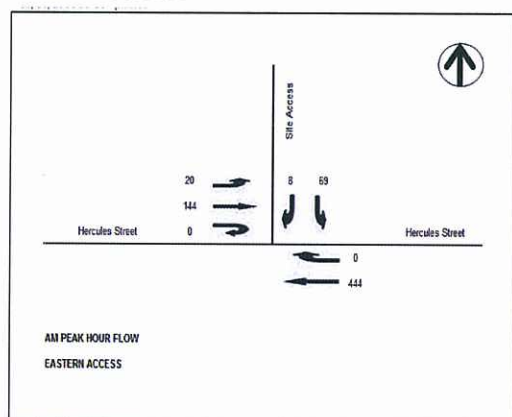


Figure 7.2: AM Peak Hour Traffic Volumes Western Access

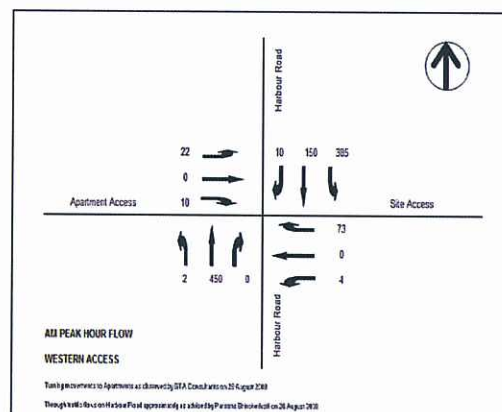


Figure 7.3: PM Peak Hour Traffic Volumes Eastern Access

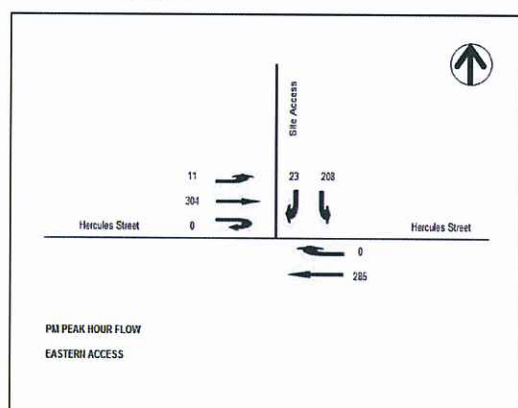
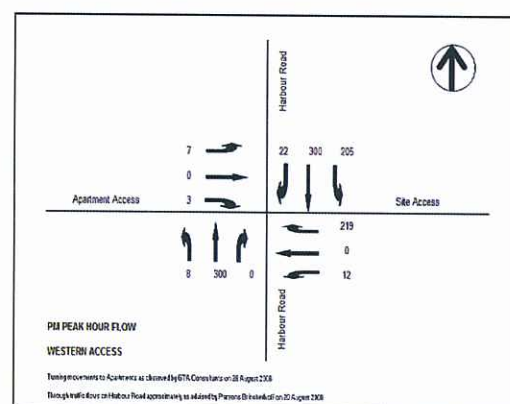


Figure 7.4: PM Peak Hour Traffic Volume Western Access



An assessment of the operation of the site access intersections, based on the above volumes and the suitability of the access design, is provided in the following Section of this report.

8. Access Design

8.1 Proposed Access Arrangements

The current plans (shown at Appendix B) include two access points, one to Harbour Road and one to Hercules Street. These accesses will connect the development to the surrounding arterial road network via signalised intersections of Kingsford Smith Drive / Harbour Road to the west and via Hercules Street and the new link road to Kingsford Smith Drive to the east.

Having reviewed the proposed access locations and based on the assessment below, the general location of each of the access points is considered appropriate. The operation of each of the proposed access points has been assessed in SIDRA INTERSECTION 3.213 (SIDRA), with consideration given to ultimate traffic flows as advised on Hercules Street and Harbour Road.

Further details on the suitability of the proposed access locations and their form are provided below.

8.2 Western Access Point

The western access point is located to ensure there is no impact on the Harbour Road / Kingsford Smith Drive intersection. It is noted that an access point to residential apartments exists opposite the subject site at the proposed access point, which needs to be taken into consideration in the design of site access from Harbour Road to avoid creating unnecessary conflicts.

