# School Infrastructure NSW

## Marsden Park New Primary School
## Transport and Accessibility Study

September 2019

# Table of contents

# Table index



# Figure index

# Appendices

*This report: has been prepared by GHD for the NSW Department of Education (School Infrastructure NSW) and may only be used and relied on by the NSW Department of Education for the purpose agreed between GHD and the NSW Department of Education.*

*GHD otherwise disclaims responsibility to any person other than the NSW Department of Education arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.*

*The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.*

*The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.*

*The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report, GHD disclaims liability arising from any of the assumptions being incorrect.*

# 1. Introduction

## 1.1 Overview

This Transport and Accessibility Study has been prepared by GHD Pty Ltd on behalf of Schools Infrastructure NSW (SINSW) (the Applicant). It accompanies an Environmental Impact Statement (EIS) in support of a State Significant Development Application (SSD-9809) for the Marsden Park New Primary School at the corner of Northbourne Drive (to the east) and a proposed future road (to the north) within the Elara Estate, Marsden Park (the site). The site is legally described as Lot 2889 in Deposited Plan 1230906. The development footprint does not cover a portion of the site to the west as this is reserved for a future alternative use.

The Marsden Park New Primary School will cater for 1,000 primary school students at completion. The proposal seeks consent for:

- Construction Stage 1 (Temporary School): a temporary school facility constructed within the western portion of the development site located on the future sports grounds. This temporary school facility is to accommodate a maximum of 500 students at any given time. Should the permanent school progress as per the program, the temporary school will not be required.
- Construction Stage 2 (Construction of Permanent School Facility) a permanent consolidated two storey courtyard building with capacity to accommodate a maximum of 1,000 students. This new school building is to comprise:
- 40 teaching spaces and ten administration staff
  - A canteen
  - Library
  - Multipurpose hall
  - Office and administration space
  - Staff and student amenities
  - Out of school hours care accommodation
- Multi-purpose sporting facilities and outdoor play spaces
- Associated site landscaping and public domain improvements
- An on-site car park for 48 parking spaces and drop-off and pick-up areas
- Construction of ancillary infrastructure and utilities as required.

The purpose of this Transport and Accessibility Study is to assess the impacts of the proposed Marsden Park New Primary School on the adjoining traffic and transport infrastructure. The analysis has focused on the Stage 2 facility, with 1,000 students.

## 1.2 Response to SEARs

The Transport and Accessibility Study is required by the Secretary's Environmental Assessment Requirements (SEARs) for SSD-9809. Table 1-1 identifies the SEARs and relevant reference within this report.

### Table 1-1 – SEARs Comments

| Comment | Relevant Section in this report |
|---|---|
| Accurate details of the current daily and peak hour vehicle, public transport, pedestrian and cycle movement and existing traffic and transport facilities provided on the road network located adjacent to the proposed development. | Refer to Section 4.1 Traffic Generation and Section 4.2 Trip Generation Analysis |
| Details of estimated total daily and peak hour trips generated by the proposal, including vehicle, public transport, pedestrian and bicycle trips based on surveys of the existing and similar schools within the local area | Refer to Section 4.1 Traffic Generation and Section 4.2 Trip Generation Analysis |
| The adequacy of existing public transport or any future public transport infrastructure within the vicinity of the site, pedestrian and bicycle networks and associated infrastructure to meet the likely future demand of the proposed development | Refer to Section 2.5 Public Transport and Section 2.6 Active Transport |
| Measures to integrate the development with the existing/future public transport network | Refer to Section 2.5 Public Transport |
| The impact of trips generated by the development on nearby intersections, with consideration of the cumulative impacts from other approved developments in the vicinity, and the need/associated funding for, and details of, upgrades or road improvement works, if required (Traffic modelling is to be undertaken using SIDRA network modelling for current and future years) | Refer to Section 4.1 Traffic Generation and Section 4.2 Trip Generation Analysis |
| The identification of infrastructure required to ameliorate any impacts on traffic efficiency and road safety impacts associated with the proposed development, including details on improvements required to affected intersections, additional school bus routes along bus capable roads (i.e. minimum 3.5 m wide travel lanes), additional bus stops or bus bays | Refer to Section 2.3 Proposed Road Upgrades and Section 2.5 Public Transport |
| Details of travel demand management measures to minimise the impact on general traffic and bus operations, including details of a location-specific sustainable travel plan (Green Travel Plan and specific Workplace travel plan) and the provision of facilities to increase the non-car mode share for travel to and from the site | Refer to Section 4.3 Travel Demand Management |
| The proposed walking and cycling access arrangements and connections to public transport services | Refer to Section 2.5 Public Transport and Section 2.6 Active Transport |

| Comment | Relevant Section in this report |
|---|---|
| The proposed access arrangements, including car and bus pick-up/drop-off facilities, and measures to mitigate any associated traffic impacts and impacts on public transport, pedestrian and bicycle networks, including pedestrian crossings and refuges and speed control devices and zones | Refer to Section 3.3 Proposed Site Access Arrangements, Section 3.8 Pick-up and Drop-off, Section 2.5 Public Transport and Section 2.6 Active Transport |
| Details of the likely school catchment area, which will influence the location of the student population and subsequent transport choices to travel to/from school. | Refer to Section 3.2 Catchment Data |
| An assessment of the planned road design and timing for the construction of adjacent roads to the school. This assessment should consider the accessibility requirements from bus stops and anticipated pick-up and drop-off zones. | Refer to Section 2.2 Existing Road Network Characteristics and Section 2.3 Proposed Road Upgrades |
| Proposed bicycle parking provision, including end of trip facilities in secure, convenient, accessible areas close to main entries incorporating lighting and passive surveillance | Refer to Section 3.6 Bicycle Parking Facilities |
| Proposed number of on-site car parking spaces for teaching staff and visitors and corresponding compliance with existing parking codes and justification for the level of car parking provided on-site | Refer to Section 3.4 Car Parking |
| An assessment of the cumulative on-street parking impacts of cars and bus pick-up/drop-off, staff parking and any other parking demands associated with the development | Refer to Section 3.4 Car Parking and 3.8 Pick-up and Drop-off |
| Emergency vehicle access, service vehicle access, delivery and loading arrangements and estimated service vehicle movements (including vehicle type and the likely arrival and departure times) | Refer to Section 3.3 Proposed Site Access Arrangements, Section 3.4 Car Parking and Section 3.5 Service Vehicles |

## 1.3 Site Location

The proposed Marsden Park New Primary School site is currently a greenfield site located within the Marsden Park Precinct approximately 40 km to the north-west of the Sydney CBD.

The site is located to the west of Northbourne Drive and approximately 400 m to the west of Richmond Road, as shown in Figure 1-1. The site also has frontage along Beale Street and Enmore Street to the west and south respectively. The site is located within the Blacktown City Council Local Government Area.


**Figure 1-1 - Subject Site Location**

*Source: Google Maps (2019), modified by GHD*

### 1.3.1 Marsden Park Precinct

The Marsden Park Precinct is currently being developed and is proposed to provide approximately 10,300 new homes and accommodate a population of approximately 30,000 residents. The proposed Marsden Park New Primary School will support the educational needs of the precinct's existing and future populations.

Low to medium density housing is proposed to be located around village centres, a school and open spaces. Higher density housing is proposed in proximity to the town centre, where retail, community facilities, schools, recreational facilities and public transport are at a short distance for improved convenience and accessibility (See Figure 1-2).

As detailed in the DCP, the key vision for the precinct is:

> *A safe and permeable street network will promote accessibility, connectivity and social interaction. The provision of cycle ways and pedestrian connections as well as public transport connections to surrounding centres will promote a community that is less dependent on private vehicle use.*

Cycleways, pedestrian connections and public transport connections to surrounding land uses and other regional centres will be provided throughout the precinct and will facilitate access and egress to / from the proposed primary school.

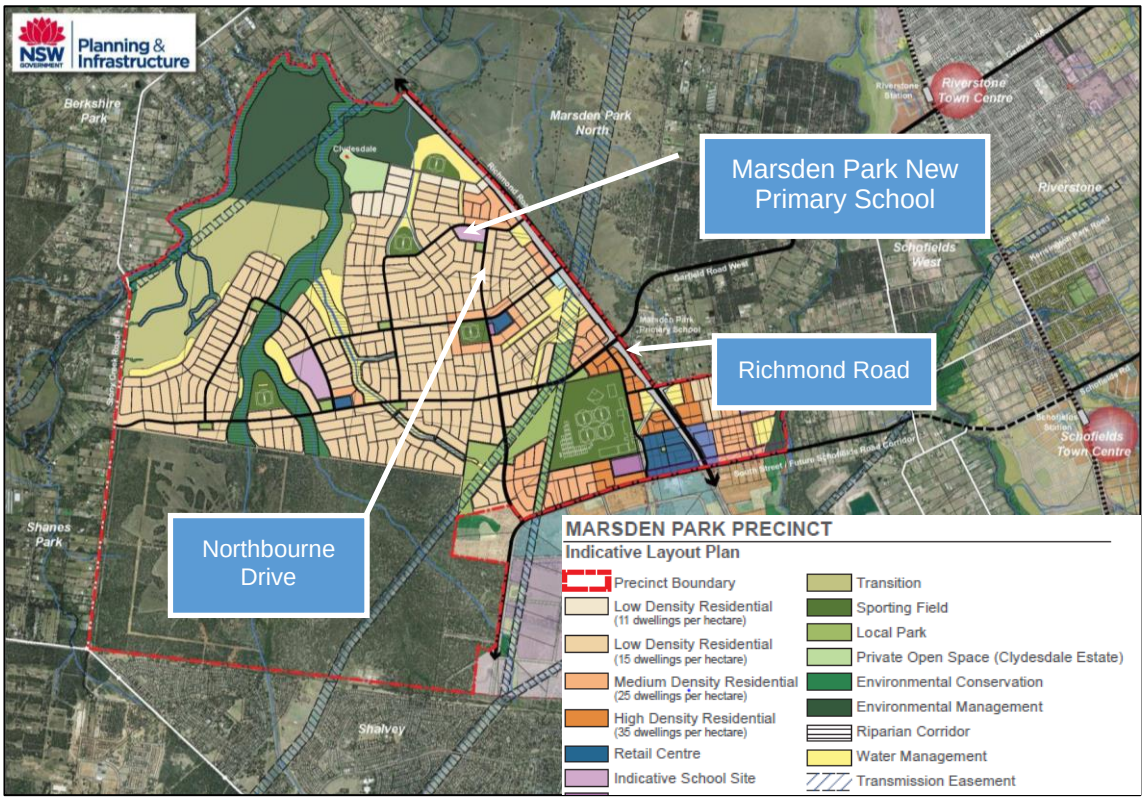



**Figure 1-2 - Marsden Park Precinct Plan**

*Source: Marsden Park Precinct Development Control Plan*

The Marsden Park North Precinct is located opposite the Marsden Park Precinct on Richmond Road and is proposed to provide approximately 6,200 dwellings. Access to the Marsden Park North Precinct is proposed from Richmond Road and Garfield Road West.

## 1.4 Study Assumptions and Limitations

The following assumptions were made as part of this study:

- Up to 1,000 students will attend Marsden Park New Primary.
- No traffic, pedestrian, bicycle riding or parking surveys have been undertaken.
- Trip generation for the Marsden Park New Primary School has been based upon data contained in the Assessment of Intersection Performance at *Richmond Road-Access 1 Intersection Marsden Park Residential Precinct,* Transport Planning Partnership 2017 (as detailed in Section 1.6.1.
- It is assumed that the Marsden Park Precinct's internal road network will be built in accordance with the road hierarchy and cross-sections detailed in the Marsden Park Precinct Development Control Plan (see Figure 2-7 and Figure 2-8).
- It is assumed that the road network within the Marsden Park Precinct has been designed to accommodate the expected vehicle activity associated with the Marsden Park New Primary School along with other developments within the precinct.

## 1.5 Study Scope

This Transport and Accessibility Study addresses the following:

- Existing Conditions – a review of the existing road and transport conditions, adjacent developments, traffic volumes and crash data.

- Proposed Development – a review of the proposed Marsden Park New Primary School and its access arrangements.
- Traffic Assessment – an assessment of the trip generation characteristics of the proposed school and the performance of the intersections following the development of the school.

## 1.6 Previous Studies

The following sections provide a summary of the previous relevant traffic and transport studies related to the proposed Marsden Park New Primary School development.

It is noted that GHD have contacted Roads and Maritime multiple times to try and obtain additional data to inform this study (see Appendix A). Roads and Maritime did not respond to these requests for data.

### 1.6.1 Assessment of Intersection Performance at Richmond Road - Access 1 Intersection Marsden Park Residential Precinct (2017)

The *Assessment of Intersection Performance at Richmond Road - Access 1 Intersection Marsden Park Residential Precinct* report (Referred to henceforth as the Richmond Road Study) was completed by Transport Planning Partnership in 2017. This study was undertaken to support the proposed Clydesdale Development, located within the Marsden Park Precinct and to the north of the proposed school site.

The key points from the Richmond Road Study are as follows:

#### *Transport Conditions*

- The Clydesdale Development proposes to provide 475 low-density dwellings and 1,755 apartments. The site is located to the north of the Stockland Elara Development as shown in Figure 1-3.
- Figure 1-3 shows the location of Elara Boulevard (referred to in the Richmond Road Study as Access Road 2) and the currently unconstructed road to the north of the proposed school site, which is referred to as Access Road 1.

