



**TRAFFIC AND PARKING IMPACT ASSESSMENT OF
THE PROPOSED CHILD CARE CENTRE
AT 49 - 51 NORTH ROCKS ROAD & 2 SPEERS ROAD, NORTH ROCKS**



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17629.04FB - 19 December 2017

Development Type: Child Care Centre

Site Address: 49 - 51 North Rocks Road & 2 Speers Road, North Rocks

Prepared for: Capital Building Solutions

Document reference: 17629.04FB

Status	Issue	Prepared By	Checked By	Date
Draft	A	TH/BP		14 December 2017
Final	A	TH	CM	14 December 2017
Final	B	TH	CM	19 December 2017

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EXECUTIVE SUMMARY

McLaren Traffic Engineering has completed a comprehensive assessment of the traffic and parking impacts of the proposed 99-place child care centre at 49 – 51 North Rocks Road and 2 Speers Road, North Rocks. This assessment has been informed by both the original traffic and parking impact assessment on the initial Development Application for a 124-place centre and the subsequent comments from Parramatta City Council.

The amended proposal includes a total of 25 car parking spaces accessed from a two-way driveway from Speers Road, with the location of the driveway shifted (since the original proposal) to the north-eastern frontage of the site. The relocated driveway location is in the best possible position for the site and provides adequate sight distances for drivers in both directions. The basement car park will provide adequate car parking for the demands of both staff and parents/carers at all times and is designed to meet or exceed the requirements of the relevant Australian Standards.

*The traffic generation of the site, estimated at some 79 trips in the AM peak hour and 69 trips in the PM peak hour, have been added to the existing traffic volumes and assessed using SIDRA Intersection 7.0. It has been found that the North Rocks Road/Speers Road intersection is close to its safe capacity under the existing traffic volumes and an upgrade to the intersection will be required within four years based on the guidelines contained in the Roads and Maritime Services Guide to Traffic Generating Developments. On this basis, alternative intersection treatments have been considered and it is suggested that a “Seagull” treatment (concept design depicted in **Annexure E** for reference) is appropriate to improve the capacity and safety of the intersection. SIDRA Intersection modelling has been undertaken and confirms that a “Seagull” treatment would provide sufficient capacity for both the existing traffic volumes and the proposed child care centre traffic now and into the future.*

In view of the above, the amended proposal for a child care centre is fully supported in terms of its traffic and parking impacts.

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1 INTRODUCTION

McLaren Traffic Engineering (MTE) was commissioned by Capital Building Solutions to provide a Traffic and Parking Impact Assessment of the proposed Child Care Centre at 49 - 51 North Rocks Road & 2 Speers Road, North Rocks, as depicted in **Annexure A** for reference.

1.1 *Description and Scale of Development*

The proposed child care centre is to accommodate 99 children and 17 staff members as per the following:

- 24 children between 0-2 years old (6 staff assigned)
- 35 children between 2-3 years old (7 staff assigned)
- 40 children between 3-5 years old (4 staff assigned)
- Hours of operation are 6:30 am to 6:30 pm, Monday to Friday

The site layout includes an underground car park with a total of **25** car parking spaces including one (1) disabled space. Vehicular access to the car park is provided via an existing two-way driveway from Speers Road.

1.2 *State Environmental Planning Policy (Infrastructure) 2007*

The proposed development does not qualify as a development with relevant size and/or capacity under Clause 104 of the SEPP (Infrastructure) 2007. Accordingly, formal referral to the Roads and Maritime Services (RMS) is not necessary and Parramatta City Council officers can determine this proposal accordingly.

1.3 *Site Description*

The subject site is currently occupied by three (3) residential dwellings, with frontages to Speers Road to the north east and North Rocks Road to the south east. All vehicular access to the proposed underground car park is via the existing two-way driveway on Speers Road.

The site is generally surrounded by low density residential dwellings.