On the basis of managing the impacts of the western access point on the existing access opposite the site, a roundabout style treatment is recommended.

A concept sketch for the intersection as a roundabout is provided at Appendix E. This shows a treatment which is capable of accommodating the swept paths of 12.5m LRVs entering and exiting the east and west legs of the intersection.

A swept path assessment was also conducted to test the ability of a 19m articulated bus to traverse through the proposed roundabout style access treatment. This assessment is provided at Appendix E to this report. The results of this assessment demonstrate that a 19m articulated bus can appropriately traverse on Harbour Road through the treatment.

The operation of the access as a roundabout has been modelled in SIDRA, with particular attention given to the likely extent of queuing back to Kingsford Smith Drive. The results of the assessment are summarised in Table 8.1, with further details provided at Appendix F.

¹³ SIDRA INTERSECTION 3.2 adopts the following criteria for Level of Service assessment:

Level of Service	Intersection Degree of Saturation (X)	
	Unsignalised Intersection	Signalised Intersection and Roundabout
A Excellent	≤ 0.50	≤ 0.60
B Very Good	0.50-0.70	0.60-0.75
C Good	0.70-0.80	0.75-0.90
D Acceptable	0.80-0.90	0.90-0.95
E Poor	0.90-1.00	0.95-1.00
F Very Poor	≥ 1.0	≥ 1.0

Table 8.1: Western Access Operation

Approach	AM Peak Hour			PM Peak Hour		
	DOS (X)	Average Delay (sec)	95 th %ile Queue (m)	DOS (X)	Average Delay (sec)	95 th %ile Queue (m)
Harbour Road (South)	0.33	5 sec	23m	0.28	6 sec	18m
Western Access (East)	0.08	11 sec	3m	0.25	13 sec	12m
Harbour Road (North)	0.37#	5 sec	23m	0.35#	5 sec	22m
Apartment Access (West)	0.05	9 sec	2m	0.02	9 sec	1m

DOS – Degree of Saturation, # - Intersection DOS

The above Table indicates that the roundabout will operate with acceptable levels of operation in both the road network AM and PM peak hour once the Hamilton Northshore area is fully developed. Importantly, the queue on the northern leg of the intersection is negligible and is not expected to result in queuing back to Kingsford Smith Drive (noting an available length of some 60m and a 95th percentile anticipated queue length of 23m).

It is noted that the extent of queuing on Harbour Road from the Kingsford Smith Road intersection is unknown. Based on site observations, it is possible that this queue will extend back past the site access in the road network peak periods.

8.3 Eastern Access Point

It is considered that by providing the proposed eastern access point some 40m west of the intersection with the new link road, the required sight distance for vehicles exiting the site will be achieved. The horizontal alignment of Hercules Street at this location sees the access point placed at a bend where sight distance is optimised. Maximising the distance from the new road link will avoid queuing from the access point extending to this link and allow for a right turn lane to be provided for movements into the subject site.

The eastern access point is proposed to be an all movement access. However, due to the restriction of turns at the Hercules Street / new link road intersection to left-in / left-out, use of this access is likely to be limited.

An assessment of the suitability of the currently proposed access operation is provided in Table 8.2. This is based on a priority controlled junction with a right turn lane. Further details of the operation of the site access are provided at Appendix F.

Table 8.2: Eastern Access Operation

Approach	AM Peak Hour			PM Peak Hour		
	DOS (X)	Average Delay (sec)	95 th %ile Queue (m)	DOS (X)	Average Delay (sec)	95 th %ile Queue (m)
Harbour Road (East)	0.25#	Nil	Nil	0.16	Nil	Nil
Eastern Access (North)	0.10	10 sec	3m	0.32#	11 sec	13m
Harbour Road (West)	0.09	1 sec	Nil	0.18	Nil	Nil

DOS – Degree of Saturation, # - Intersection DOS

The results from Table 8.2 indicate the proposed eastern access point (priority controlled) is expected to operate with an excellent level of service.

9. Preliminary Construction Management Plan

9.1 Background

As part of planning for the development, a Preliminary Construction Management Plan (PCMP) is being prepared. The purpose of the PCMP is to detail the following:

- an overview of proposed works
- the timing and staging of works
- construction traffic access and parking arrangements
- the impact of the construction process on the surrounding road network.