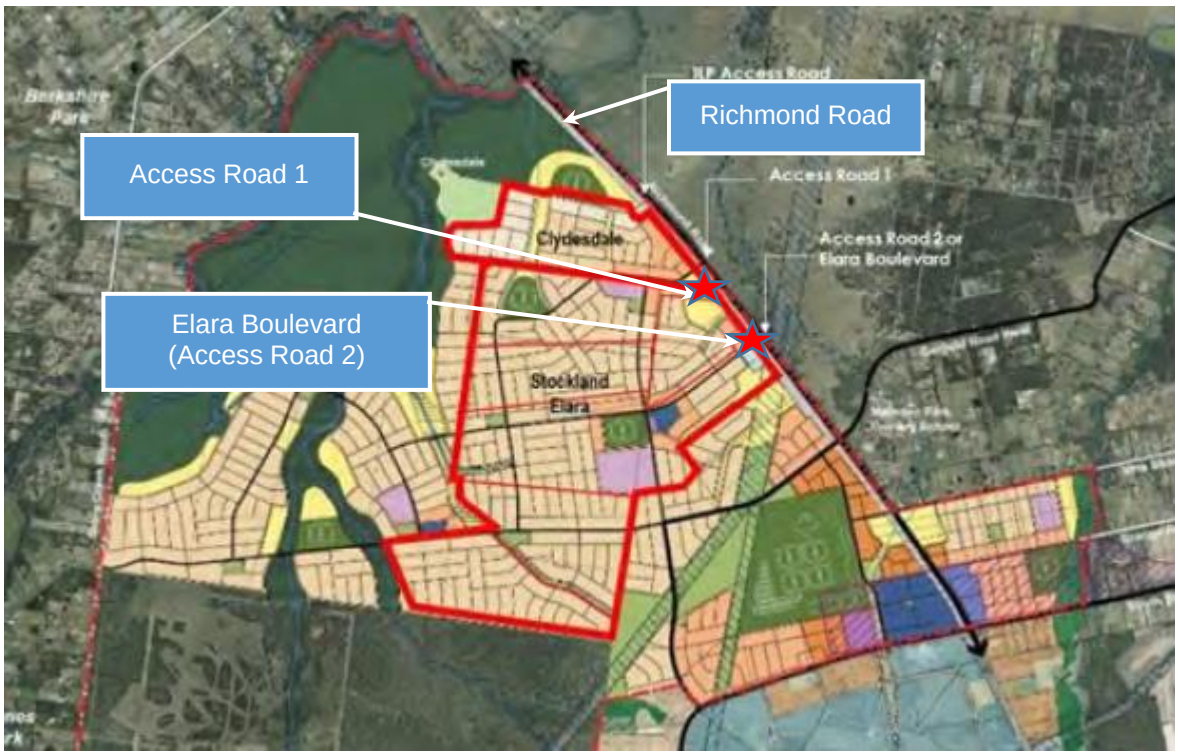



**Figure 1-3 – Proposed Clydesdale and Stockland Elara Sites**

*Source: Assessment of Intersection Performance at the Richmond Road- Access Road 1 Intersection (2017)*

- In 2013, AECOM prepared a Traffic Assessment report (refer to Section 1.6.2) for the rezoning of the Marsden Park Precinct to support the Marsden Park Indicative Layout Plan (refer to Figure 1-2). The AECOM study proposed the following intersection arrangements:
  - The Access Road 1 / Richmond Road intersection would be a left in / left out only priority controlled intersection.
  - The Access Road 2 (Elara Boulevard) / Richmond Road intersection would be traffic signal controlled.
- The adjacent Stockland Elara[2] and Winten's Newpark developments would comprise of 2,193 dwellings and a primary school. These developments, along with the Clydesdale Development, are expected access / egress the Marsden Park Precinct via Elara Boulevard and Access Road 1 (see Figure 1-4).
- The developers are seeking to allow residents to obtain full access to Richmond Road 1 using a full-movement signalised intersection.

[2] As displayed in Figure 2-2, the Stockland Elara Development has been partially completed

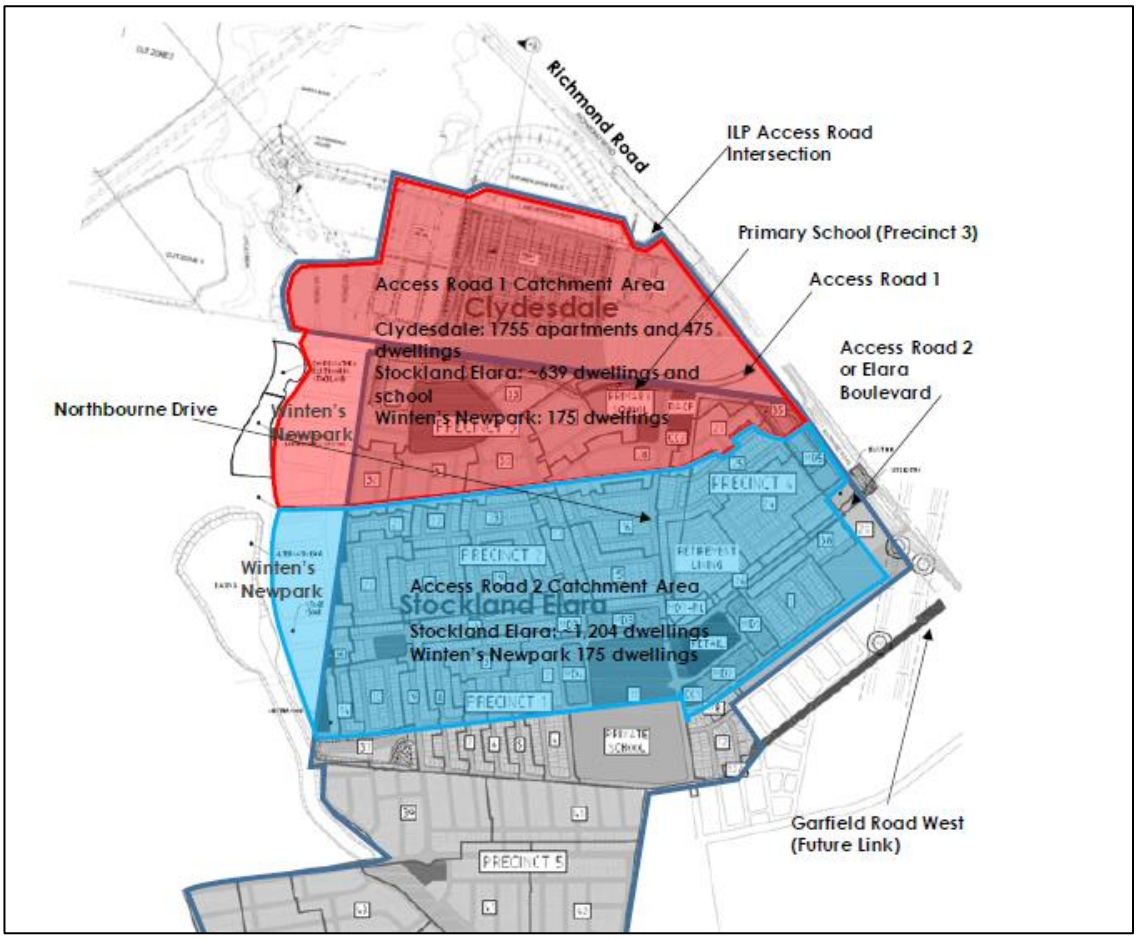



**Figure 1-4 – Catchment Area for Access Road 1 and Elara Boulevard**

*Source: Assessment of Intersection Performance at the Richmond Road- Access Road 1 Intersection (2017)*

- Richmond Road will progressively be upgraded from a two-lane road north of Bells Creek Bridge, Colebee to the South Creek floodplain. The proposed upgrade would see Richmond Road widened to a four-lane road, with provision for six traffic lanes in the future.
- Richmond Road currently carries approximately 28,900 vehicles per day. Heavy vehicles made up approximately 12 percent of the total traffic during peak hours.
- The AECOM traffic forecast for 2021 indicates that the peak hourly flows on Richmond Road are expected to be in the order of 2,250 vehicles (two-way), including traffic associated with the Marsden Park Precinct.
- The Sydney Greater Metropolitan Area Strategic Traffic Forecasting Model provided by Roads and Maritime Services (Roads and Maritime) indicates that by 2036, the peak hour traffic volumes on Richmond Road would be in the order of 2,750 – 3,150 vehicles (two-way).

### *Trip Generation*

- Roads and Maritime trip rates (Guide to Traffic Generating Developments V2.2, and updated TD 13-04a) were used to identify the trip generation characteristics of the proposed residential developments.
- For Marsden Park New Primary School the study assumed the following:[3]

[3] The assumptions for the tips generated by the school were based on the data contained in the Marsden Park Precinct – Traffic and Transport Study.

- The school would have a capacity of 500 students
- 45 percent of trips would be made by car with surveys derived from traffic surveys of an existing Kindergarten to year 12 school.[4]
- 60 percent of trips would come from the Marsden Park Precinct, with 40 percent from the wider North West Growth Centre
- The school would generate 225 car trips (45 percent of 500 students)
- 90 car trips would come from the wider North West Growth Centre outside of Marsden Park Precinct (i.e. 225 car trips x 40 percent), of which 70 percent are made by parents who would both travel to and leave the school, whereas the rest (30 percent) would be one-way peak hour trips (e.g. staff)
- The resulting estimated traffic generation for the proposed school would be:
  - 90 inbound car trips and 63 outbound car trips in the AM peak
  - 63 inbound car trips and 90 outbound car trip in the PM peak

- A summary of the trip generation associated with the developments that would use Access 1 Road and Elara Boulevard to access the Marsden Park Precinct is provided in Table 1-2.

**Table 1-2 – Marsden Park Precinct Trip Generation Rate (Trips via Access 1 Road and Elara Boulevard)**

| Development | No Dwellings | AM Peak | | PM Peak | |
|---|---|---|---|---|---|
| | | In | Out | In | Out |
| Clydesdale | 2,230 | 192 | 768 | 783 | 196 |
| School | - | 90 | 63 | 63 | 90 |
| Stockland Elara | 1,843 | 350 | 1,401 | 1,460 | 365 |
| Winten's Newpark | 350 | 67 | 266 | 277 | 69 |
| **Total** | **4,423** | **699** | **2,498** | **2,583** | **720** |

Table 1-3 summarised the traffic distributions, based on the AECOM SIDRA modelling for the Access Road 1 / Richmond Road and Elara Boulevard / Richmond Road intersection. The majority of traffic is expected to access / egress the Marsden Park Precinct from the south.

**Table 1-3 – Marsden Park Trip Distribution Data**

| | AM Peak | | PM Peak | |
|---|---|---|---|---|
| | To/from north | To/from south | To/from north | To/from south |
| Inbound Trips | 28% | 72% | 4% | 96% |
| Outbound Trips | 11% | 89% | 50% | 50% |

[4] As some students in years 10 – 12 could be expected to drive to school, this could represent a conservative rate for a primary school

### *Traffic Forecasts*

- Traffic forecasts for Richmond Road were obtained from an AECOM report (see Section 1.6.2) which assumed that 10,300 dwellings would be constructed within the Marsden Park Precinct.
- The AECOM traffic generation forecast for the approved land uses within the Marsden Park Precinct for 2021 is summarised in Table 1-4.

**Table 1-4 – 2021 Modelled Traffic Flow on Richmond Road associated with the approved Marsden Park Yield (vph)**

| Road Section (between) | AM Peak | | | PM Peak | | |
|---|---|---|---|---|---|---|
| | Northbound | Southbound | Total | Northbound | Southbound | Total |
| South Creek and Access Road 1 | 779 | 975 | 1,754 | 972 | 850 | 1,822 |
| Access Road 1 and Elara Boulevard | 776 | 975 | 1,751 | 1,163 | 850 | 2,013 |

- The AECOM traffic forecast associated with the approved yield of the Marsden Park Precinct for 2036 is summarised in Table 1-4.

**Table 1-5 – 2036 Modelled Traffic Flow on Richmond Road associated with the approved Marsden Park Yield (vph)**

| Road Section (between) | AM Peak | | | PM Peak | | |
|---|---|---|---|---|---|---|
| | Northbound | Southbound | Total | Northbound | Southbound | Total |
| South Creek and Access Road 1 | 1,207 | 1,549 | 2,757 | 1,867 | 1,277 | 3,144 |
| Access Road 1 and Elara Boulevard | 1,207 | 1,549 | 2,757 | 1,867 | 1,277 | 3,144 |

- The following modelling scenarios[5] were developed, assuming 100 percent of the Marsden Park Precinct was constructed and occupied.
  - Scenario 1: left in / left out only priority controlled intersection at the Access Road 1 / Richmond Road intersection, with no internal connection between the Clydesdale and Stockland Elara developments.

[5] All scenarios assumed that the intersection of Richmond Road and Elara Boulevard would be signalised.

– Scenario 2: left in / left out only priority controlled intersection at the Access Road 1 / Richmond Road intersection with an internal connection between the Clydesdale and Stockland Elara developments.
– Scenario 3: the signalisation of the Access Road 1 / Richmond Road intersection.

### *Intersection Assessments*

- The proposed signalised Access Road 1 / Richmond Road intersection layout is shown in Figure 1-5, while the current layout of Elara Boulevard and Richmond Road is shown in Figure 1-6.

