



10 March 2016

Our ref: 21/25061
Your ref: 212171

ESQ 1818 Panthers Pty Ltd
C/- Cabe
PO Box 6924
Baulkham Hills
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Attention: Joe Bevacqua

Dear Joe

ESQ 1818 Mixed Use Development Traffic Impact Statement

GHD was engaged by ESQ 1818 Panthers Pty Ltd to prepare a traffic statement for the ESQ 1818 Mixed Use Development located on Lots 2, 3a and 3b at Panthers Penrith.

A Masterplan Transport Strategy for the entire Panthers Precinct has already been developed and includes parking and transport analysis of the entire precinct; including Lots 2, 3a and 3b.

This letter statement has been prepared to provide a comparison between the proposed ESQ 1818 Development and that previously approved for lots 2, 3a and 3b in the *Panthers Precinct Master Plan – Transport Strategy* -GHD July 2014 (*Transport Strategy*).

This traffic statement is based on the *Transport Strategy* and uses the traffic generation rates, background growth and traffic distribution assumptions outlined within the precinct strategy. This statement should be read in conjunction with the *Transport Strategy*.

In the *Transport Strategy* lot 2 is proposed as a retail outlet centre.

1 Proposed development – ESQ 1818 mixed use development

The proposed development is to include a total of 859 apartments and 3,304 m² (GFA) of retail over lots 2, 3a and 3b. The locations of the lots within the precinct are shown in Figure 1.

Figure 1 Panthers precinct development lots



Source: Architectus Draft Urban Design Report – modified by GHD

A detailed description of the proposed development for each lot is outlined in Table 1 and Table 2.

Table 1 Lot 2

Land use	No. units / GFA (m ²)
Apartments	694
Retail (speciality shops)	1,251
Retail (restaurant)	2,053

Table 2 Lot 3a + 3b

Land use	No. units
Apartments	165 units

2 Existing conditions

Panthers and the Penrith City generally are serviced by two state classified roads, namely Great Western Highway and Mulgoa Road. Further to the south, Mulgoa Road also provides access to the M4 Motorway. These roads have been assessed and addressed in the overall *Panthers Precinct Masterplan Transport Strategy*. The purpose of this statement is to assess the proposed traffic generation for the ESQ1818 at Panthers development against that assessed and addressed in the *Panthers Precinct Masterplan Transport Strategy* for the Lots 2, 3a and 3b.

2.1 Existing road network

Mulgoa Road is a classified road linking the Penrith City Centre and Mulgoa Village. It is generally a four-lane divided road north of Glenmore Park, and to the south of Glenmore Park is a two-lane undivided Road. Mulgoa Road is signposted at 60 km/h through the study area and currently carries an average annual daily traffic volume of 38,000 vehicles per day in the section south of Preston Street, Jamisontown. Mulgoa Road is a main traffic route into and out of Penrith and has a number of signalised intersections along its length. Due to its location, Mulgoa Road is the key thoroughfare affected by the traffic generated by the Penrith Panthers development proposal.

3 Traffic impacts

This section provides an understanding of the impacts resulting from the ESQ 1818 at Panthers development of Lots 2, 3a and 3b.

3.1 Traffic generation

The traffic generation for this assessment has been based on the following reports:

- *Panthers Precinct Masterplan – Transport Strategy (GHD 2014)*.

This assessment focuses on the traffic generated by the ESQ 1818 at Panthers development and its comparison with the potential traffic generation outlined in the *Transport Strategy* for Lots 2, 3a and 3b.

3.1.1 ESQ 1818 mixed use development

Table 3 provides the traffic generation associated with the ESQ 1818 mixed use development and a comparison to the *Transport Strategy* for Lots 2, 3a and 3b.