Details of this plan from a traffic engineering perspective are set out in the following sections. This information has largely been drawn from Devine Constructions, whom are responsible for overseeing the construction of numerous large scale developments.

9.2 Construction Timing and Management

Works on the site are anticipated to begin in December 2009 and continue until June 2012. These works will be conducted over two (2) main traffic management stages and involve the excavation of the site (December 2009) and construction of the proposed development (June 2010 – June 2012).

The traffic management strategy for the works associated with each of these construction stages is described below.

9.3 Excavation (December 2009 – May 2010)

9.3.1 Expected Traffic Volumes

During this period of works, six to ten trucks will be accessing the site daily (i.e. a total of 180 trips per day¹⁴) to remove excavated materials from the site. In addition, a concrete pump will be placed on site to fill the necessary ground beams, which will be serviced by approximately six to ten concrete trucks per day. Furthermore, a piling rig will be on site for approximately three to four weeks and there will be delivery of approximately 500 precast piles during this time.

Loading and unloading of these trucks will be completed from within the subject site.

Once excavation is complete, construction will commence and tower cranes will be erected.

In addition, approximately 50 workers will attend the site on a daily basis.

9.3.2 Construction Vehicle Access and Parking

Access for construction vehicles will remain via Hercules Street with access also available to the site via Harbour Road. In the further planning for the construction, every effort will be made to restrict the need for access to Kingsford Smith Drive.

Access to the site will be required between 6:00am - 6:00pm Monday to Saturday. Loading of trucks will be undertaken on-site, with parking for construction workers provided in the future road reserve.

¹⁴ On the basis of 50-90 loads per day.

9.3.3 Pedestrian Access

Pedestrian access will continue to be required between Harbour Road / Hercules Street, the site (via the main entrance) and the site shed.

9.3.4 External Works

No public pedestrian access will be permitted around the site, with a footpath closure proposed on Harbour Road, Hercules Street and Kingsford Smith Drive.

It is noted that access to the subject site will continue to be restricted through the use of 2m high temporary fencing where needed.

9.4 Construction (June 2010 – June 2012)

9.4.1 Expected Traffic Volumes

During this period of works, up to 20 trucks of various sizes will be accessing the site each day (i.e. up to 200 trips a day³⁵). Loading and unloading of these trucks will be completed from within the subject site.

In addition, up to 300 workers will attend the site on a daily basis, with this number fluctuating from 100 to 300 workers dependent on the stage of construction.

9.4.2 Construction Vehicle Access and Parking

Access for construction vehicles will remain via Hercules Street. Access to the site will be required between 6:00am - 6:00pm Monday to Saturday.

9.4.3 Pedestrian Access

Pedestrian access will continue to be required between Hercules Street, the site (via the main entrance) and the site shed.

9.4.4 External Works

Pedestrians will continue to be directed to use footpaths on the opposite side of the road.

³⁵ Assuming each truck has a turnaround time of one hour, ten work hours per day.

9.5 Impact on Surrounding Road Network

As detailed above, during the planned works, the greatest number of vehicle movements to and from the site is anticipated to be up to 700 trips per day¹⁶.

This increase in traffic is not considered to adversely impact on the safety or operation of Harbour Road, Hercules Street or the surrounding road network.

9.6 Construction Worker Car Parking Management

As part of the construction of the proposed development, a number of workers may choose to drive to the site. Parking for construction workers will be provided within the future road link to the east of the subject site. It is intended that this area will be fenced and screened from the remainder of the site.

In the initial stages of the program (i.e. Demolition and Excavation), only a limited number of workers (between 10 and 50) will need to attend the site on a daily basis and could be accommodated within the future road reserve.

In the final phases (i.e. Construction) the number of workers on-site on a daily basis will vary from some 100 to 300 workers, with the latter number anticipated once building fit-out commences.

Assuming 80% of workers travel to work as a car driver, this anticipates 8 to 240 cars parking in the surrounds during the construction phases of the project. Whilst it is anticipated that a large number of construction workers can park within the future road reserve, there may be some overspill on-street car parking in the vicinity of the site at peak times.