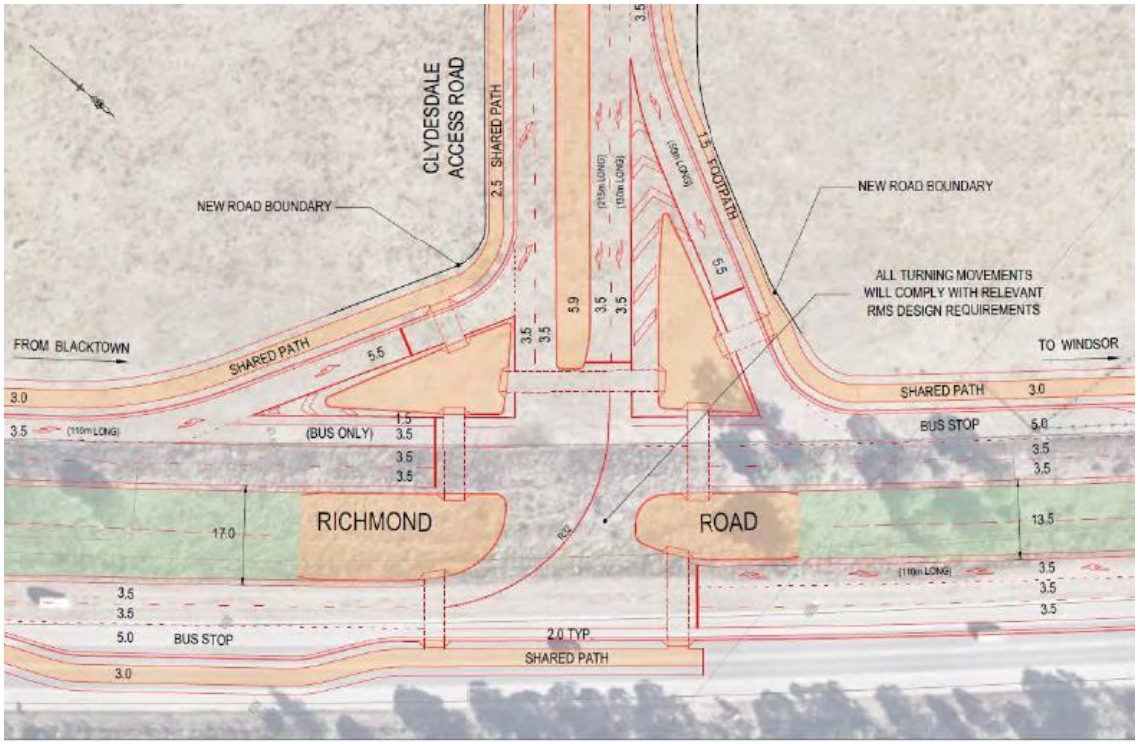



**Figure 1-5 – Proposed Access Road 1 / Richmond Road Intersection Arrangement (Signal Controlled)**

*Source: Assessment of Intersection Performance at the Richmond Road- Access Road 1 Intersection (2017)*

**Figure 1-6 – Existing Elara Boulevard / Richmond Road Intersection Arrangement**

*Source: Google Earth*

SIDRA intersection modelling was completed for both intersections and for the three intersection arrangement scenarios for the 2021 and 2036 horizon years. The results of the SIDRA analysis indicated the following:

- Scenario 1: The Access Road 1 intersection would operate at LoS F in both 2021 and 2036, with a left in / left out only priority controlled intersection configuration.
- Scenario 2: While the left in / left out at Access Road 1 would work acceptably (LoS A), the Elara Boulevard / Richmond Road intersection would operate with excessively long delays if the additional right-turning traffic associated with the Clydesdale and Winten's Newpark developments were assigned to this intersection. The signalisation of the Access Road 1 / Richmond Road intersection would therefore be required.
- Scenario 3: The 2021 SIDRA modelling results indicated the signalised intersections would operate at LoS F based on the four-lane configuration in Richmond Road. However, if Richmond Road is widened to provide three traffic lanes in each direction, the Richmond Road intersections would operate at LoS D or better in 2021. By 2036, with three lanes in either direction on Richmond Road, the intersections with Elara Boulevard and Access Road 1 would operate at LoS F in the AM peak period.
- The traffic warrants for the signalisation of the Access Road 1 / Richmond Road intersection are met.
- It is anticipated that realistically, that the Marsden Park Precinct would not be fully occupied by the year 2021. An additional assessment was undertaken to determine the maximum number of occupied dwellings/ apartments before the associated trips triggering an unsatisfactory intersection performance (LoS E) in 2021. The modelling results indicated

that the Richmond Road intersections with Access Road 1 and Elara Boulevard would operate acceptably based on 70 percent development occupancy. This equates to 3,096 dwellings / apartments of the total proposed 4,423 dwellings / apartments.

- The SIDRA network modelling results indicated that the network is not expected to perform acceptably by the year 2021, despite the provision of six traffic lanes along Richmond Road. This would trigger the need for four through lanes in each direction (eight traffic lanes in total).

#### *Conclusions*

- The traffic estimates and modelling confirm that a traffic signalised access is required at Access Road 1 / Richmond Road intersection, which would operate acceptably in the near future. This arrangement has been accepted by Roads and Maritime in principle. However, motorists travelling along Richmond Road are expected to experience delays during the weekday peak periods.
- The planning for Richmond Road upgrade should consider sufficient network capacity to accommodate the anticipated traffic volumes. The traffic modelling indicated that the provision of six traffic lanes (three in each direction) along Richmond Road would be insufficient to accommodate the forecast traffic demand by 2021. The proposed upgrade to Richmond Road should also consider traffic impacts associated with other planned developments such as Marsden Park (North) and the expected population growth in Western Sydney which will require additional traffic capacity to be provided.
- The traffic estimates indicate Richmond Road would require four through lanes in each direction to sufficiently accommodate the anticipated traffic volumes in the peak hours prior to 2036.

Based on discussions with Council (see Appendix A) it is now understood that it is proposed to provide access to the Clydesdale Development via a major new signalised intersection on Richmond Road to the north of Access Road 1. GHD has requested data about this intersection/access road from Council and Roads and Maritime, however it was not made available at the time of writing this study.

### 1.6.2 Marsden Park Precinct Traffic and Transport Assessment (2013)

The *Marsden Park Precinct Traffic and Transport Study* (AECOM, 2013) was prepared to assess the transport and access requirements of an indicative layout plan for the Marsden Park Precinct. This report covers a range of transport modes and considers improvements to public transport, walking and cycling networks to ensure sustainable transport opportunities are provided for the future communities.

Key points from this study are detailed below.

#### *Traffic Modelling*

- AECOM's Sydney Strategic Traffic Assignment Model (the model) was used to provide traffic forecasts on key roads on the network. The model was developed using the CUBE (version 5.1.2) traffic modelling software.
- The model was used to forecast traffic volumes within the Marsden Park Precinct based on the proposed future land use and infrastructure developments in the precinct and the wider North West Growth Centre.
- The road hierarchy for the precinct has been determined based on forecast daily traffic flows, estimated using modelled 2036 peak hour flows. The classification also considers the location, proposed function and capacity of links within the proposed road network.

### *Intersections*

- All the intersections across the Marsden Park Precinct were designed so they will accommodate future year traffic volumes associated with the proposed full development of the precinct as well as wider regional development.
- All intersections are expected to operate at an acceptable level of service during the morning peak hour and evening peak hour, with appropriate forms of control.
- In line with Roads and Maritime guidance, all intersections within the precinct which are proposed to be signalised have been assessed to perform at Level of Service (LoS) D or above, at full development in 2036, and therefore will provide adequate capacity and operational efficiency.

### *Public Transport*

- The precinct will benefit from good public transport accessibility through a comprehensive proposed bus network and bus servicing strategy linking key centres, transport nodes, schools, employment opportunities and residential areas.
- It has been agreed with TfNSW that the proposed collector road and sub-arterial road network within the precinct are designed to accommodate bus routes to provide local, district and regional connectivity to public transport services within the North West Growth Centre.
- It is expected at least 90 percent of the precinct's residents will be within 400 metres of potential bus routes. Within the precinct, roads serving bus routes should have two traffic lanes in each direction or one traffic lane in each direction with a parking lane that could accommodate a bus stop.

### *Active Transport*

- A comprehensive bicycle network is proposed for the Marsden Park Precinct which will link the centres, schools, transport nodes and various residential neighbourhoods with key strategic routes and onward destinations. The proposed bicycle network will include a mixture of dedicated bicycle facilities which will take the form of off-road (shared path) and on-road (cycle lane) routes.
- Within the precinct, all collector roads will also have available shared path bicycle facilities to allow connections between key origins (residential) and destinations within the precinct and onto the external linkages. The proposed cycling connections are designed to create a continuous network of facilities removing obstacles and barriers to cycling, both physical and perceived.
- Green Travel Plans should be established for schools within the Marsden Park Precinct. These should be integrated into the curriculum for the school and should encourage parents and children to walk, cycle or catch public transport for journeys to school. Reducing the number of local car trips to schools is likely to result in better health, better social interaction at the community level, air quality improvements and road safety benefits.

# 2. Existing and Proposed Conditions

## 2.1 Land Uses

The proposed land uses in the vicinity of the proposed school site, as shown in Figure 2-1, consists of low to medium density residences, sporting fields, and a local park. A significant portion of the surrounding area is currently greenfield land but is intended to be developed in accordance with the Marsden Park Precinct DCP and the Blacktown City Council Growth Centre Precincts DCP (2016).

Northern Village Centre, one of the proposed vibrant and mixed-use village centres within Marsden Park Precinct, is proposed to be located approximately 600 metres to the south of the Marsden Park New Primary School site. This village centre will support the needs of the surrounding neighbourhood community. It will provide a range of small scale retail, business and community uses which will serve the needs of the residents, employees, and students within the northern part of the Marsden Park Precinct.

It is proposed to construct medium density dwellings to the north of Marsden Park New Primary School. Children residing in the residences will have a short walk to access / egress the proposed school site.

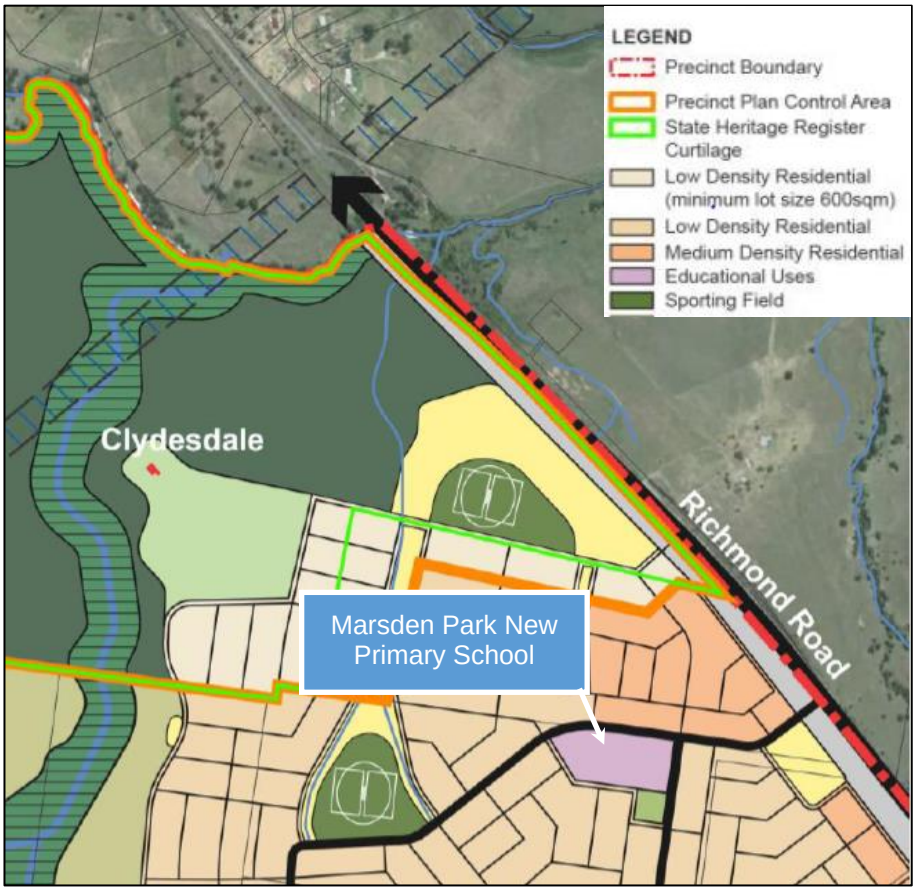



**Figure 2-1 - Land Zoning in proximity to the Marsden Park New Primary School**

*Source: Marsden Park Precinct Development Control Plan*

A relatively large number of dwellings have already been constructed within the Marsden Park Precinct, particularly in the north of the precinct near the proposed school site, as shown in Figure 2-2.

St Luke's Catholic College is located on Northbourne Drive, approximately one kilometre to the south of the Marsden Park New Primary School site. This college provides education from kindergarten to year eight. Access to the teachers' car park for the college along with pick-up and drop off facilities is provided from Northbourne Drive.

Marsden Park Public School is located to the south of the precinct, to the east of the Richmond Road / Garfield Road intersection.


**Figure 2-2 – Marsden Park Precinct Development (at 7th July 2019)**

*Source: Nearmaps*

## 2.2 Existing Road Network Characteristics

### 2.2.1 Road Hierarchy

Roads within NSW are categorised in the following two ways:

- By Classification (ownership)
- By the function that they perform

#### *Road Classification*

Roads are classified (as defined by the Roads Act 1993) based on their importance to the movement of people and goods within NSW (as a primary means of communication).