Table 3 ESQ 1818 mixed use development (Lots 2, 3a & 3b) traffic generation potential (Evening Peak)

Lot	Stage	Land use	No. units (GFA (m ²))	Panthers Masterplan Trip Generation Rate	Trip Generation (PM peak hour)	Panthers Masterplan Approval Comparison	Approved Trip Generation (PM peak hour)
3A + 3B	1	Residential (165 units)	165	0.5	82	Residential (89 dwellings) and Hotel (200 rooms)	145
2	2	Residential (70 units)	70	0.5	35	Retail Outlet Centre 25,000 GFA and Retail 2,500 GFA	544
	3	Residential (373 units)	373	0.5	187		
	2	Retail (Speciality shops)	1,251 (939 GLFA)	0.02	19		
	3	Retail (Restaurant)	2,053	0.05 (RMS Guide rate per GFA)	103		
	4	Residential (111 units)	111	0.5	56		
	5	Residential (140 units)	140	0.5	70		
Total					551		689

As shown in Table 3, with the land use changes proposed for Lots 2, 3a and 3b, the proposed traffic generation from the lots would be less than the traffic generation approved for the outlet centre in the *Transport Strategy*.

4 Parking

The parking rates have been determined and assessed for these lots as part of the *Transport Strategy*.

Since the development of the *Transport Strategy* Council has produced a revised Development Control Plan and associated parking rates. This traffic impact statement assesses the parking component of the

ESQ 1818 at Panthers development based on the Penrith City Council Development Control Plan (PCC DCP) and provides a comparison to the approved parking demand as shown in Table 4.

Table 4 ESQ 1818 mixed use development parking demand

Lot	Building No.	Stage	Land use	No. bedrooms (GFA (m²))	PCC DCP (2014) Parking rates	Parking demand (PCC DCP)	Panthers Masterplan Approval parking demand	Proposed parking provision (ESQ 1818)
3A+ 3B	A & B	1	Residential (165 units)	165	(PCC DCP) 1 space per 1-2 bdm, 2 spaces for 3+ bdm + 1 space per 5 (visitor parking)	198	260	198
2	C	2	Residential (70 units)	70		85	769	86
	H, J, K & L	3	Residential (373 units)	373		514		514
	C	2	Retail (Speciality shops)	1,251	(PCC DCP) 1 space per 30 m² GFA (retail)	42		20
	L	3	Retail (Restaurant)	2,053 (seating area 990)	1 space per 6 m2 of seating area + 1 space per employee (assumed 35 employees)	200		90
	D & E	4	Residential (111 units)	111	(PCC DCP) 1 space per 1-2 bdm, 1.5 space for 3+ bdm + 1 space per 20 (visitor parking)	133		133
	F & G	5	Residential (140 units)	140		168		168
Total						1,340	1029	1,209

Note; Detailed parking calculations have been provided by Turners and are based on the Part 2 Apartment Mix and Yield spreadsheet dated 16th February 2016.

Table 4 shows that overall the proposed parking demand is more than the parking demand for lots 2, 3a and 3b as outlined in the *Transport Strategy*, but less than that is required by the revised PCC DCP (2014). The main difference is the parking rate provided in the DCP for the restaurant component of the proposed development. Considering the restaurant will attract many internal trips rather than being only a destination, a lower parking and trip generation rate is more appropriate. Based on advice from ESQ 1818 relating to the development mix and their desire to capture trips internally, GHD has applied retail rate for the parking generation. The main difference between the parking provision in the *Transport Strategy* verses this development is the increase in parking rates in the revised DCP which has been released since the development of the *Transport Strategy*. Based on the rates used within the *Transport Strategy* the parking demand for the ESQ 1818 development would be similar to that approved in the *Transport Strategy*.

Over the entire ESQ 1818 mixed use development there is proposed to be around 1,209 parking spaces which includes a total of 93 accessible parking spaces spread throughout the development. Each land use meets or exceeds the DCP requirement except for the restaurant component which has been calculated at the retail rate as this is more realistic based on the internal generation from the overall Panthers Precinct.

The development also intends to provide the following parking facilities:

- a total of 312 bicycle parking spaces throughout the development
- 15 car wash bays throughout the development with the provision of two to four wash bays provided in each building
- a total of seven battery charging stations throughout the development
- four car share spaces are proposed on the road within Lot 2.

5 Parking provision verses travel behaviour

As the proposal for Panthers precinct is a mixed development, it is expected that the retail and restaurant developments will generate a significant number of internal trips from the residential land use within the precinct, with residents more likely to walk to access these developments. The retail and restaurant land uses will have different peak periods for car parking demand, with the retail development peak being within the daytime period and the restaurant at night or at lunchtime on weekends. This presents an opportunity for providing a portion of shared parking spaces for the restaurant and retail uses and lowering the proposed number of parking spaces. This could be achieved by keeping a proportion of the spaces accessible to all users within the development rather than every parking space being allocated to a particular tenant or user. This would result in the situation where parking can be more effectively shared between the different users at different times to serve demand peaks for the different land uses.