As the construction vehicles will be parked informally within the future road reserve, the exact number of vehicles that will be accommodated in this area is unknown. Indeed, any attempt to estimate parking numbers would likely understate the reality. In addition to this on-site parking, it is noted that vehicles are able to park along Harbour Road and Hercules Street adjacent to the site.

Whilst the construction period is expected to last for two years, in considering the parking demands during construction, the peak car parking demands are anticipated to occur once a certain stage of each building has been completed and the fit-out of various tenancies commence. This is when the full complement of construction related vehicles will be on-site. Demand will then reduce once building construction is complete and only the building fit-out remains. Advice provided by Devine Constructions indicates that the peak staff demand represents approximately 30% – 40% of the total construction period (7 - 10 months).

In addition, it is standard practice for the construction management team to liaise with Brisbane City Council during the construction phases of a project. This typically ensures that the car parking demands associated with the construction of the site are not causing excessive impacts on the surrounding road network.

¹⁶ Assuming 80% of workers drive to the site, 240 worker cars equals 480 trips, plus 200 truck trips during construction, say 700 trips.

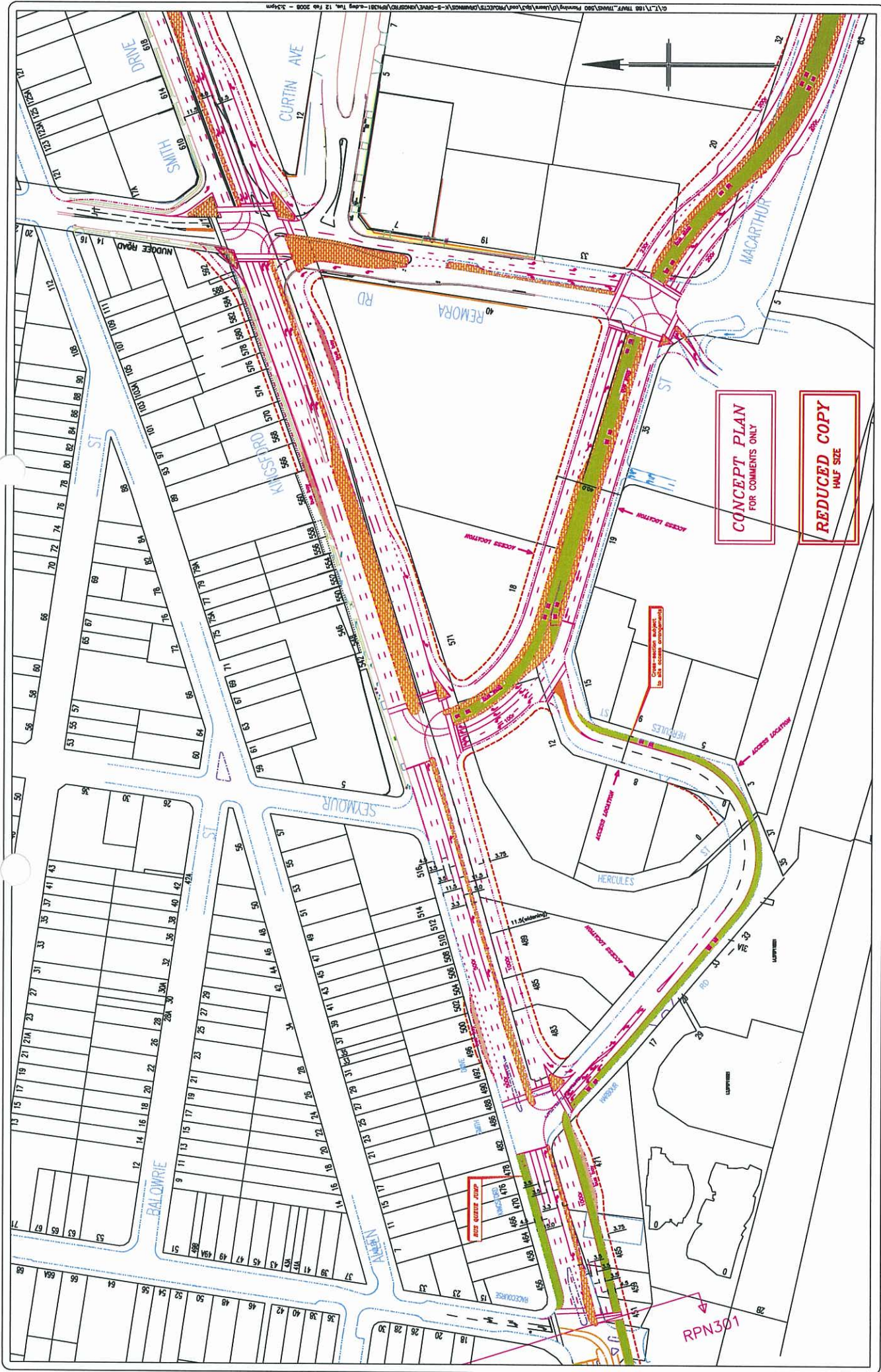
10. Conclusion

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

- i The approach to the site's car parking provision, in restricting supply, is consistent with the principles of a TOD, the vision of the Northshore Hamilton UDA and the limited capacity on Kingsford Smith Drive.
- ii The proposed car parking provision of 924 spaces is appropriate considering the car parking requirements specified in the Northshore Hamilton Urban Development Area Development Scheme.
- iii To support reduced car parking provisions and principles underlying development in the Northshore Hamilton UDA, provision is made for a potential temporary bus shuttle service to nearby train stations and the development provides appropriate bicycle facilities, an attractive pedestrian environment and green travel plans are recommended.
- iv Future improvements and upgrades to public transport facilities and services are expected to adequately support travel to the Hamilton Northshore UDA and this development.