The classification of a road allows Roads and Maritime Services (Roads and Maritime) to exercise authority of all or part of the road. Classified roads include Main Roads, State Highways, Tourist Roads, Secondary Roads, Tollways, Freeways and Transitways.

For management purposes, Roads and Maritime has three administrative classes of roads. These are:

- **State Roads –** Major arterial links through NSW and within major urban areas. They are the principle traffic carrying roads and fully controlled by Roads and Maritime with maintenance fully funded by Roads and Maritime. State Roads include all Tollways, Freeways and Transitways; and all or part of a Main Road, Tourist Road or State Highway.
- **Regional Roads** – Roads of secondary importance between State Roads and Local Roads which, with State Roads provide the main connections to and between smaller towns and perform a sub arterial function in major urban areas. Regional roads are the responsibility of councils for maintenance funding, though Roads and Maritime funds some maintenance based on traffic and infrastructure. Traffic management on Regional Roads is controlled under the delegations to local government from Roads and Maritime.
- **Local Roads** – The remainder of the council controlled roads. Local Roads are the responsibility of councils for maintenance funding. Roads and Maritime may fund some maintenance and improvements based on specific programs (e.g. urban bus routes, road safety programs). Traffic management on Local Roads is controlled under the delegations to local government from Roads and Maritime.

### *Functional Hierarchy*

Functional road classification involves the relative balance of the mobility and access functions. Roads and Maritime define four levels in a typical functional road hierarchy, ranking from high mobility and low accessibility to high accessibility and low mobility. These road classes are:

- **Arterial Roads** – generally controlled by Roads and Maritime, typically no limit in flow and designed to carry vehicles long distance between regional centres.
- **Sub-Arterial Roads** – can be managed by either Roads and Maritime or local council. Typically, their operating capacity ranges between 10,000 and 20,000 vehicles per day, and their aim is to carry through traffic between specific areas in a sub region, or provide connectivity from arterial road routes (regional links).
- **Collector Roads** – provide connectivity between local roads and the-arterial road network and typically carry between 2,000 and 10,000 vehicles per day.
- **Local Roads** – provide direct access to properties and the collector road system and typically carry between 500 and 4,000 vehicles per day.

The proposed road hierarchy for the Marsden Park Precinct is shown in Figure 2-3.

Northbourne Drive and the proposed road to the north of the school (Access Road 1) are designated as collector roads, while the remaining roads in the vicinity of the school are designated as local roads or streets.

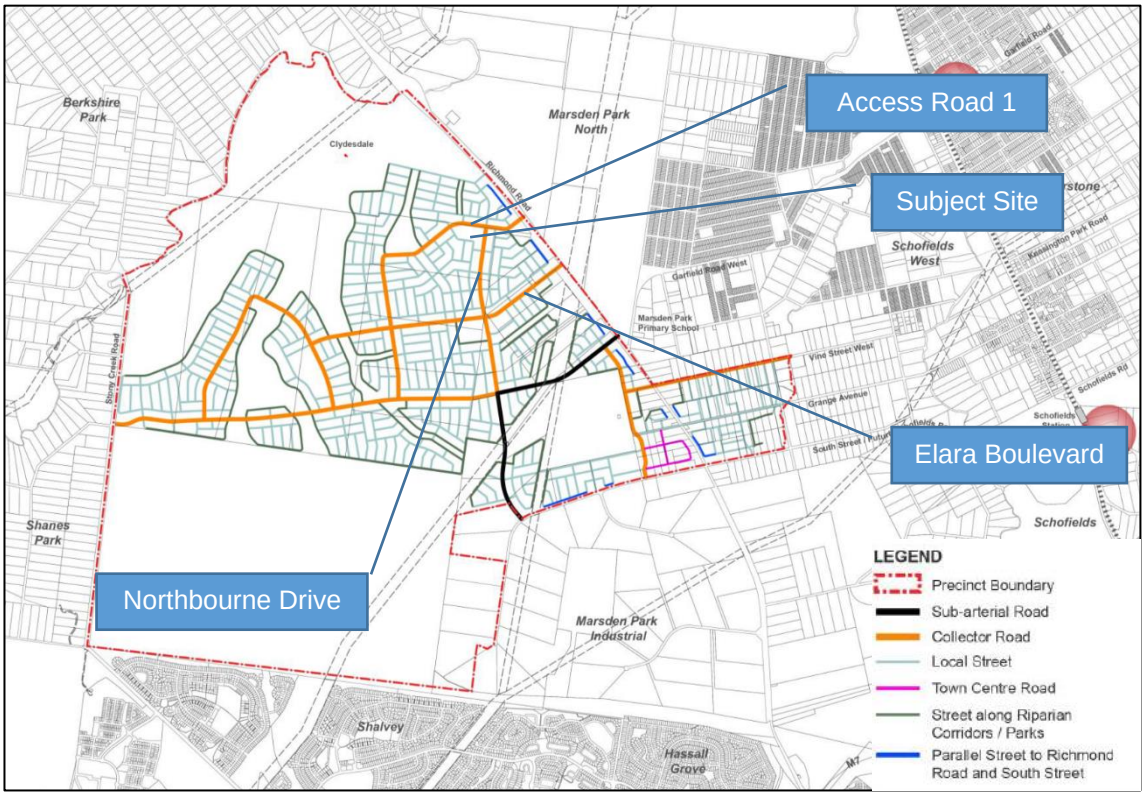



**Figure 2-3 - Marsden Park Precinct Road Hierarchy**

*Source: Marsden Park Precinct Development Control Plan*

A summary of the key roads in proximity to the subject site is provided below.

### 2.2.2 Richmond Road

Richmond Road is a 23.5 km arterial road which links Blacktown in the south, to Richmond in the north. It passes through the suburbs of Woodcroft, Marayong, Doonside, Quakers Hill, Dean Park, Glendenning, Hassall Grove, Colebee, Marsden Park, Windsor Downs, and Berkshire Park; and connects Marsden Park Precinct to other regional centres.

In proximity to the proposed Marsden Park New Primary School site, Richmond Road has the following characteristics:

- North of Elara Boulevard, it is a two-way road with one traffic lane in each direction with the provision of turning lanes and painted medians at intersections.
- South of Elara Boulevard, is a two-way road with two traffic lanes in each direction, with the provision of turning lanes at the intersections.
- It has a posted speed limit of 80 km/h.

The signalised intersection of Richmond Road and Elara Boulevard was constructed in 2014 to facilitate access / egress to the Marsden Park Precinct.


**Figure 2-4 – Richmond Road, north of Elara Boulevard (viewed southwards)**
*Source: Google Street View*


**Figure 2-5 – Richmond Road, south of Elara Boulevard (viewed northwards)**
*Source: Google Street View*

### 2.2.3 Northbourne Drive

Northbourne Drive functions as a collector road, which is approximately 1.3 km long and runs in an approximately north / south alignment within the Marsden Park Precinct. As shown in Figure 2-3, the northern section of Northbourne Drive is directly connected to the proposed Marsden Park New Primary School.

Northbourne Drive has the following characteristics:

- A single traffic lane and parking lane provided in each direction
- A two-way single carriageway with a width of approximately ten metres
- The default speed limit for local urban roads of 50 km/h applies

### 2.2.4 Beale Street, Enmore Street and Donnelly Street

Beale Street, Enmore Street and Donnelly Street are local roads located adjacent to the proposed school site. The proposed low-density residential development which will be accessed from these roads has not yet been constructed, as shown in Figure 2-2.

These local roads have a width of nine metres, enabling a parking lane and travel lane in either direction. An urban default speed limit of 50 km/h applies.

## 2.3 Proposed Road Upgrades

### 2.3.1 Richmond Road

The NSW Government is planning the upgrade of Richmond Road between Elara Boulevard and Heritage Road, to the north of the Marsden Park Precinct.[6]

The upgrade would provide additional traffic light access to fast-growing residential and commercial developments in the Marsden Park Precinct and the Marsden Park North Precinct. Key features of the upgrade include:

- Provide additional signal controlled access for the new commercial and residential developments at Marsden Park and Marsden Park North Precincts
- Provide bus bays and bus priority lanes at the signalised intersections
- Increase the road from a single lane to two lanes in each direction
- Provide shared paths for pedestrian and cyclists

The upgrade is in the preliminary planning stages, which includes the preparation of a strategic design.

As detailed in Section 1.6, Richmond Road is being progressively upgraded from a two-lane road north of Bells Creek Bridge, Colebee to the South Creek floodplain. The upgrade would see Richmond Road widened to a four-lane road with provision for six lanes in the future.

### 2.3.2 Proposed Roundabouts

As shown in [7], two new roundabouts are proposed to be constructed to the north of the school:

- One roundabout will be located at the northern end of Northbourne Drive and will facilitate access to Richmond Road from the school pick-up / drop-off facility.
- The second roundabout will be located approximately 150 metres to the west and will facilitate access to the northern section of the Marsden Park Precinct (the proposed Clydesdale Development).

Based on discussions with Blacktown Council (refer to Appendix A for communications with Council) it is noted that:

- The two proposed roundabouts have been approved by the Council and will be constructed shortly.
- The proposed eastern roundabout on Northbourne Drive forms part of Council's regional planning strategy and is included in the 7.ll contribution plans.
- The proposed western roundabout is associated with the Clydesdale Development, in order to provide access to future residences.

[6] https://www.rms.nsw.gov.au/projects/sydney-west/north-west-growth-centre-strategy/richmond-road-upgrade.html

[7] It is noted that the drawings for the two roundabouts and the northern road have been issued for construction approval

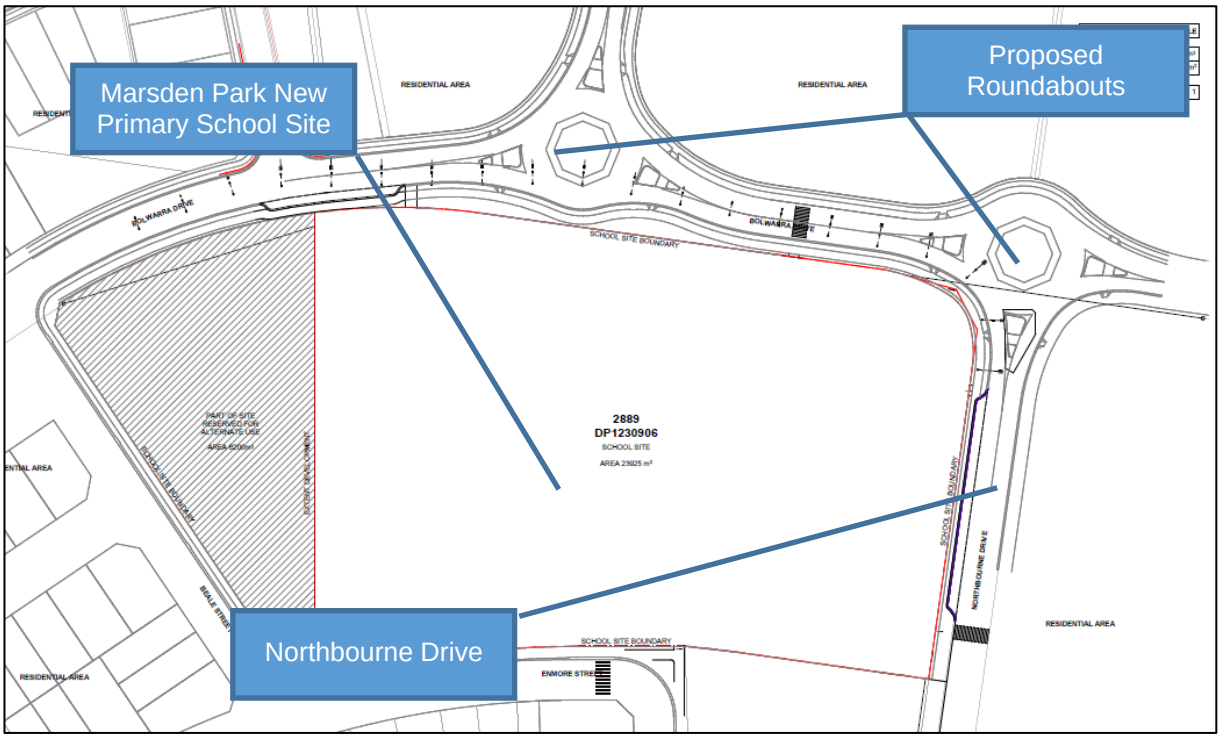



**Figure 2-6 – Proposed Roundabouts**

The proposed roundabout designs include splitter islands with storage areas for pedestrians.

For the purposes of this assessment, it has been assumed that the roundabout and the road to the north of the school will be constructed prior to the opening of Marsden Park New Primary School.

### 2.3.3 Northbourne Drive

As shown in Figure 2-3, Northbourne Drive is classified as a collector road. As specified in the Marsden Park Precinct DCP, collector roads link neighbourhoods and centres, and accommodate public transport routes. Since they carry a higher volume of traffic, amenity and safety should be maintained by restricting vehicle speeds. This can be achieved through traffic calming measures and intersection design. Intermittent parking on both sides of the road is also allowed.

Figure 2-7 shows the proposed cross-section for Northbourne Drive in proximity to Marsden Park New Primary School. It includes the provision of a 2.5 metre-wide shared path for bicycle riders and pedestrians.