Many Councils have been lowering parking rates, to encourage more sustainable modes of travel including, walking bicycle riding and public transport. This has a number of benefits including reducing traffic congestion, vehicle emissions and health benefits. However, it is noted that the Penrith City Council parking rates have increased from those approved in the *Transport Strategy* for some land uses, resulting in more parking spaces being required for the proposed development.

The development site is located within an easy one kilometre walk or bike ride from Penrith City Centre (Transport Strategy), with good access to employment, education, shopping and public transport connections. It is expected that reducing the car parking supply at the proposed development would result in a higher mode share in more sustainable travel modes.

Travel Plans for employment and residential development provide strategies for managing transport access choices to a development. The development of Travel Plans could be investigated further for this development.

Travel Plans promote the use of sustainable modes of transport through the development of a number of actions that can include:

- Car sharing schemes, which allow people to share lifts to work or other travel purposes
- Car sharing clubs, such as Go Get and Flexicar
- Providing information for residence and employees on walking, bike riding and public transport services
- Improved pedestrian / bicycle riding facilities, such as bicycle parking and showers
- A dedicated bus service
- Restricted car parking.

Based on the internal trip potential and the above strategies there is the opportunity that a discounted parking rate could be applied to the retail component, as outlined in the *Transport Strategy* it could be reasonable to discount the retail component of parking by 5 per cent to 10 per cent. In addition, many Councils in Sydney provide dedicated car share parking spaces within residential streets. This has been included as part of this development to encourage the use of car share schemes and reduce the need for residents to have a privately owned vehicle.

6 Access arrangements

The access arrangements described in this section relate to the building names identified in the plan titled *GA Plans Ground Level DA-110-008 revision 1*.

Due to the nature of this development considerable planning has been undertaken to separate the parking areas serving the majority of the retail and residential land uses. Access to all of the retail car parking will be provided from Ransley Place, with access to all of the residential car parking provided from Retreat Avenue and the proposed access road through Lot 2. This access arrangement will provide a clear distinction between residence and retail car parking areas and also avoid unnecessary traffic accessing the new road within Lot 2.

6.1 Lots 3a and 3b basement carpark access

6.1.1 Access to buildings A and B

A combined entry /exit ramp is provided into a basement car park for buildings A and B providing access to around 198 parking spaces. The design of the entry /exit width has been done in accordance with

AS2890.1 (2004) off street car parking. As the carpark is servicing less than 300 residential parking spaces the entry/exit ramp can be combined at a width of 6 – 9 metres.

6.2 Lot 2 basement carpark access

6.2.1 Access to building C

The basement car park for building C provides access to residential and a portion of retail with around 112 parking spaces. As the carpark is servicing less than 300 residential parking spaces and less than 100 retail spaces the entry/exit ramp can be combined at a width of 6 – 9 metres. This access is provided from the new road through lot 2.

6.2.2 Access to building D and E

A combined entry /exit ramp is provided in to a basement car park for buildings D & E providing access to around 133 parking spaces. The design of the entry /exit width has been done in accordance with *AS2890.1 (2004) off street car parking.* As the carpark is servicing less than 300 residential parking spaces the entry/exit ramp can be combined at a width of 6 – 9 metres. This access is provided from the new road through lot 2.

6.2.3 Access to building F and G

A combined entry /exit ramp is provided in to a basement car park for buildings F & G providing access to around 168 parking spaces. The design of the entry /exit width has been done in accordance with *AS2890.1 (2004) off street car parking.* As the carpark is servicing less than 300 residential parking spaces the entry/exit ramp can be combined at a width of 6 – 9 metres. This access is provided from the new road through lot 2.

6.2.4 Access to building H, J, K and L

Separated entry and exit ramps are provided into a basement car park for buildings H, J, K and L providing access to around 439 residential parking spaces. The design of the separated entry and exit ramps has been done in accordance with *AS2890.1 (2004) off street car parking.* As the carpark is servicing more than 300 residential parking spaces separate entry and exit ramps are required with the entry ramp width required to be six metres wide and the exit ramp width would need to be 4 – 6 metres. This access is provided from the new road through lot 2 with the entry being the first driveway on the approach.