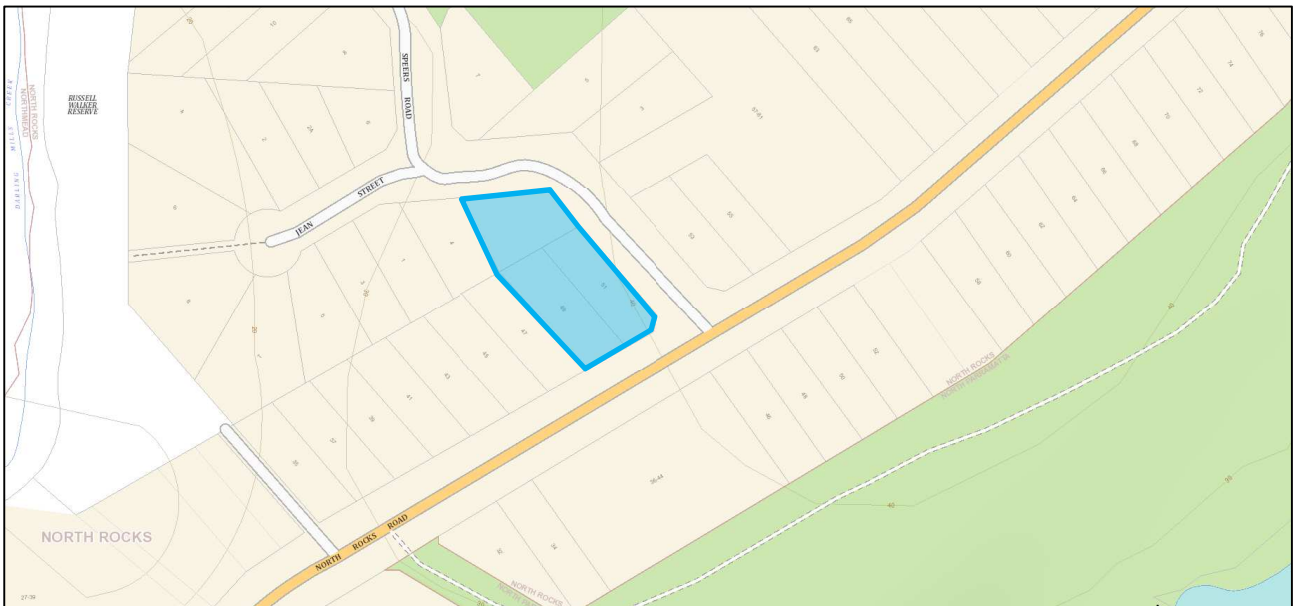
1.4 *Site Context*

The site location is shown on aerial imagery and a map in **Figure 1** and **Figure 2** respectively.



Site Location

FIGURE 1: SITE CONTEXT – AERIAL PHOTO



Site Location

FIGURE 2: SITE CONTEXT – STREET MAP

2 EXISTING TRAFFIC AND PARKING CONDITIONS

2.1 *Road Hierarchy*

The relevant characteristics of the road network servicing the site are provided in the following sub-sections.

2.1.1 Speers Road

- Unclassified LOCAL Road;
- Approximately 9.8m in width facilitating one traffic flow lane in each direction;
- Signposted 50km/h carriageway;
- No parking permitted on either side of the road due to the narrow width of the carriageway between “BB” line marking treatment.

2.1.2 North Rocks Road

- Classified Regional Road (No. 7144);
- Approximately 12m in width facilitating one traffic flow lane in each direction and parking on both sides of the road;
- Signposted 60km/h carriageway;
- Unrestricted kerbside parallel parking permitted along both sides of the road
- “Bus Zone” signs along both sides of the road.

2.2 *Existing Traffic Management*

- Priority controlled intersection of North Rocks Road / Speers Road.

2.3 *Existing Traffic and Parking Environment*

2.3.1 Intersection Performances

Turning movement counts (extracted from the *Barker Ryan Stewart* report dated February 2017) were completed at the intersections of North Rocks Road / Speers Road, on Wednesday 2nd November 2016, representing a typical weekday, and are reproduced in **Annexure B**.

Existing intersection performances have been assessed using SIDRA INTERSECTION 7.

The results of the analysis are summarised in **Table 1** below, with detailed SIDRA outputs reproduced in **Annexure C** for reference.