While the Northbourne Drive has been constructed, the active transport infrastructure detailed in the DCP has not been fully implemented in proximity to the school.

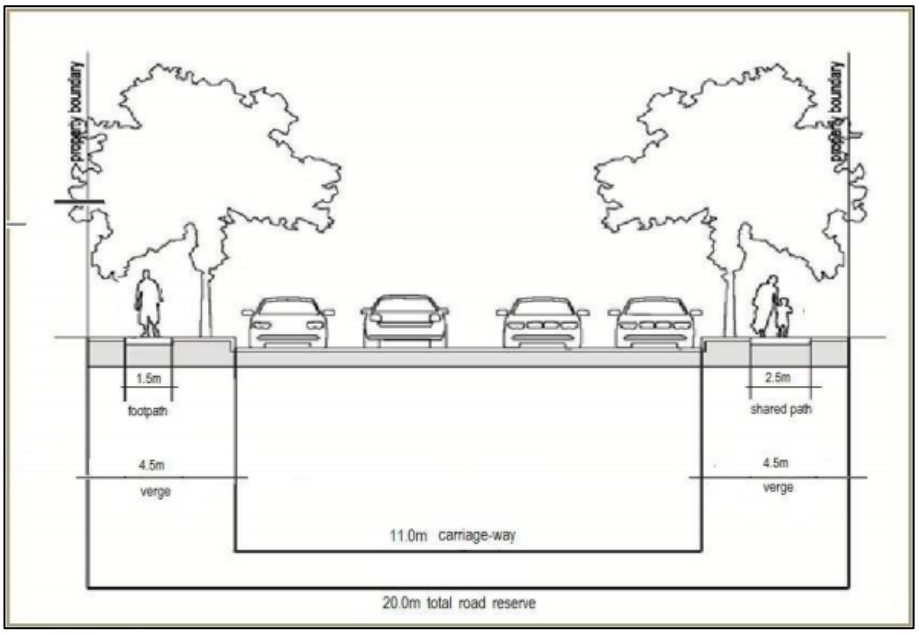



**Figure 2-7 - Typical Collector Road Cross Section**
*Source: Blacktown City Council Precincts Development Control Plan*

### 2.3.4 Other Roads

The other roads in the vicinity of the proposed school site are designated as “local streets”. The DCP specifies that local streets are designed to slow residential traffic in order to give priority to pedestrians and cyclists. Amenity and safety are to be maintained by introducing various traffic calming measures. On-street parking is provided on both sides of the street.

Figure 2-8 shows the proposed cross-section for local streets within the Marsden Park Precinct.

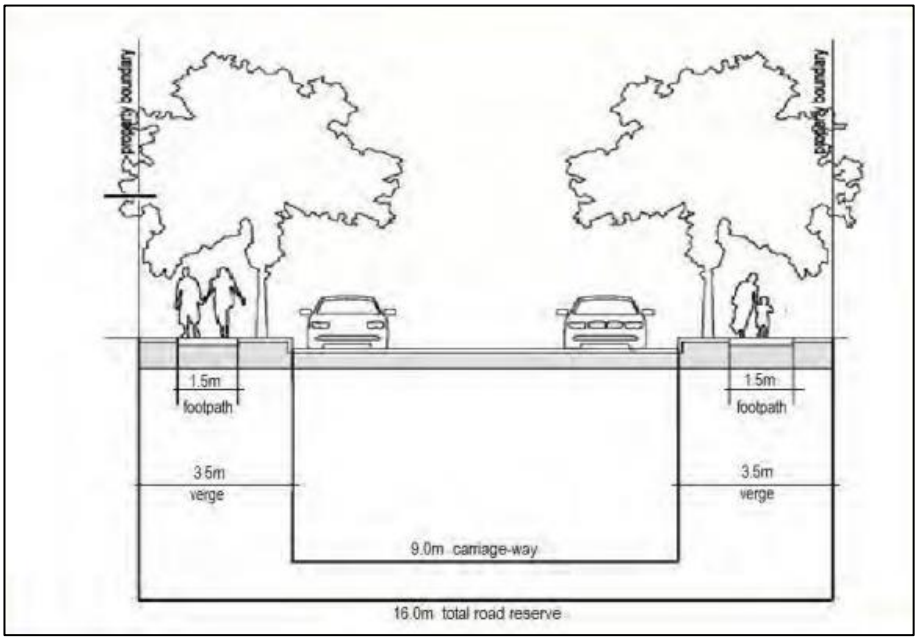



**Figure 2-8 - Typical Local Street Cross Section**
*Source: Blacktown City Council Precincts Development Control Plan*

## 2.4 Crash Data Review

Crash Data was obtained from the Centre of Road Safety for roads in the vicinity of Marsden Park New Primary School. The data has been analysed for the five year period between 2013 and 2017. The location of recorded crashes are shown in Figure 2-9.


**Figure 2-9 - Crash Locations near the proposed Marsden Park New Primary School**

*Source: https://roadsafety.transport.nsw.gov.au/statistics/interactivecrashstats/lga_stats.html?tablga=4 modified by GHD*

A review of the crash data is provided below.

There were 14 crashes recorded on Richmond Road within one kilometre of the proposed school, which included:

- Eight crashes involved a rear-end collision between vehicles travelling in the same direction. Of these, three crashes resulted in serious injuries, with four resulting in moderate injuries and one resulting in a minor injury.
- Three crash was a result of a vehicle leaving the carriageway and crashing into an object. One of these crashes resulted in a minor injury.
- One crash involved a head-on collision between vehicles at an undivided section of the road, which did not result in an injury.
- One crash involved a vehicle colliding with another vehicle leaving a parking area, which resulted in a serious injury.
- One crash involved vehicles travelling in the same direction, with no injuries reported.

A summary of the crash data review, reveals the following:

- None of the crashes recorded involved pedestrians or bicycle riders
- None of the crashes resulted in a fatality
- One crash resulted in serious injuries (to three people)
- Two crashes resulted in moderate injuries
- One crash resulted in a minor injury

## 2.5 Public Transport

### 2.5.1 Train Services

Riverstone Station is the closest station to the Marsden Park New Primary School and is served by the T1 Western Line and T5 Cumberland Line.

Riverstone Station is located approximately 3.8 km from Marsden Park New Primary School which exceeds typical walking catchments.

The 757 and 6508 bus services operate as a feeder route between the Marsden Park Precinct and Riverstone Station and may provide future utility to people seeking to access the school via public transport.

### 2.5.2 Current Bus Services

The nearest public bus stops from Marsden Park New Primary School are located along Elara Boulevard, located approximately 800 m south of the proposed school (refer to Figure 2-10).


**Figure 2-10 - Distance from Marsden Park New Primary School to the nearest bus stop**

*Source: Google Maps modified by GHD*

A summary of the bus routes operating from these bus stops and their approximate frequency is provided in Table 2-1.

**Table 2-1 - Bus Routes and Frequencies**

| Bus Route | Origin – Destination | Frequency (minutes) | |
|---|---|---|---|
| | | Peak | Off-peak |
| 747 | Rouse Hill to Marsden Park via Riverstone | 60 | 60 |
| 757 | Mt Druitt to Riverstone via Rooty Hill Road North and Marsden Park | 60 | 60 |

It is noted that in the morning and afternoon a single 757 bus service diverts from its typical route to St Luke's Catholic College, operating as a school service.

The following school bus services also operate from St Luke's Catholic College:

- Bus route 6580 - Australian Christian College to Riverstone Station, one afternoon service
- Bus route 6608 – St Luke's Catholic College to Blacktown Station, one afternoon service
- Bus route 6609 - St Luke's Catholic College to Rooty Hill, one afternoon service

The intersection of Elara Boulevard and Richmond Road has been constructed with a bus only lane for buses travelling northbound on Richmond Road.

### 2.5.3 Future Bus Services

The following future bus corridors are identified in the *Blacktown City Council Integrated Transport Management Plan* (2013):

- As part of the NSW Long Term Transport Master Plan, the NSW Government will secure a public transport corridor into Marsden Park.
- This public transport corridor will ensure the growing North West continues to have access to quality public transport services.

The TfNSW *Future Transport 2056* (2018), envisages Marsden Park as a centre being served by a "turn up and go" public transport network (see Figure 2-11).

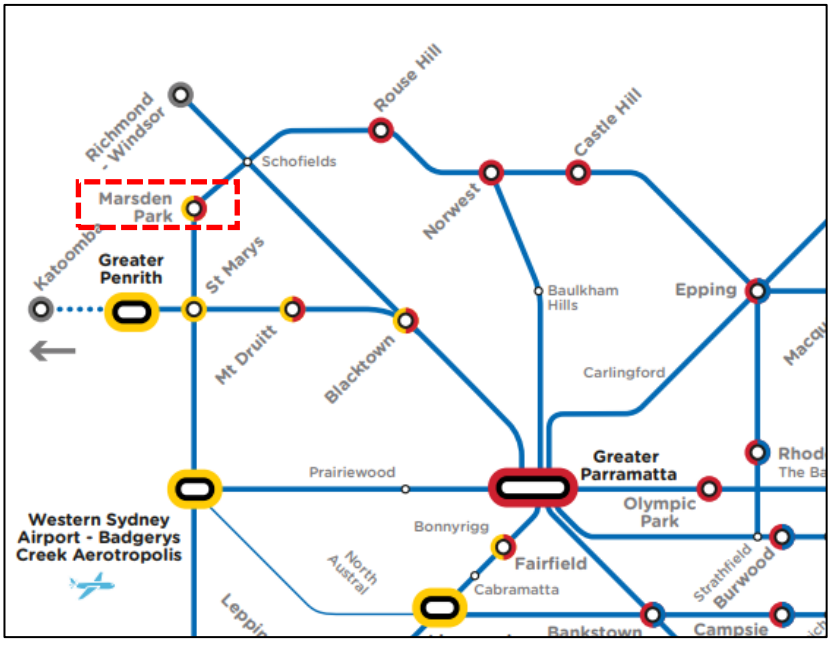



**Figure 2-11 – Proposed "Turn Up and Go" Transport Network**

*Source: Future Transport Strategy 2056*

Discussions with TfNSW for this project (see Appendix A) have indicated that:

- Bus services at Marsden Park will continue to expand and evolve in response to new development as part of the North West Growth Area.
- Marsden Park and Elara Estate are on the very rural-urban fringe and current bus routes are only interim services pending the construction and opening of new roads that will enable the future permanent bus network to be delivered in coming years.
- Bus links to Mt Druitt, Penrith, Blacktown, Schofields, Riverstone, Tallawong, Rouse Hill and the future Marsden Park Town Centre are being taken into account in planning future bus services in the area.

Details about potential school bus services at Marsden Park New Primary School are not currently available. However, St Luke's Catholic College is served by four bus services and there are potential efficiencies in extending these services to Marsden Park New Primary School. It is recommended that the DoE advocate to TfNSW for the provision of school bus services.

### 2.5.4 Bus Stops

TfNSW's *NSW Bus Stop Guidelines* (2005) specifies that, at a minimum, school bus stops should provide:

- A bus stop pole
- A level stand boarding area
- Footpath connectivity.

The implementation of any school bus stops along the school frontage and access to/from the bus stop to the pedestrian entrance of the school must be designed in accordance with the relevant disability access standards, DCP and TfNSW Guidelines.

It is expected that the bus facility will be used for school routes only. Bus zone signage should be implemented at the frontage to Marsden Park New Primary School. An example of signage at a school bus zone (at Picton Public School) is displayed in Figure 2-12.


**Figure 2-12 – Example of Signage at a School Bus Zone.**

The implementation of the school bus stop should be provided prior to commencement of the school operations.

It is recommended that the DoE advocate to TfNSW for the provision of school bus services.

It has been noted that bus trips from longer distances would be primarily used by teachers and staff at the school, as the majority of students are likely to be drawn from within the Marsden Park Precinct, in walking distance of the school.