6.2.5 Access to building J and L (retail component)s and K (part residential)

A combined entry /exit is provided in to a car park from the proposed cul de sac on Ransley Road for the retail component of buildings J and L and also part of the residential component of building K providing access to around 165 parking spaces. This includes 12 accessible parking spaces. The design of the entry /exit width has been done in accordance with *AS2890.1 (2004) off street car parking.* As the carpark is servicing less than 300 residential parking spaces and less than 100 retail parking spaces the entry/exit ramp can be combined at a width of 6 – 9 metres. This access is services from the cul de sac at the western end of Ransley Street.

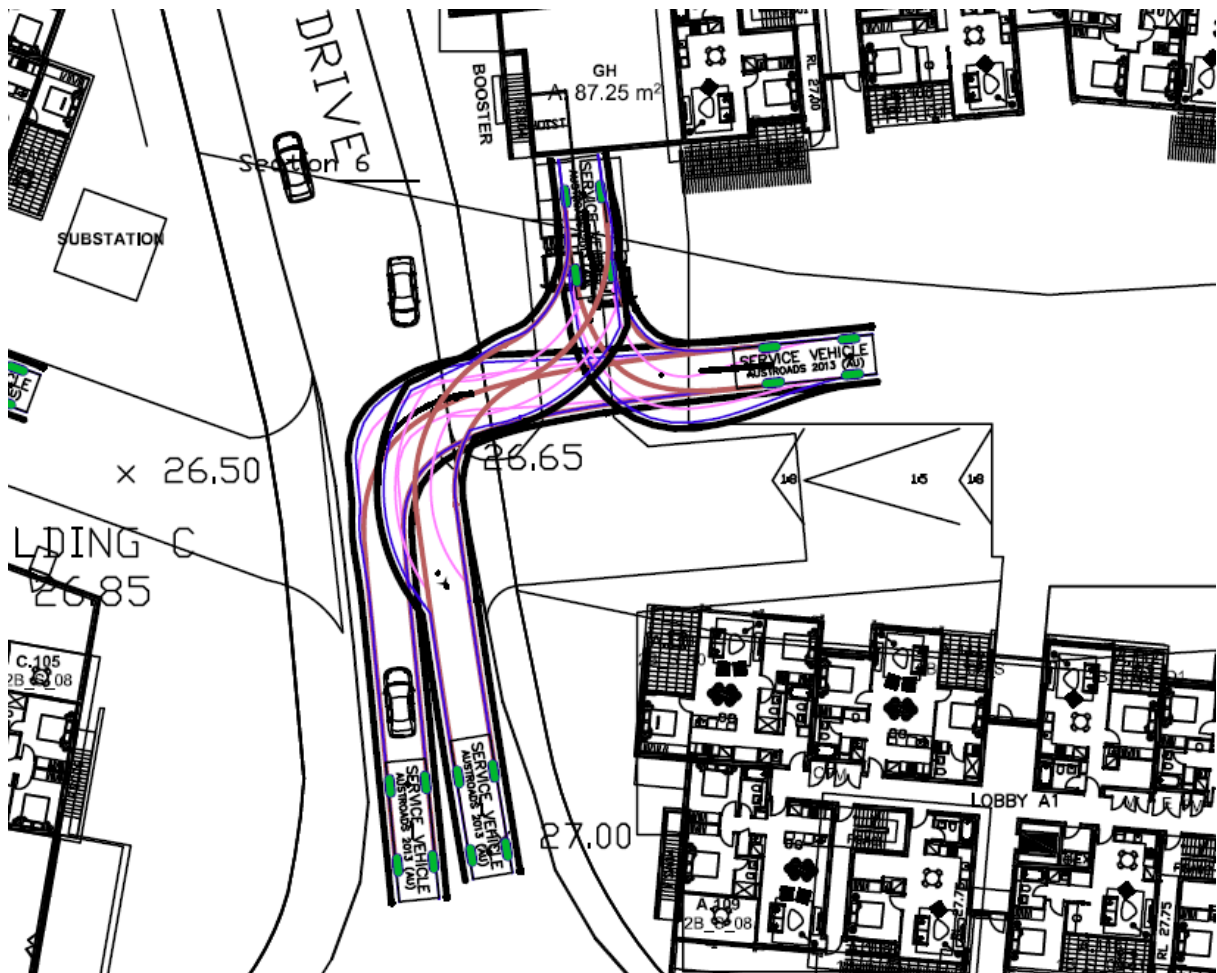
7 Service vehicles

Service areas have been assessed based on an 8.8 metre service vehicle entering and exiting the site in a forward direction.