TABLE 1: INTERSECTION PERFORMANCES (SIDRA INTERSECTION 7)

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/veh)	Level of Service ⁽³⁾	Control Type	Worst Movement	95th Percentile Queue
EXISTING VOLUMES							
North Rocks Road / Speers Road	AM	0.43	1.1 (Worst: 46.5)	NA (Worst: D)	Give Way	RT from Speers Road (W)	1 veh (6.7m) Speers Road (W)
	PM	0.35	0.6 (Worst: 20.9)	NA (Worst: B)		RT from Speers Road (W)	0.3 veh (2.4m) North Rocks Road (N)

NOTES:

- (1) Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
- (2) Average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
- (3) Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
- (4) No overall Level of Service is provided for Give Way and Stop controlled intersections as the low delays associated with the dominant movements skew the average delay of the intersection. The Level of Service of the worst approach is an indicator of the operation of the intersection, with a worse Level of Service corresponding to long delays and reduced safety outcomes for that approach.

As shown above, the intersection of North Rocks Road / Speers Road is approaching its capacity under the existing traffic flows, with the right turn out of Speers Road experiencing a Level of Service (LoS) “D” during the morning and Level of Service (LoS) “B” during the afternoon peak periods.

2.3.2 Traffic Survey

Tube traffic surveys were undertaken along both sides of North Rocks Road, west of Speers Road and outside of 3 Speers Road during the week of Monday 13th November – Monday 20th November 2017, representing a typical week, with the detailed results reproduced in **Annexure D**. The results of the tube surveys are summarised in **Table 2** below.

TABLE 2: TUBE COUNT SUMMARY

Tube	Direction	Average Peak Hour Volume		Average Daily Weekday Volume	85 th Percentile Speed	Heavy Vehicles
		Time	Volume			
North Rocks Road	Westbound	AM (8am – 9am)	713	8,303	64.5	5.8%
		PM (5pm – 6pm)	602			
	Eastbound	AM (8am – 9am)	718	8,394	61.3	5.9%
		PM (5pm – 6pm)	623			
Speers Road	Northbound	AM (8am – 9am)	42	451	29.3	4.5%
		PM (3pm – 4pm)	37			
	Southbound	AM (8am – 9am)	39	455	25.8	2.7%
		PM (3pm – 4pm)	38			

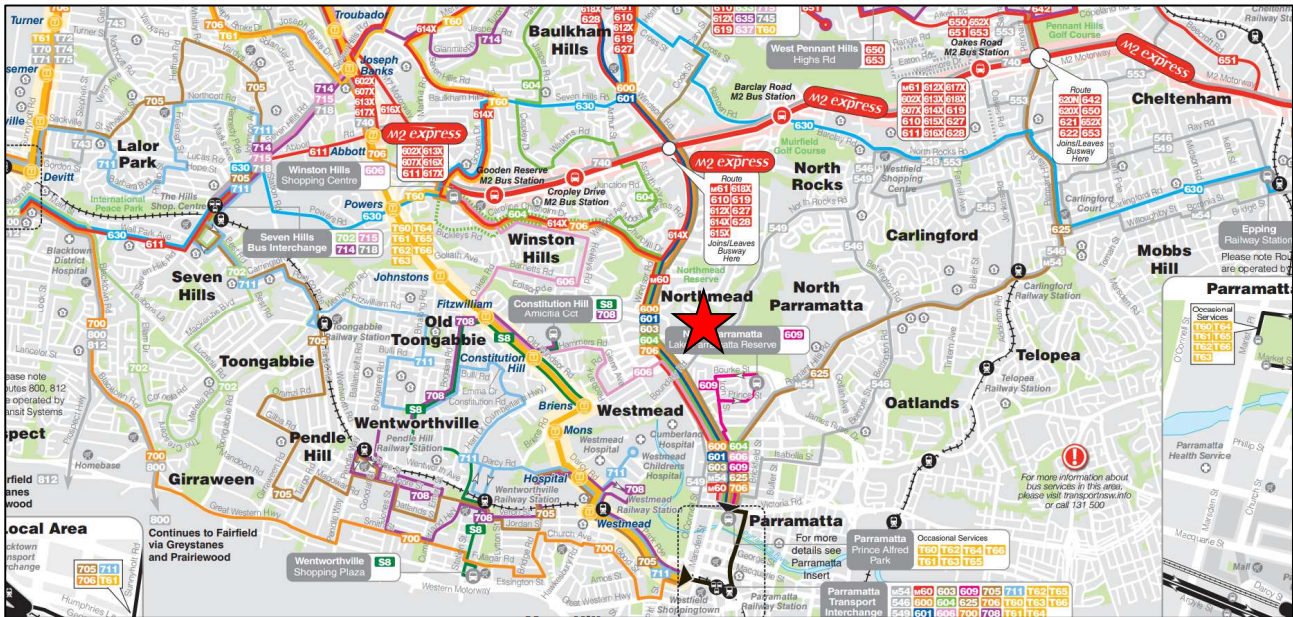
*Survey period – Monday 13th November to Monday 20th November 2017