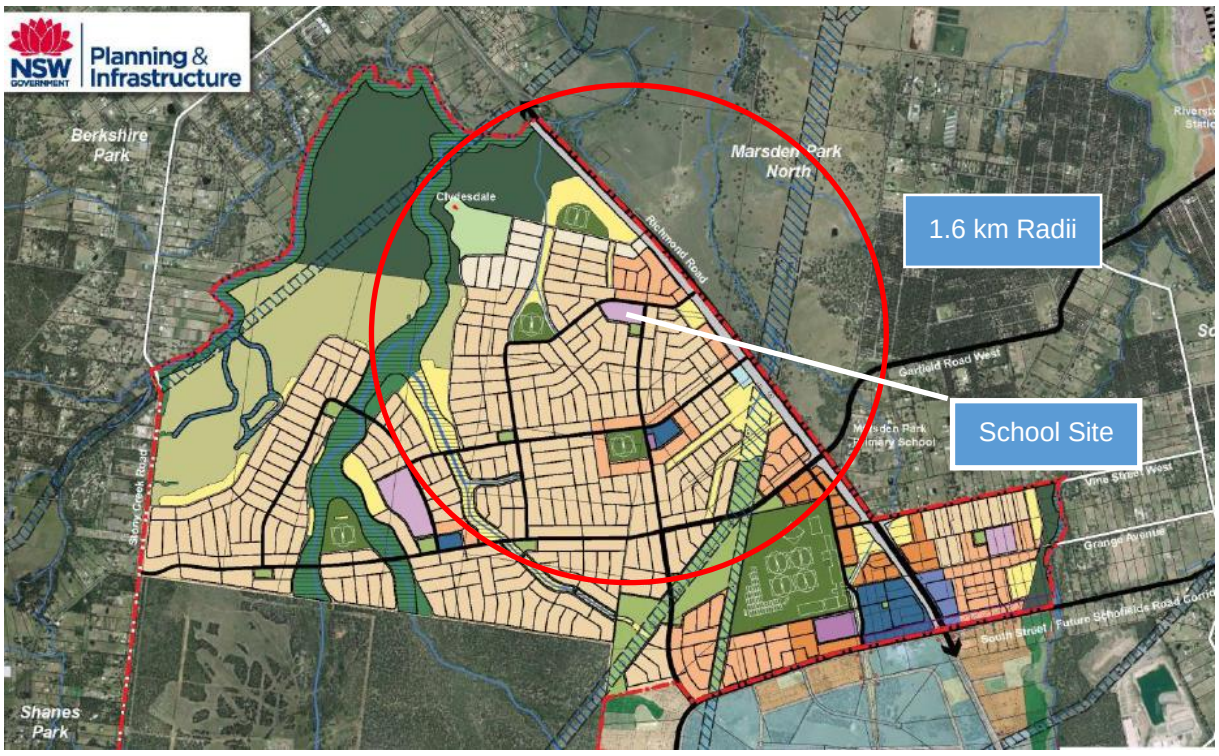
### 2.5.5 Student Eligibility

The following is noted with respect to student eligibility to free public transport to school:

- Kindergarten to Year 2: No minimum walking applies to these students.
- Year 3 to Year 6: The straight line distance from their home address to school is more than 1.6 km.

An image showing the approximate 'catchments' associated with this distance in the context of the Marsden Park Precinct is displayed in Figure 2-13.

**Figure 2-13 – Student Travel Pass Eligibility Catchment**




*Source: Marsden Park Precinct Development Control Plan (modified by GHD)*

As shown in Figure 2-13, that the majority of the Marsden Park Precinct is included within the area where students would not be eligible for free travel passes, due to their close residential proximity to the school. The road network within the Marsden Park Precinct will provide walking and cycling paths to facilitate sustainable travel to and from the school, as discussed in Section 2.6.

## 2.6 Active Transport

### 2.6.1 Existing Pedestrian Facilities

As the Marsden Park Precinct is still undergoing development, there are currently no zebra crossing or signalised pedestrian crossings provided in the vicinity of the proposed school site.

There are currently footpaths on Northbourne Drive south of Donnelly Street.

There are no footpaths on Northbourne Drive north of Donnelly Street or other roads adjacent to the proposed school.

### 2.6.2 Existing Bicycle Facilities

There is currently no bicycle network provided in the vicinity of Marsden Park New Primary School site.

A bi-directional shared path has been constructed on the western side of Richmond Road, south of Elara Boulevard.

The Blacktown City Council Bike Plan identifies Richmond Road as an existing cycleway which is consistent with the provision of the shared path.

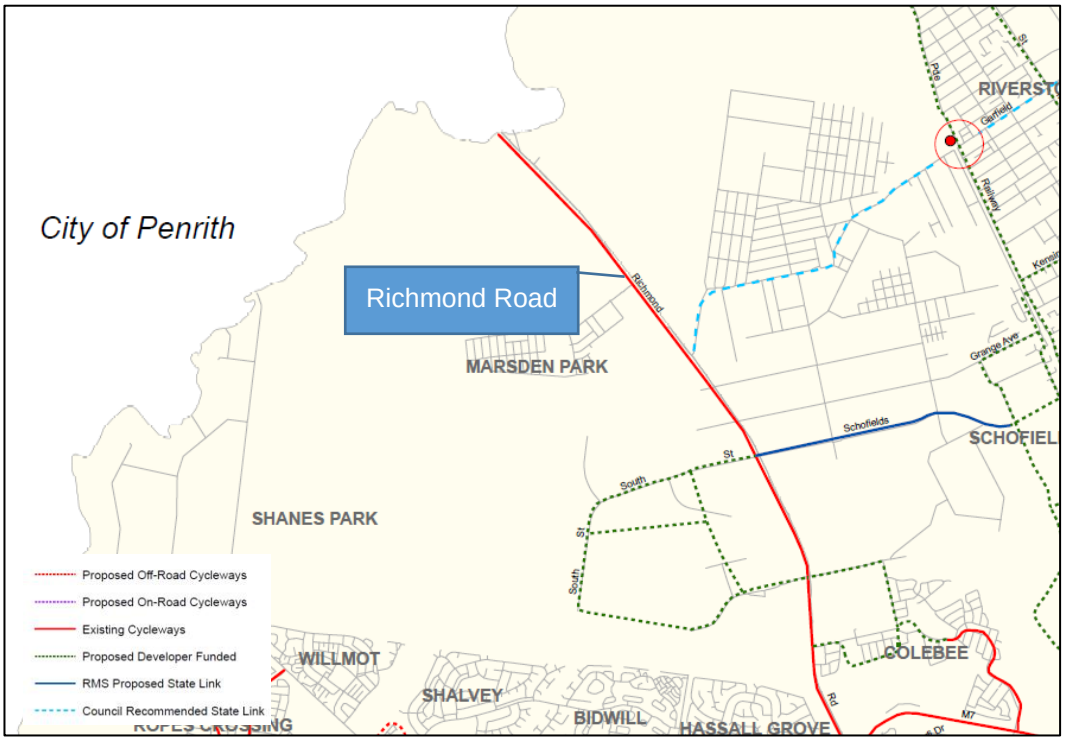



**Figure 2-14 - Blacktown Bike Plan 2016**

*Blacktown City Council 2016 Bike Plan Existing and Future Routes (2016)*

### 2.6.3 Future pedestrian and cycling facilities

A safe and walkable active transport network will be required within the Marsden Park Precinct to facilitate safe walking connections for students, their parents / guardians and other pedestrians.

Within the Marsden Park Precinct, the following active transport infrastructure is proposed:

- Collector roads, such as Northbourne Drive, will provide 1.5 metre wide footpaths and 2.5 metre wide shared paths (one on each side, refer to Figure 2-7).
- Local streets will be designed to promote slow vehicle speeds in order to improve safety pedestrians and cyclists (refer to Figure 2-8).

In summary, as specified in the DCP, the Marsden Park Precinct will be designed to create a pleasant and comfortable pedestrian and cycling environment. Amenity and safety will be maintained by restricting speeds through traffic calming measures and intermittent parking with landscaping will also be provided on both sides of the street.

The design of the proposed road network will encourage active transport for trips to and from the proposed school within the Marsden Park Precinct.

### *Proposed Roundabouts*

As detailed in Section 2.3.2, Council are planning to construct two new roundabouts to the north of the proposed Marsden Park New Primary School. *Austroads Guide to Road Design Part 4B Roundabouts* (2015) specifies the following should be included with respect to the provision of pedestrian crossings at roundabouts:

> *It is emphasised that with most roundabouts special crossing facilities will not be necessary. Generally, the installation of well-designed splitter islands of sufficient size to hold and protect pedestrians allows them to cross only one direction of traffic at a time. This should result in pedestrians being able to move more safely and freely around the intersection than was the case before the installation of the roundabout. On small roundabouts in local streets a cut-through of splitter islands at pavement level or a painted island may be appropriate.* ***However, where pedestrian volumes are high, consideration should be given to the use of an alternative intersection treatment, particularly where there are schoolchildren or the elderly crossing.***

The proposed roundabout designs include splitter islands with storage areas for pedestrians. It is noted that these facilities do not provide priority for pedestrians.

In accordance with Austroads guidelines, it is recommended that pedestrian crossings at the splitter island are discouraged and pedestrian crossings are implemented on the roads adjacent to Marsden Park New Primary School, adjacent to each of the pedestrian entrances to the school.

### *School Pedestrian Crossing*

Pedestrian access to the Marsden Park New Primary School (see is proposed from the following locations:

- The proposed road to the north of the school
- To the east of the school at Northbourne Drive
- To the south of the school Enmore Street

Based on discussions with Council (see Appendix A) it is noted that:

- Council require pedestrian crossings on all roads adjacent to schools
- The crossings should be located at the schools' pedestrian entry points

Options for the provision of pedestrian crossings include the following:

- A standard pedestrian crossing (wombat crossing or zebra crossing).
- A children's crossing – which operates before and after school hours.
- A mid-block signalised pedestrian crossing

A list of the benefits and dis-benefits associated with each of these options is provided in Table 2-2.

### Table 2-2 - Pedestrian Crossing Options

| Crossing Type | Benefits | Dis-benefits |
|---|---|---|
| Children's Crossing | • Operates only during school peak periods.<br>• The provision of a traffic controller can assess the variability in traffic and pedestrian activity thereby reacting to increased traffic or pedestrian demand.<br>• Provides a high level of safety with crossings taking place in a very controlled environment. | • Requires twice daily installation and removal of the "School Crossing" flags.<br>• Likely require the provision of a traffic controller. So, high operational cost.<br>• Can only be installed in locations with a maximum of one travel lane in the same direction, thereby requiring the installation of line marking / kerb blister to direct traffic into one lane through the crossing<br>• Requires increased awareness from drivers and pedestrians to ensure visual connectivity is maintained. |
| Pedestrian (Wombat / Zebra Crossing) | • Operates full time giving priority to pedestrians.<br>• Can incorporate a raise in the threshold for traffic calming.<br>• Crossing area well defined. | • Potential increase in traffic delays due to constant pedestrian crossing activity likely. Therefore, only suitable on roads with low traffic volumes.<br>• Can only be installed in locations with a maximum of one travel lane in the same direction, thereby requiring the installation of line marking /kerb build-out to direct traffic into one lane through the crossing.<br>• Requires increased awareness from drivers and pedestrians to ensure visual connectivity is maintained. |
| Mid-block Signalised Crossing | • Operates full-time and activated only as required<br>• Highly visible infrastructure with clear directions to both drivers and pedestrians for increased safety<br>• Creates groups of pedestrians to cross at one time in lieu of potential constant pedestrian crossing activity.<br>• Can be installed in locations with more than two travel lanes in the same direction.<br>• Allows opportunity of audio and tactile queues | • Less priority is given to pedestrians as they will be required to wait for appropriate green time.<br>• Mitigation options for the above could be either integrating a vehicle detecting system to identify end of queue extents, or during low traffic volumes the push button could activate the pedestrian phase immediately reducing the wait time for pedestrians.<br>• Higher capital cost |

The *Roads and Maritime Supplement to Australian Standard* warrant for the provision of a standard pedestrian crossing that is used by children and in two (2) counts in an hour before and after school exceed the following, a standard pedestrian crossing may be installed:

- Pedestrian volumes (P) is greater than 30
- Vehicle volumes (V) is greater than 200

The volumes of students and parent / guardians that will cross the roads adjacent to Marsden Park New Primary School to access / egress the school is currently unknown. However, as much of the student population will be drawn from the local residential area and it is expected that parents / guardians will accompany many of the children to / from school. It has therefore been assumed that pedestrian flows (P) will exceed 30 at each access point from the opening year.

Accordingly, it is recommended that:

- Pedestrian crossings be provided on the northern road, Northbourne Drive and Enmore Street at each of the school access points.

- The roundabout splitter islands be constructed without the pedestrian storage areas to encourage students to cross the road at the designated pedestrian crossings.
- The potential use of fencing to encourage students to cross at the road at the designated crossings.
- Traffic and pedestrian activity be monitored to ensure that pedestrian safety and traffic flows are maintained.

### *Bus Lane and Kiss and Drop Pedestrian Access*

Detailed drawings of the proposed school bus zone on the proposed northern road and the pick-up/drop-off zone on Northbourne Drive are not currently available. However, they will be required to be designed in accordance with the relevant disability access standards, DCP and TfNSW Guidelines.

The Austroads *Guide to Road Design Part 6A: Paths for Walking and Cycling – (Table 5.1 Width requirements for pedestrian paths),* specifies that pedestrian paths with high volumes should have a minimum width of 2.4 m and a minimum width of 1.8 m is required to allow two wheelchairs to comfortably pass each other.

As stated in Section 2.3.3, the Marsden Park Precinct ILP includes the provision of a 2.5 m shared path on Northbourne Drive (as a collector road) for bicycle riders and pedestrians.

The *Australian Human Rights Commission accessible bus stop guidelines*, specifies the key performances sought in an accessible bus stops are:

- A firm evenly graded crossing point
- An unobstructed space, large enough for the deployment of a ramp
- A seamless transition between the bus stop and the connecting footpath
- Clear signage indicating the location of the bus stop

### *Crossing supervision*

TfNSW runs a school crossing supervisor program, to help students use crossings on roads adjacent to schools[8]. School crossing supervisors are provided to increase mobility and safety around schools by enhancing the performance of pedestrian traffic facilities. Criteria for the provision of a school crossing supervisor include:

- They must have an adjoining children's crossing or pedestrian crossing
- The crossing must be used by infant and / or primary school children
- The site must be located within a 40 km/h school zone
- The crossing must be used by a minimum of 50 school children per hour

The volumes of students and parent / guardians that will cross the roads adjacent to Marsden Park New Primary School is currently unknown. However, as the main entrance to the school will be on Northbourne Drive, much of the student population will be drawn from the local residential area and it is expected that parents / guardians will accompany many of the children to / from school. As such, it is likely that pedestrian flows will exceed 50 per hour from the opening year.