7.1 Service area Lots 3a and 3b

One loading area is provided for Lots 3a and 3b. This area will be separated from the basement car park access with a hard landscaped zone provided next to the basement car park entry so that a service vehicle can enter and exit the site in a forward direction. Figure 2 provides an understanding of the service area location in relation to the basement car park ramp.

Figure 2 Loading area Lots 3a and 3b – service vehicle turning paths



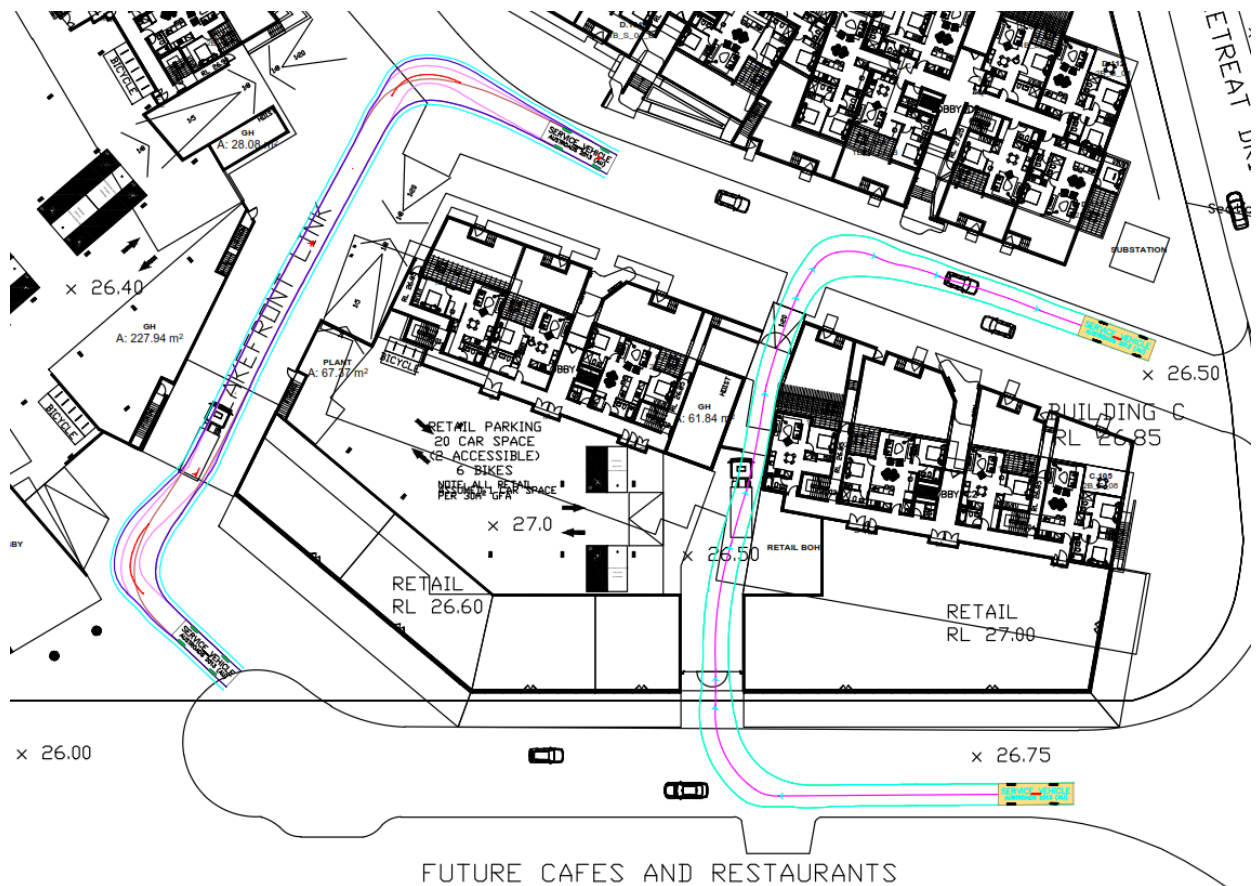
Source: Turner Architect base plan – GHD turning paths

7.2 Service areas Lot 2

Three service loading areas are provided for Lot 2.