2.4 Public Transport

The subject site is within 100m walking distance of bus stops serving existing bus route 549 provided by Sydney Buses which travels along North Rocks Road to the east of the site, with the nearest bus stop located near the intersection of North Rocks Road / Speers Road. The 549 service connects Parramatta and Epping.

The subject site is also within 650m walking distance of bus stops serving existing bus routes 600, 601, 603, 604, 606, 609, 706 and M60 provided by Hillsbus which travel along Windsor Road to the south of the site, with the nearest bus stops (215149 & 215191) located near the intersection of Church Street / Toll Street. The bus routes provide access from Parramatta to Blacktown, Castle Hill, Hornsby, Lake Parramatta, Rouse Hill and Winston Hill.

Figure 3 below shows the site's location relative to the surrounding bus network.



★ Site Location

FIGURE 3: BUS NETWORK MAP

2.5 Future Road and Infrastructure Upgrades

From Parramatta City Council's Development Application tracker and website, it appears that there are no future planned road or public transport changes that will affect traffic conditions within the immediate vicinity of the subject site.

3 **PARKING ASSESSMENT**

3.1 ***Council Parking Requirement***

Reference is made to the *Hills Shire Council Development Control Plan 2012* (Hills Shire DCP) which designates the following parking rates:

Child Care Centre (including Kindergartens, Creches)

1 space per employee plus 1 space per 6 children enrolled for visitors and/or parent parking

Car parking for child care centres must be situated in a convenient location, allowing for safe movement of children to and from the centre.

Table 3 below summarises Council's parking requirements for the proposed development.

TABLE 3: DCP PARKING REQUIREMENTS

Land Use	Scale	Rate	Spaces Required
Child Care Centre	99 Children	1 space per 6 children	16.5 (17)
	17 Staff	1 space per staff member	17
Total			34

As shown above, the development requires a total of **34** car parking spaces. The site provides a total of **25** car parking spaces, a total of nine (**9**) spaces below the requirement by strict application of the Hills Shire Council Development Control Plan.

3.2 ***Recommended Parking Provision***

Whilst the Hills Shire DCP is still the control document for the proposed site, it is recommended that the parking requirements of both the *Parramatta Council Development Control Plan* (Parramatta DCP) and the recently published *State Environmental Planning Policy (Educational Establishments and Child Care Facilities)* (SEPP Education) be considered. The requirements of each of the above documents are provided below.

Parramatta Council DCP

Child care centres - 1 space for every 4 children in attendances

SEPP Educational Establishments and Child Care Facilities

Within 400 metres of a metropolitan train station:

- *1 space per 10 children*
- *1 space per 2 staff.*

Staff parking may be stack or tandem parking with no more than 2 spaces in each tandem space.

In other areas:

- *1 space per 4 children.*

As depicted above, each of these documents has a requirement that one car space be provided for every four children attending a child care centre. The resulting parking requirement is summarised in **Table 4**.