[8] http://roadsafety.transport.nsw.gov.au/stayingsafe/schools/schoolcrossingsupervisorprogram.html

It is therefore recommended that upon opening, the volumes of pedestrian activity at the proposed pedestrian crossing be monitored and if the criteria are met, that a request for a crossing supervisor be submitted to the Roads and Maritime[9].

[9] http://roadsafety.transport.nsw.gov.au/downloads/school-crossing-supervisor-request.pdf.

# 3. The Proposed Development

## 3.1 The Development

The proposed Marsden Park New Primary School will cater for 1,000 primary school students at completion. The proposal seeks consent for:

- Construction Stage 1 (Temporary School): a temporary school facility constructed within the western portion of the development site located on the future sports grounds. This temporary school facility is to accommodate a maximum of 500 students at any given time. Should the permanent school progress as per the program, the temporary school will not be required.
- Construction Stage 2 (Construction of Permanent School Facility): a permanent consolidated two storey courtyard building with the capacity to accommodate a maximum of 1,000 students. This new school building is to comprise
  - 40 teaching spaces and ten administration staff
  - A canteen
  - Library
  - Multipurpose hall
  - Office and administration space
  - Staff and student amenities
  - Out of school hours care accommodation.
- Multi-purpose sporting facilities and outdoor play spaces.

The site development plan for the proposed school (Stage 2) is shown in .

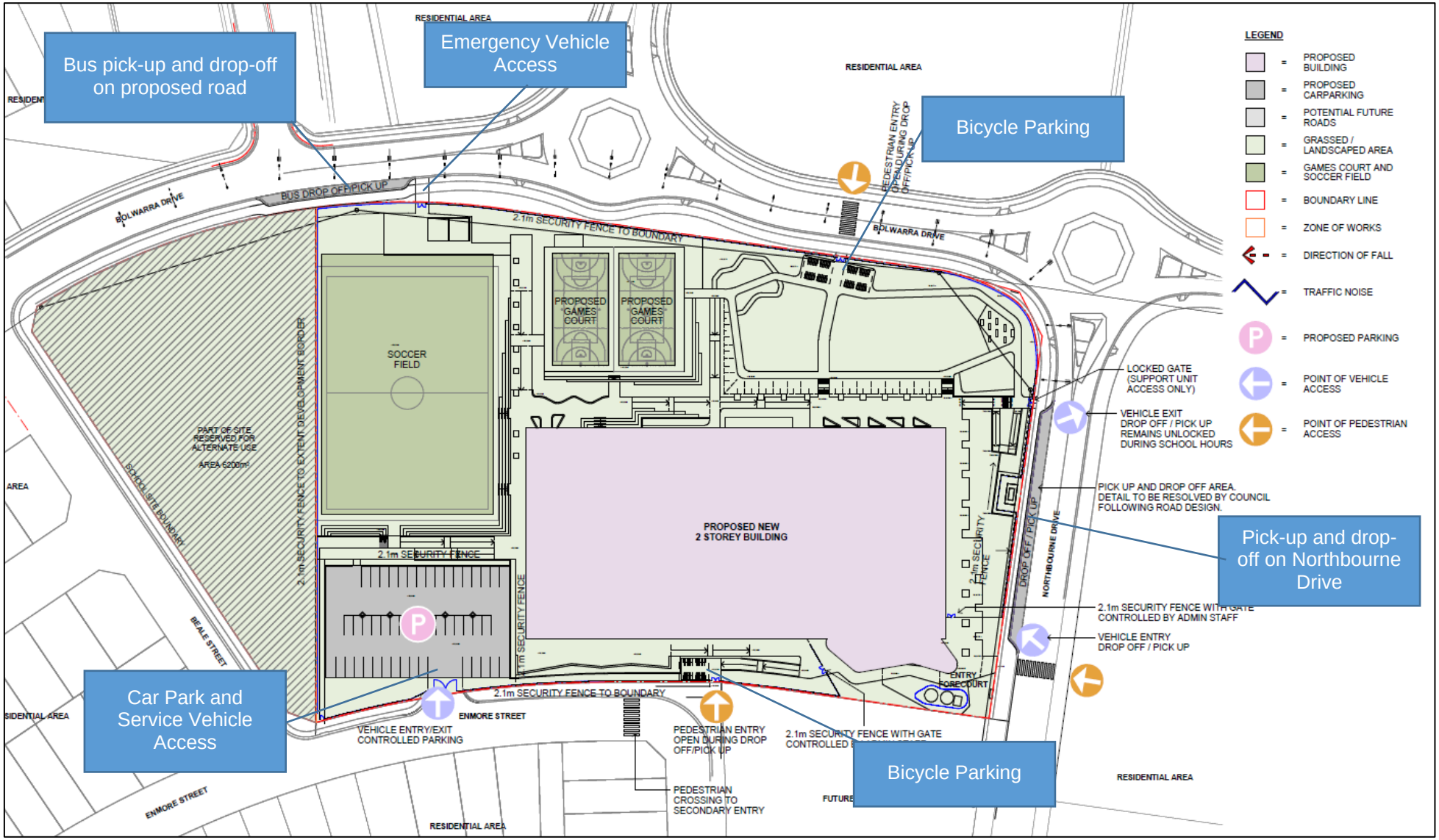



**Figure 3-1 - Marsden Park New Primary School Site Development Plan**

## 3.2 Catchment Data

The proposed catchment area for Marsden Park New Primary School is not currently available.

In accordance with the proposed population of up to 30,000 people (see Section 1.3.1), the catchment for Marsden Park New Primary School is expected to primarily consist of the existing and future residences with the Marsden Park Precinct.

SINSW has provided the following residential catchment data for the nearby Marsden Park Public School:

- There were 222 students attending Marsden Park Public School, of which 199 resided within the school catchment.

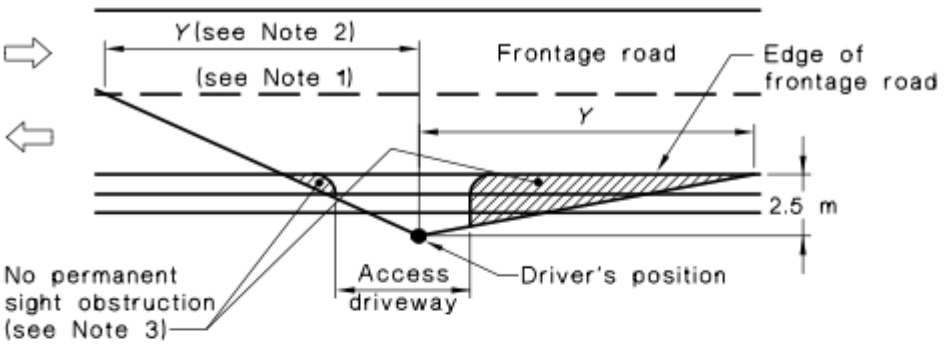
Applying the above data it has been assumed that approximately 90 percent of students for Marsden Park New Primary School will reside within the Marsden Park Precinct.

## 3.3 Proposed Site Access Arrangements

A summary of the proposed access arrangement for Marsden Park New Primary School is as follows (see ):

- The main pedestrian access will be provided along Northbourne Drive, with additional pedestrian access points provided on the proposed northern road and Enmore Street.
- Car pick-up and drop-off activity will occur on Northbourne Drive
- School bus pick-up and drop-off activity will occur on the proposed northern road
- Access to the teachers parking area will be provided in Enmore Street
- Waste collection will occur via Enmore Street. Waste collection vehicles will be required to manoeuvre within the car park to collect the waste containers
- Emergency services vehicles will access the school from the proposed northern road. The gate to the school will typically be closed and locked

Enmore Street will function as a local street (see Section 2.3) with a speed limit of 50 km/h. Sight distance requirements for driveway access are provided in Australian Standards *AS 2890.1 Part 1: Off street car parking* are shown in Figure 3-2.




| Frontage road speed (Note 4) km/h | Distance (Y) along frontage road m | | |
|---|---|---|---|
| | Access driveways other than domestic (Note 5) | | Domestic property access (Note 6) |
| | Desirable 5 s gap | Minimum SSD | |
| 40 | 55 | 35 | 30 |
| 50 | 69 | 45 | 40 |
| 60 | 83 | 65 | 55 |
| 70 | 97 | 85 | 70 |
| 80 | 111 | 105 | 95 |
| 90 | 125 | 130 | Use values from 2nd and 3rd columns |
| 100 | 139 | 160 | |
| 110 | 153 | 190 | |

**Figure 3-2 - Sight Distance Requirement at Access Driveway**

Based on the 50 km/h speed limit along Enmore Street, it is recommended to leave the shaded area shown in Figure 3-2 free of permanent obstacles for a desirable length 'Y' of 69 m or a minimum of 45 m from the access driveway.

The proposed access driveway to the car park is located on Enmore Street to the east of Beale Street, as shown in . A desktop assessment indicates that the desirable site distances of 69 m on Enmore Street (as displayed in the red line) are achieved.

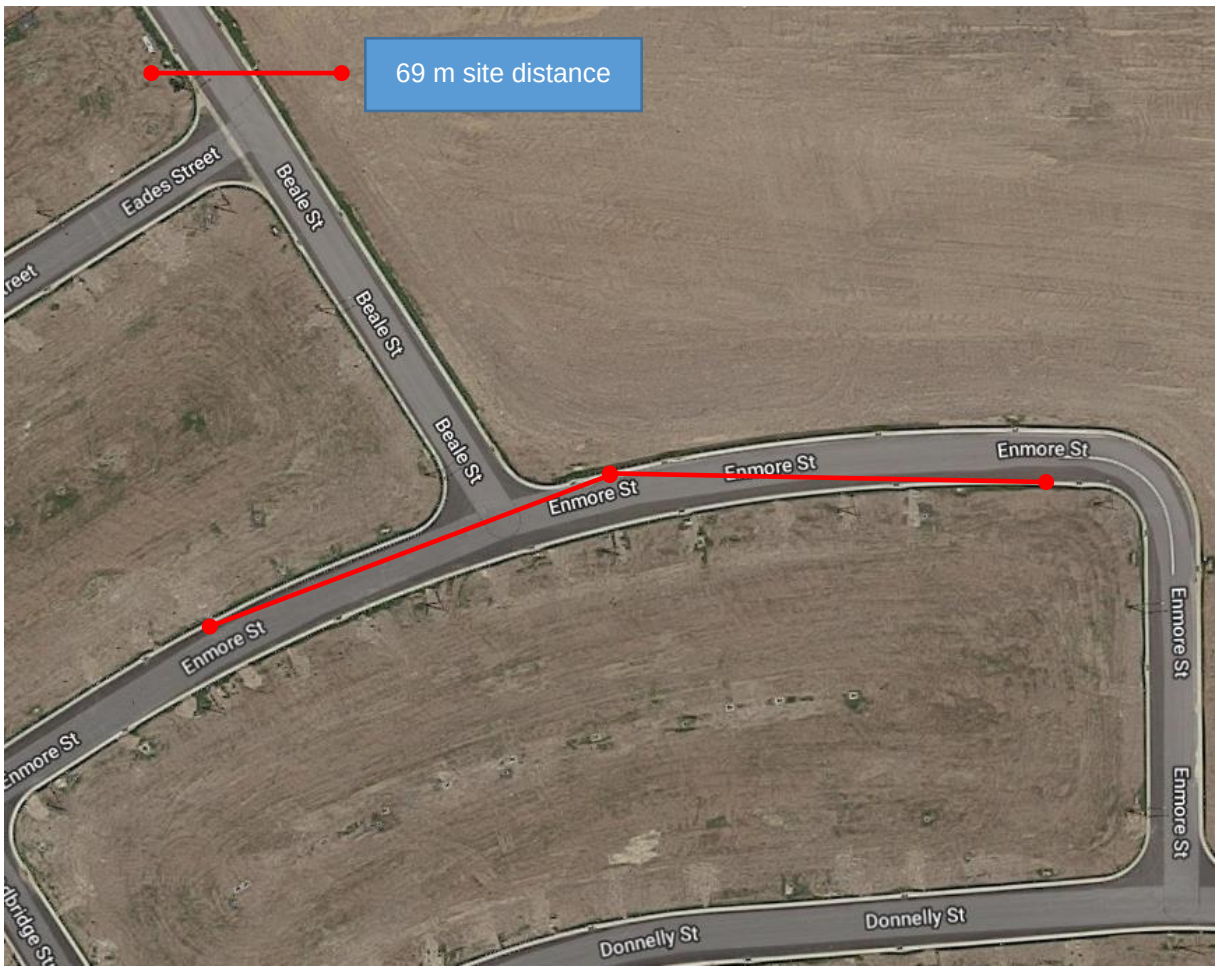



**Figure 3-3 – Preliminary Sight Distance Analysis**

## 3.4 Car Parking

### 3.4.1 Car Parking Supply

The Blacktown Development Control Plan (2015) states that parking should be provided at the following rates for both primary and secondary schools:

- 1 space per staff member
- 1 space per 100 students

The Marsden Park New Primary School will have 40 teachers, ten administration staff and up to 1,000 students. In accordance with DCP guidelines, 60 parking spaces are recommended.

The proposed car park will provide 48 parking spaces, including one parking space for the mobility impaired, twelve less than DCP guidelines.