The first two service loading areas are accessed from Ransley Street in a forward direction and exit in a forward direction onto the proposed new road in Lot 2 as shown in Figure 3. The service area through the lakefront link is provided as a hard landscaped through service access only.

Figure 3 Lot 2 - Service loading areas 1 and 2 – service vehicle turning paths



Source: Turner Architect base plan – GHD turning paths

The third service area is on the northern side of Lot 2 and is accessed through a hard landscape zone next to basement car parking entry, so the truck can make a three point turn in and out of the holding area in forward direction and clear of the circulation path of other vehicles as shown in Figure 4.

Figure 4 Lot 2 - Service loading area 3 – service vehicle turning paths



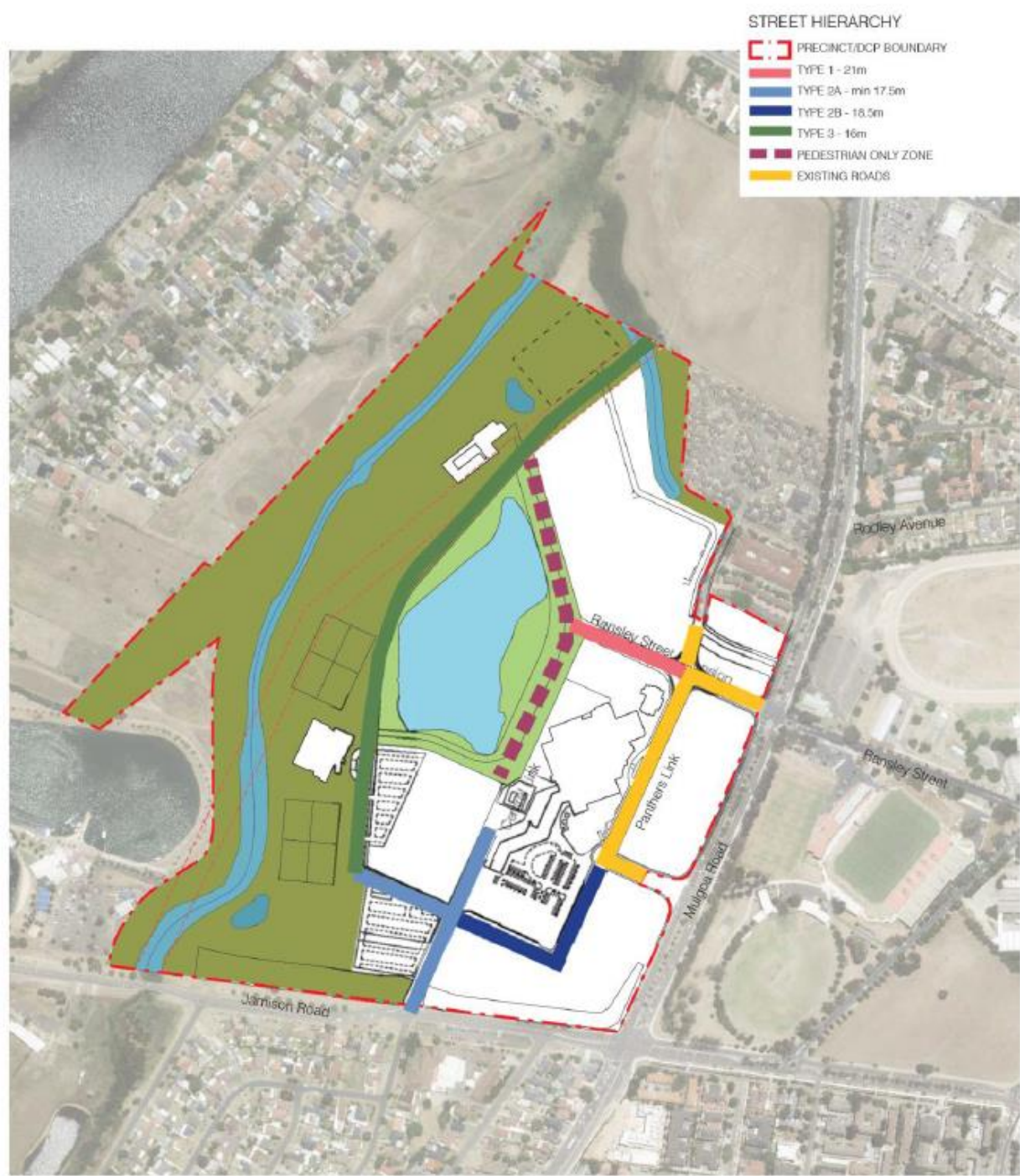
Source: Turner Architect base plan – GHD turning paths