TABLE 4: PARRAMATTA DCP AND SEPP EDUCATION PARKING REQUIREMENT

Land Use	Scale	Rate	Spaces Required
Child Care Centre	99 Children	1 space per 4 children	24.75 (25)
Total			25

The site provides a total of **25** car spaces, meeting the respective requirements of both the Parramatta DCP and SEPP Education. On this basis, it is recommended that this provision of parking will be adequate to serve the needs of the site for both parent and staff parking.

Further justification for the use of this car parking rate is provided in the following sub-sections.

3.2.1 Parent/Carer Car Parking Demand

The actual car parking accumulation of parents/carers can be estimated mathematically utilising queueing theory, utilising the methods outlined in *Austrroads Guide to Traffic Management Part 2: Traffic Theory*.

The analysis has been based on the traffic generation rates provided by the Roads and Maritime Services *Guide to Traffic Generating Developments* of 0.8 trips per child and 0.7 trips per child in the AM and PM peak hours respectively and an average stay length of 10 minutes (where an average of 6.8 minutes is provided by the RMS Guide).

Using the above traffic generation and stay length assumptions, the 98th percentile queue of parents is some 10 vehicles. Therefore, 10 parking spaces should be allocated to parents within the car park, with the remaining 15 allocated to staff.

3.2.2 Proximity of Windsor Road Public Transport Corridor

Windsor Road is part of a high-frequency bus corridor, with over 20 services departing from bus stops along Windsor Road in both the AM and PM peak hours. Bus stops along Windsor Road serving both directions of travel are within 800m walking distance of the site and provide an attractive alternative to private car use for centre staff.

Considering the characteristics of child care centre workers, a high proportion of whom are typically in their late teenage years or early their twenties, it is likely that some staff will not own a car and will likely not be daunted by the 800m walk to and from the bus stops along Windsor Road.

3.2.3 Journey to Work Statistics

The NSW Bureau of Transport Statistics provides statistics for how employees in the North Rocks area travel to and from work, indicating that some 83% of employees drive to work. Even should there be no increase of public transport use based on the staff characteristics of the Child Care Centre, the Journey to Work statistics reflect that fifteen ($0.83 \times 17 = 14.1$) of the staff of the child care centre will drive to work.

On the basis that 10 spaces are required for parents as per **Section 3.2.1**, 15 spaces will be available for staff, which will meet or exceed the staff parking demand.

3.2.4 Impact of Occasional Overflow of Car Parking

Child Care Centre parking facilities should be designed to accommodate the average maximum parking demand; however, it is typical for any parking facility that overflow will occasionally occur. It prudent to examine the impact of overflowing parking demand. In this case, while Speers Road is narrow and cannot accommodate long-term or a high density of car parking, there is ample car parking available along the frontage of the site to Speers Road for occasional parking by parents or staff members (who could move their car into the car park once peak times are finished), without any unacceptable impact on the function of Speers Road in terms of either traffic flow or resident parking needs.

3.3 ***Bicycle & Motorcycle Parking Requirements***

Council's DCP does not provide bicycle or motorcycle parking rates for child care centres, and as such, the DCP does not require the provision of this facility. Therefore, no on-site bicycle or motorcycle parking has been provided.

3.4 ***Servicing & Loading***

Council's DCP does require that service or delivery facilities be provided for Child Care Centres. Deliveries to the site, which generally will be made in vehicles not exceeding 5.2m in length (similar to a Hiace Van), can be undertaken using the on-street parking along Speers Road or using an on-site space using a visitor space under a management plan to avoid the 7 am – 9 am and 4 pm – 6 pm peak periods.

Waste collection can be undertaken along the Speers Road frontage of the site as per the existing operation for the dwellings currently occupying the site.

3.5 ***Disabled Parking***

Council's DCP Part B requires accessible parking to comply with AS2890.6 and provided in accordance with the BCA. A child care centre is a Class 9b building, as such requires the provision of 1 disabled space per 100 spaces provided, or part thereof. Therefore, the site requires one (1) disabled space which has been provided as per AS2890.6:2009 design requirements.