- v The proposed parking layout is generally consistent with the dimensional requirements as set out in the Australian Standard / New Zealand Standard for Off-Street Car Parking (AS / NZS2890.1-2004), with minor amendments at Appendix C to this report, which could be conditioned as part of an approval.
- vi The end-of-trip bicycle facilities are considered appropriate for residents, noting that in addition to 310 dedicated bicycle spaces, additional general storage units exist and residents could store bicycles within their apartments.
- vii It is recommended that the employee bicycle parking be increased to 111 spaces in accordance with the Development Scheme.
- viii The current provision of visitor bicycle parking is considered appropriate at the time of development, with the developer to retrofit additional visitor bicycle parking if a need becomes apparent, up to a total of 149 visitor spaces.
- ix Appropriate pedestrian footpaths are provided.
- x The provision of loading of up to three large vehicles and two vans is appropriate, having consideration to demand surveys undertaken at a comparable facility, noting that a number of car parking bays at the ground plane are to be marked as 15 minute parking.
- xi The site is expected to generate up to some 508 and 671 vehicle movements in the road network AM and PM peak hours, respectively.
- xii The transport planning being undertaken for the Hamilton Northshore area considers the traffic generated by the proposed Hamilton Harbour development in determining a suitable future road network in the vicinity of the site.
- xiii Assessment of the site access intersections, based on a previous (comparable) traffic generation, including a priority controlled eastern access and roundabout style western access indicate that these accesses can operate satisfactorily in the short and long term.
- xiv A preliminary construction management plan is provided in this report, demonstrating the likely traffic impacts of the proposed development.

Appendix A

Road Upgrade Plans



BRISBANE CITY COUNCIL – CITY POLICY & STRATEGY		CONCEPT DESIGN PROPOSED ROADWORKS KINGSFORD SMITH DRIVE		RPN381		KBBEPF8H1	
City Policy And Strategy		NO. 1 IN SET OF 4					
DIVISIONAL MANAGER CITY POLICY AND STRATEGY		DIVISIONAL MANAGER TRANSPORT AND TRAFFIC		FILE NO.		SURVEY NO.	
MANAGER TRANSPORT AND TRAFFIC		MANAGER TRANSPORT AND TRAFFIC		DATE		DATE	
DESIGNED		CHECKED		DATE		DATE	
DRAWN		CHECKED		DATE		DATE	
DATE		DATE		DATE		DATE	
1		2		3		4	
Altered to show access locations		H		X		X	
Section of 11.5m requirement only		AMENDMENT		DATE		DATE	
DATE		DATE		DATE		DATE	