Service loading areas have been designed to be located away from the circulation path of other vehicles.

8 Lot 2 proposed road

The street hierarchy for the Panther Precinct is provided in the Penrith Council DCP *E13 Part B Panthers Penrith Precinct*. Figure 5 provides an understanding of the proposed street hierarchy which identifies that the proposed road through Lot 2 is not identified to be a significant road within the precinct.

Figure 5 Panthers Precinct street hierarchy



Source: Penrith Council DCP E13 Part B Panthers Penrith Precinct Figure E12:17

As the DCP does not specifically propose requirements on the road width and carriageway configuration for the road through Lot 2 it is proposed to provide a 16 metre road reserve which allows for verges including footpaths on both sides, two designated traffic lanes and on street parking on the northern side only. This provides a similar configuration to a local road, however with providing designated on street parking on the north side only would ensure that both the eastbound and westbound traffic lanes remain unobstructed. This would provide a suitable road cross section should this road ever be connected through to the proposed Riverlink North Road.

9 Panthers precinct transport strategy comparison

A review of the *Transport Strategy* has been done to provide a comparison between the land uses proposed as part of the transport strategy for Lots 2, 3a and 3b and the proposed ESQ 1818 mixed use development.

In order to undertake the comparison the spreadsheet models prepared as part of the transport strategy were updated to replace the traffic generation associated with Lots 2, 3a and 3b with the proposed traffic generation from the proposed ESQ 1818 mixed use development. Based on the revised generation and associated traffic distribution SIDRA Modelling has been undertaken based on the entire Panther Precinct including the ESQ 1818 development for the following intersections for the year 2031 PM peak:

- Mulgoa Road / Great Western Highway / High Street
- Mulgoa Road / Ransley Street
- Mulgoa Road / Panthers Place
- Mulgoa Road / Jamison Road
- Northern Access / Great Western Highway

9.1 Intersection analysis

The revised traffic forecasts for the ESQ 1818 mixed use development were distributed across the road network in the same proportions as the original VPA and the Panthers Masterplan. This produced forecast turning movements at all of the intersections surrounding Panthers which were then modelled in SIDRA.

The performance of the intersections of the original VPA and Panthers Masterplan were modelled using SIDRA 5 which has recently been superseded by SIDRA 6.1. As SIDRA 5 is no longer supported, all intersections have been reassessed using SIDRA 6.1. This provides a more accurate comparison between the endorsed SIDRA results from the VPA and Panthers Masterplan and the performance of the intersections utilising the forecast traffic for the ESQ 1818 at Panthers development. The original VPA results, which were modelled in SIDRA 5, are provided as a comparison.

The traffic generation discussed in Section 3.1 shows a reduction overall traffic volumes due to the ESQ 1818 mixed use development. However, change in land use results in a change in travel patterns with a slight increase in the number of vehicles entering Panthers in the PM peak period as there will be more residential development than previously provided in the Panthers Masterplan.

The results of the analysis are shown in Table 5.