3.6 Car Park Design & Compliance

The proposed car park and access design has been assessed to meet or exceed the relevant objectives and requirements of AS2890.1:2004 and AS2890.6:2009. The design includes the following features:

- Car parking spaces for staff with minimum dimensions of 2400mm width by 5400mm length;
- Car parking spaces for parents/carers with minimum dimensions of 2600mm width by 5400mm length;
- Disabled car parking space of 2400mm width by 5400mm length with adjacent 2400mm width by 5400mm length shared space.;
- Parking aisle width of 5800mm;
- Driveway and ramp with 6100mm wall to wall width and appropriately designed gradients.

4 TRAFFIC ASSESSMENT

The impact of the expected traffic generation levels associated with the subject proposal is discussed in the following sub-sections.

4.1 *Traffic Generation*

The estimated traffic generation level for the 99 children for the subject child care centre is based upon the *Roads and Maritime Services' Guide to Traffic Generating Developments*, which assumes a worst case of a high proportion of private vehicle trips. The estimated traffic generation is summarised in **Table 5** below.

TABLE 5: TRAFFIC GENERATION OF SITE

Time	Rate	Traffic Generation	Direction
7:00-9:00am	0.8 per child	79 trips	40 in; 39 out
4:00-6:00pm	0.7 per child	69 trips	34 in; 35 out

As shown above, during the 7-9am period the traffic generated by the site equates to **79** vehicle trips (40 in; 39 out) based upon a rate of 0.8 vehicle trips per child. For the 4-6pm period, the site generated traffic equates to **69** vehicle trips (34 in; 35 out) based upon a rate of 0.7 vehicle trips per child as per the RMS Guide.

It is assumed the peak site generated traffic occurs during the recorded commuter peak hour period of 8.00-9.00am and 5.00-6.00pm, as recorded in the intersection surveys, with 100% of the above volumes occurring during the one hour.

4.2 *Traffic Assignment*

The location of the site relative to surrounding residential areas and employment centres has been considered and the following traffic assignment assumed.

- AM Peak Hour
 - 50% of traffic will approach from the north along North Rocks Road;
 - 50% of traffic will approach from the south along North Rocks Road;
 - 30% of traffic will depart to the north along North Rocks Road;
 - 70% of traffic will depart to the south along North Rocks Road.
- PM Peak Hour
 - 30% of traffic will approach from the north along North Rocks Road;
 - 70% of traffic will approach from the south along North Rocks Road;
 - 50% of traffic will depart to the north along North Rocks Road;
 - 50% of traffic will depart to the south along North Rocks Road.

4.3 Traffic Impact – Existing Intersection Configuration

The traffic generation outlined in **Section 4.1 & 4.2** above has been added to the existing traffic volumes recorded. SIDRA INTERSECTION 7 was used to assess the intersections performance. The purpose of this assessment is to compare the existing intersection operations to the future scenario under the increased traffic load. The results of this assessment are shown in **Table 6** with detailed SIDRA outputs reproduced in **Annexure C** for reference.

**TABLE 6: INTERSECTION PERFORMANCES
SIDRA INTERSECTION 7.0**

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/veh)	Level of Service ⁽³⁾	Control Type	Worst Movement	95th Percentile Queue
EXISTING VOLUMES							
North Rocks Road / Speers Road	AM	0.43	1.1 (Worst: 46.5)	NA (Worst: D)	Give Way	RT from Speers Road (W)	1 veh (6.7m) Speers Road (W)
	PM	0.35	0.6 (Worst: 20.9)	NA (Worst: B)		RT from Speers Road (W)	0.3 veh (2.4m) North Rocks Road (N)
EXISTING VOLUMES + 10 Years Growth							
North Rocks Road / Speers Road	AM	0.66	2.5 (Worst: >70)	NA (Worst: F)	Give Way	RT from Speers Road (W)	2.2 veh (15.3m) Speers Road (W)
	PM	0.37	0.7 (Worst: 25.2)	NA (Worst: B)		RT from Speers Road (W)	0.5 veh (3.3m) North Rocks Road (N)
EXISTING VOLUMES + CHILD CARE CENTRE							
North Rocks Road / Speers Road	AM	0.67	3.3 (Worst: 67.1)	NA (Worst: E)	Give Way	RT from Speers Road (W)	2.6 veh (18.5m) Speers Road (W)
	PM	0.37	1.3 (Worst: 23.2)	NA (Worst: B)		RT from Speers Road (W)	0.6 veh (4.3m) North Rocks Road (N)

NOTES:

- (1) The Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
- (2) The average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
- (3) The Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
- (4) No overall Level of Service is provided for Give Way and Stop controlled intersections as the low delays associated with the dominant movements skew the average delay of the intersection. The Level of Service of the worst approach is an indicator of the operation of the intersection, with a worse Level of Service corresponding to long delays and reduced safety outcomes for that approach.

As shown above, the intersection of North Rocks Road / Speers Road is approaching its capacity under the existing traffic flows and will be at capacity within the next 10 years due to traffic growth along North Rocks Road. It should be noted that the right turn out of Speers Road will reflect delays consistent with a Level of Service of “E” within four years. The performance standards for intersections, as provided in the RMS Guide, are reproduced in **Figure 4**.

Table 4.2
Level of service criteria for intersections

Level of Service	Average Delay per Vehicle (secs/veh)	Traffic Signals, Roundabout	Give Way & Stop Signs
A	< 14	Good operation	Good operation
B	15 to 28	Good with acceptable delays & spare capacity	Acceptable delays & spare capacity
C	29 to 42	Satisfactory	Satisfactory, but accident study required
D	43 to 56	Operating near capacity	Near capacity & accident study required
E	57 to 70	At capacity; at signals, incidents will cause excessive delays Roundabouts require other control mode	At capacity, requires other control mode

FIGURE 4: RMS INTERSECTION CAPACITY CRITERIA

On this basis, the upgrade of the North Rocks Road / Speers Road intersection is required irrespective of further development in Speers Road. The additional traffic associated with the Child Care Centre would cause the intersection to reach its capacity earlier than would otherwise be the case.

4.4 Traffic Impact – Suggested “Seagull” Configuration

Given the results of traffic modelling as presented in **Section 4.3** above, alternative intersection treatments have been considered. Based on the geometry of the road reserve and the configuration of driveways (particularly the driveways in non-compliant locations opposite Speers Road) it is suggested that a “Seagull” treatment would be appropriate. A concept layout has been prepared and is reproduced in **Annexure E** for reference.

The proposed intersection layout has been assessed using the existing and future development traffic volumes, with the results summarised in **Table 7** with detailed SIDRA outputs reproduced in **Annexure F** for reference.

**TABLE 7: INTERSECTION PERFORMANCES – “SEAGULL” CONFIGURATION
SIDRA INTERSECTION 7.0**

Intersection	Peak Hour	Degree of Saturation ⁽¹⁾	Average Delay ⁽²⁾ (sec/veh)	Level of Service ⁽³⁾	Control Type	Worst Movement	95th Percentile Queue
EXISTING VOLUMES							
North Rocks Road / Speers Road	AM	0.43	0.6 (Worst: 12.7)	NA (Worst: A)	Seagull	RT from North Rocks Road (N)	0.3 veh (1.8m) Speers Road (W)
	PM	0.35	0.5 (Worst: 10.2)	NA (Worst: A)		RT from North Rocks Road (N)	0.3 veh (2.4m) North Rocks Road (N)
EXISTING VOLUMES + 10 Years Growth							
North Rocks Road / Speers Road	AM	0.52	0.8 (Worst: 18.1)	NA (Worst: B)	Seagull	RT from North Rocks Road (N)	0.5 veh (3.2m) North Rocks Road (N)
	PM	0.42	0.7 (Worst: 12.8)	NA (Worst: A)		RT from North Rocks Road (N)	0.6 veh (4.3m) North Rocks Road (N)
EXISTING VOLUMES + CHILD CARE CENTRE							
North Rocks Road / Speers Road	AM	0.46	1.3 (Worst: 13.3)	NA (Worst: A)	Seagull	RT from North Rocks Road (N)	0.9 veh (6.6m) North Rocks Road (N)
	PM	0.37	1.1 (Worst: 10.6)	NA (Worst: A)		RT from North Rocks Road (N)	0.6 veh (4.1m) North Rocks Road (N)
EXISTING VOLUMES + CHILD CARE CENTRE + 10 Years Growth							
North Rocks Road / Speers Road	AM	0.57	2.1 (Worst: 19.5)	NA (Worst: B)	Seagull	RT from North Rocks Road (N)	1.9 veh (13.4m) North Rocks Road (N)
	PM	0.44	1.4 (Worst: 13.7)	NA (Worst: A)		RT from North Rocks Road (N)	1.1 veh (7.6m) North Rocks Road (N)