Table 5 SIDRA modelling results

Intersection	Master Plan VPA run in SIDRA 5		Master Plan VPA re-run in SIDRA 6.1		Masterplan with revised Lot 2, 3a & 3b SIDRA 6.1	
	Average delay (s)	Level of service	Average delay (s)	Level of service	Average delay (s)	Level of service
Mulgoa Rd/Great Western Hwy/High St	80+	F	80+	F	80+	F
Mulgoa Rd/Ransley St	28	B	28	B	23	B
Mulgoa Rd/Panther Pl	10	A	8	A	8	A
Mulgoa Rd/Jamison Rd	48	D	46	D	45	D
Northern Access/Great Western Hwy	18	B	25	B	24	B
Southern Access/Jamison St/Harris St	22	B	21	B	20	B

The analysis shows that the results are comparable between the different versions of SIDRA, with some minor increases and decreases in average delay at the intersections. These changes are due to improvements in the way that SIDRA performs its calculations and are considered reasonable.

The SIDRA modelling has shown that the proposed amendments to the land use within the Panthers site due to the ESQ 1818 development do not have an adverse impact on the operation of any of the signalised intersections. All intersections are forecast to operate at the same level of performance as agreed in the VPA or with slightly reduced delay. The level of service of each intersection is not forecast to change.

10 Review of the VPA

In order to provide an understanding of the VPA triggers for the Panther Precinct a review was undertaken of the *Road Works Planning Agreement*. Table 6 provides an understanding of the triggers.

Table 6 VPA Triggers – Panthers Precinct

Lot	Development	GFA m ²	Triggers	Required work
Lot 9	Western Sydney Community Sports Centre (WSCSC)	12,926 m ²	WSCSC or 23,000 m ²	Works associated with Jamison Road / Harris Street
Lot 6	Nepean Manor Seniors Living	16,930 m ²		Widening of Jamison Road between Harris Street/ Mulgoa Road Shared path and extension of median along Jamison Road.
		<u>29,856 m²</u>	Lot 1C or 28,000 m ²	Works associated with Jamison Road / Mulgoa Road Intersection
Lot 3a+3b	ESQ 1818 mixed use development	13,197 m ²		
	<i>Development subtotal</i>	<u>43,053 m²</u>		
			Outlet Centre or 45,000 m ²	Works associated with Mulgoa Road / Panther Place some works associated with Mulgoa Road / Ransley Street (northbound component) Widening of Mulgoa Road northbound
Lot 2	ESQ 1818 mixed use development	66,843 m ²	Campus style office development or 85,000 m ²	Some works associated with Mulgoa Road / Ransley Street (Southbound component) Widening of Mulgoa Road southbound
	<i>Development total</i>	<u>109,896 m²</u>		

Table 6 shows that Lots 3a + 3b in isolation would not trigger any external road works under the current VPA agreement. However the development of Lot 2 would trigger the road works associated with the precinct exceeding 45,000 m² and 85,000 m², under the current VPA agreement. It is understood that the VPA triggers may need to be reviewed based on the proposed land use changes.

The additional works required should Lot 2 be developed based on the current VPA agreement are:

- Works associated with Mulgoa Road / Panther Pace some works associated with Mulgoa Road / Ransley Street (northbound component)
- Widening of Mulgoa Road northbound
- Some works associated with Mulgoa Road / Ransley Street (southbound component)
- Widening of Mulgoa Road southbound.

10.1 Additional analysis to be completed

As a result of a meeting with Penrith City Council on Tuesday 23rd February 2016 the following was identified as additional assessment and analysis that Council would like to have included with the ESQ 1818 mixed use development application. The following work is to be progressed and provided as an addendum once completed:

- An assessment of the surrounding road network during AM peak conditions, with and without the development
- Assessment of the surrounding road network should the proposed Riverlink North Road never actually be constructed for both the AM and PM peak periods
- Assessment of queue lengths on Ransley Drive and potential impact on the Ransley Road / Retreat Road roundabout
- Proposed configuration of the intersection of Retreat Drive and the Lot 2 road.

In summary, the ESQ 1818 mixed use development is consistent with what is outlined in the *Panthers Precinct Masterplan – Transport Strategy 2014*. Overall it would generate slightly less traffic than outlined in the Masterplan and analysis indicates the external road network would continue to operate as outlined in the Masterplan in 2031 PM peak.

The additional analysis outlined in Section 10.1 requires surveys to be undertaken during the AM peak and also further discussion with Council and Roads and Maritime to confirm traffic distribution assumptions. This will be forwarded to Council when completed.

Regards



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