NOTES:

- (1) The Degree of Saturation is the ratio of demand to capacity for the most disadvantaged movement.
- (2) The average delay is the delay experienced on average by all vehicles. The value in brackets represents the delay to the most disadvantaged movement.
- (3) The Level of Service is a qualitative measure of performance describing operational conditions. There are six levels of service, designated from A to F, with A representing the best operational condition and level of service F the worst. The LoS of the intersection is shown in bold, and the LoS of the most disadvantaged movement is shown in brackets.
- (4) No overall Level of Service is provided for Give Way and Stop controlled intersections as the low delays associated with the dominant movements skew the average delay of the intersection. The Level of Service of the worst approach is an indicator of the operation of the intersection, with a worse Level of Service corresponding to long delays and reduced safety outcomes for that approach.

As shown above, the suggested “Seagull” intersection configuration would add sufficient capacity to the intersection to serve both the existing and proposed child care centre traffic under both the existing and future traffic conditions.

4.5 Residential Amenity

The existing two-way traffic volumes surveyed along Speers Road were 81 two-way vehicles during the morning peak hour and 74 two-way vehicles during the evening peak hour. The additional traffic of 79 morning trips and 69 evening trips will result in a total of 160 two-way vehicles in the AM peak hour and 143 two-way vehicles in the PM peak hour.

These two-way flows are below the environmental goal of 200 vehicles per hour or the maximum threshold of 300 vehicles per hour for a local street as specified in the RMS Guide to Traffic Generating Developments 2002 and the traffic flows will remain well within the acceptable limits of a residential street.

5 **CONCLUSION**

The traffic and parking impacts of the proposed Child Care Centre at 49 - 51 North Rocks Road & 2 Speers Road, North Rocks, as depicted in reduced plans reproduced in **Annexure A** have been assessed.

A total of **25** car parking spaces are proposed, meeting the requirements of the *Parramatta Council Development Control Plan* and the *State Environmental Planning Policy (Educational Establishments and Child Care Facilities)*, representing an acceptable outcome. It is recommended that 10 parking spaces should be allocated to parents within the car park, with the remaining 15 allocated to staff. A total of one (**1**) disabled car parking spaces is provided.

The proposed design generally meets the relevant requirements and objectives of AS2890.1 and AS2890.6 and the design is sufficient for all parking, loading and servicing uses.

The traffic generation of the site has been estimated as some **79** (40 in/39 out) trips in the AM and **69** (34 in/35 out) trips in the PM peak hours respectively. The suggested "Seagull" intersection configuration would add sufficient capacity to the intersection of North Rocks Road / Speers Road to serve both the existing and proposed child care centre traffic under both the existing and future traffic conditions.

In view of the foregoing, the proposed development is fully supported in terms of its traffic and parking impacts.



ANNEXURE A: PROPOSED PLANS
(2 SHEETS)



**ANNEXURE B: TRAFFIC COUNTS EXTRACTED FROM
BARKER RYAN STEWART REPORT
(5 SHEETS)**



**ANNEXURE C: SIDRA OUTPUTS UNDER EXISTING
LAYOUT
(8 SHEETS)**



ANNEXURE D: TUBE COUNT DATA
(4 SHEETS)



**ANNEXURE E: "SEAGULL" INTERSECTION
CONFIGURATION CONCEPT**

(1 SHEET)



**ANNEXURE F: SIDRA OUTPUTS UNDER SEAGULL
LAYOUT
(8 SHEETS)**