The DoE provides a set of guidelines with respect to the provision of parking at schools in the Educational Facilities Standards and Guidelines (PS610.17 Service Zone), which states:

*In order to ensure that the available site are for teaching, learning and play is maximised, to enable community use and to encourage sustainable means of transport to and from school, on school parking should be kept to a minimum.*

It is noted that:

- As detailed in Section 4.3, it is expected that travel demand measures will be implemented at Marsden Park New Primary School to encourage teachers to utilise sustainable modes of transport or car share.

- As detailed in Section 2.5.3, bus services to Marsden Park are expected to improve as the North West Growth Centre continues to be developed.

The provision of 48 spaces is consistent with the DoE Guidelines, provides parking for the majority of the expected teachers / staff and is considered to be sufficient to accommodate typical parking demand associated with Marsden Park New Primary School.

### 3.4.2 Parking Layout

#### *Parking Bays*

This section will investigate the compliance of the proposed car park with the requirements outlined in AS 2890.1-2004.

In accordance with the requirements specified in Australian Standard AS:2890.1 residential car parking is categorised as a User Class 1A Off-Street Car Parking Facility, namely:

Residential, domestic and employee parking - the requirements for User Class 1A car parks are as follows:

- Bay width 2.4 m
- Bay length 5.4 m
- Aisle width 5.8 m

The proposed development provides parking bays with dimensions of 2.5 metres by 5.5 metres and circulation aisles with a width of 6.0 metres, which complies with Australian Standards.

Where a parking space is bound by a wall or other structure, it is required to be widened by at least 0.3 metres.

It is noted one-way circulation is proposed through the car park in a clockwise direction.

#### *Driveway Width*

AS 2890.1-2004 specifies that two-way driveways require a minimum of 5.5 metres between 0.3 metre kerbs. The proposed access driveway has a width of 9.4 metres (in order to accommodate waste collection vehicles), which complies with Australian Standards.

## 3.5 Service Vehicles

Other than waste collection vehicles, the school is expected to generate negligible volumes of service vehicle activity.

Waste collection is proposed within the teachers' car park.

It is expected that a 10.5 metre front loading waste collection vehicle will be used at the school. A swept path analysis, shown in Figure 3-4, indicates that the waste collection vehicle will need to cross some of the parking spaces to access and egress the school. It is noted that these spaces will be painted and will not provide wheel stops so the vehicle will not need to drive over any hard structure.

Waste collection times will be managed so that waste will only be collected when the car park is not in use, outside periods of school activity (at night or very early in the morning), to minimise any potential interactions between collection vehicles and students, their guardians and teachers. It is noted that GHD are preparing a Waste Management Plan as a separate deliverable, which confirms this proposed arrangement.

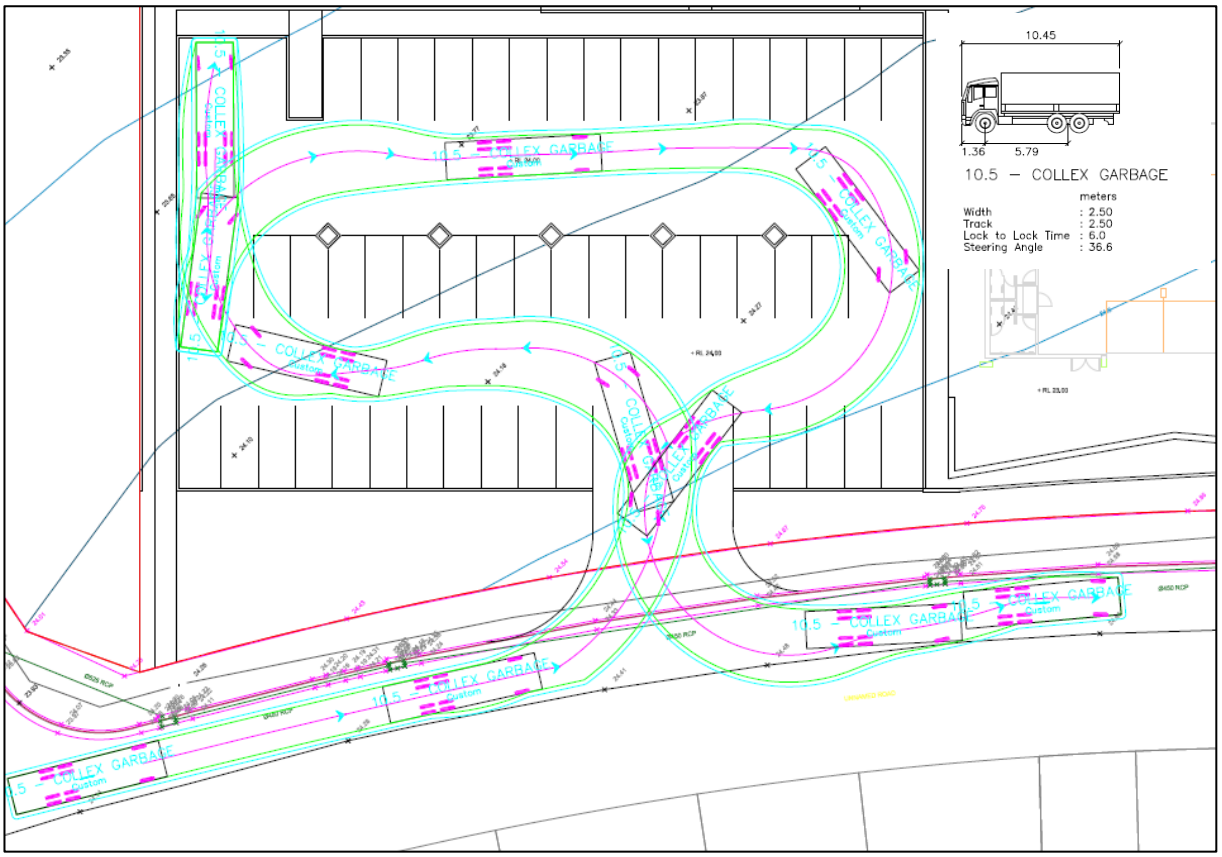



**Figure 3-4 – Swept Path Analysis**

Other service vehicle activities would be associated with canteen deliveries, school supplies and maintenance vehicles. These deliveries would be undertaken by light vehicles, which would only park for a short period (i.e. the time required to unload their goods). These vehicles could potentially park:

- Within the waste collection area (accessed via the car park)
- Within the vehicle pick-up / drop-off facility on Northbourne Drive
- On-street

These light vehicle service deliveries can be adequately be accommodated within the above locations. However, it is also recommended that any delivery of supplies occurs outside peak periods of school traffic activity where possible.

## 3.6 Bicycle Parking Facilities

### 3.6.1 Students

*Green Star – Design & As Built v1.2, Chapter 17 Sustainable Transport* specifies that secure bicycle parking should be provided for 40 percent of students over grade four.

Assuming the proposed 1,000 students are distributed evenly over seven years there will be 142 students per year and a total of 284 students in grade five and six.

To comply with Green Star specifications, bicycle parking for 114 students is required. It is possible to park two bicycles on a single storage hoop, so a total of 57 hoops are required for students to comply with Green Star standards.

The Marsden Park New Primary School will provide 72 bicycle hoops for students, exceeding Green Star specifications.

### 3.6.2 Staff

*Green Star – Design & As Built v1.2* specifies that bicycle parking for non-residential developments should be provided for 7.5 percent of regular occupants. Based on 40 teachers and ten administration staff, four bicycle spaces or two hoops should be provided.

The Green Star Guide also specifies that for regular occupants working in a building, end of trip facilities such as showers and lockers are required. End of trip facilities do not need to be provided for non-staff, such as students.

Based on 40 teachers and ten administration staff, two showers and four lockers are required.

The Marsden Park New Primary School will provide two hoops for teachers (separate to students), two showers and a minimum of four lockers, which complies with Green Star specifications.

## 3.7 Crime Preventions

Crime Prevention through Environmental Design (CPTED) is a crime prevention strategy that focuses on planning and design. It reduces opportunities for crime by using design and place management principles that reduce the likelihood of crime occurring.

A key component of CPTED is passive surveillance which is achieved when normal space users can see and be seen by others. This highlights the importance of building layout, orientation and location; the strategic use of design; landscaping and lighting.

The proposed bicycle parking and car parking areas will be visible from the street and from within the Marsden Park New Primary School (see Figure 3-1). The layout of the school is considered consistent with CTPED principals.

## 3.8 Pick-up and Drop-off

As displayed in Figure 3-1, a pick-up / drop-off facility at the Marsden Park New Primary School is proposed on the western side of Northbourne Drive. A separate bus zone is proposed to be provided to the north of the school site along the proposed northern road.

Key advantages of this arrangement are expected to include:

- Both facilities will be adjacent to the school and children will not be required to cross the road to access either the pick-up / drop-off facility or bus stop.
- Increased operational efficiency associated with the separation of buses and cars operations.

As requested by Council, both the pick-up / drop-off facility and the bus stop will be indented to minimise impacts to through traffic along Northbourne Drive and the proposed northern road.

### 3.8.1 Northbourne Drive Pick-up / Drop-off Facility

It is recommended that the drop off facility on Northbourne Drive be designated as a 'No Parking' zone (8:00 am – 9:30 am and 2:30 pm – 4:00 pm) as vehicles are not permitted to park for more than two minutes and drivers must remain within three metres of their vehicle. This will facilitate improved turnover and efficiency of operation during pick-up and drop-off periods as vehicles should be left unattended.

Regulatory signage will need to be provided for the 'No Parking' (R5-40) and 'No Stopping' (R5-400) restrictions. Additional signage could be implemented on Northbourne Drive to clarify and promote the lay-by facility's pick-up and drop-off operation.



**Figure 3-5 – Example of Supplementary Signage**

Parents should be encouraged to use the designated pick-up / drop-off facility at the front of the school on Northbourne Drive. For safety reasons (in accordance with its proposed collector road functionality), parents travelling in a southbound direction should be discouraged from dropping their children off on the eastern side of Northbourne Drive (opposite the school).

The provision of roundabouts near the school will enable legal U-turn manoeuvers to access / egress the designated facility.

To minimise impacts on local streets, parents should be discouraged from dropping their children off on Beale Street or Enmore Street.

The functional capacity of the proposed pick-up and drop-off zone will be dependent on a management plan for this facility, which would be developed by the school. This may include:

- Designated pick-up times, with parents / guardians not to arrive before this period.
- Students to be grouped into designated pick-up zones.
- Parents / guardians to identify the student names on the front of cars (to assist teachers with identifying the approaching cars).

TfNSW literature with respect to the “pick-up and drop-off initiative”, including volunteer adult supervisors to help children get in and out of cars is included in Appendix B.

Some councils have produced brochures identifying measures parents and teachers can facilitate the safety and efficiency parking and pick-up / drop-off facility. An example prepared by the City of Ryde and Hornsby Shire is provided in Appendix C. It includes the details of the fine and loss of demerit points associated with disobeying signage / controls in proximity to schools.

It is recommended that a similar brochure is prepared and distributed to parents with children at Marsden Park New Primary School.

It is also recommended that staff monitor the operation of the proposed pick-up / drop-off facility. If vehicles are observed to undertake illegal manoeuvres or parking behaviour (which carry heavy fines), Council should be requested to send out rangers to patrol the school zone[10].

[10] The Hills Shire Council have a ‘request a school zone patrol’ facility to monitor and control traffic and parking issues. https://epathway.thehills.nsw.gov.au/ePathway/Production/Web/mobility/Citywatch/index.html?Module=ECRREQT&Type=PA03

Enforcement will quickly stop this behaviour and facilitate the safety and efficiency of the operation of the designated pick-up / drop-off facilities.

### 3.8.2 Proposed bus stop at the northern road

Information included in the *State Transit Bus Infrastructure Guide* (2011) indicates that a bus zone for a "long rigid bus" is 35 metres, consisting of:

- A bus length of 14.5 metres
- A draw out length of 6.5 metres
- A draw in length of 14 metres.

It is noted that a 14.5 metre bus (with a capacity of 80 passengers) is consistent with the largest rigid bus operated by Sydney Buses.

It is expected that the proposed indented bus bay on the proposed northern road will primarily be used during peak morning and afternoon periods of school activity. It is also expected that the bus bay will occasionally be used by buses associated with school excursions. These buses would typically use the pick-up / drop-off facility during off-peak periods only (i.e. during school hours) which would minimise any potential impacts to bus movements at before / after school pick-up / drop-off periods.

Regulatory signage will need to be provided at the designated bus zone i.e. R5-20, as displayed in Figure 3-6.


**Figure 3-6 – Examples of Bus Zone Signage**

As discussed in Section 2.5.3, details about potential school bus services at Marsden Park New Primary School are not currently available. However, St Luke's Catholic College is served by four bus services and there are potential efficiencies in extending these services to Marsden Park New Primary School. It is recommended that the DoE advocate to TfNSW for the provision of school bus services.

## 3.9 40 km/h School Speed Zones

School zones are implemented outside schools to reduce vehicle speeds where there is an increased potential for conflict between vehicles and schoolchildren. School zones operate on government gazetted school days between 8:00 am – 9:30 am and 2:30 pm – 4:00 pm.

The NSW Government has ensured that every school in NSW has at least one set of school zone flashing lights, to reduce the probability and severity of crashes and protect children on their way to and from schools.

School zones can promote active transport as a result of slower vehicle speeds.

Technical Direction *TD 2003 / RS02 Installation of 40 km/h School Zones on Multi-lane Road and High Speed Road* specifies for roads with a speed limit of 70 km/h or less:

- School zones should have a minimum length of 200 metres.
- The main school access should be centred within the zone.

Drawings showing the locations of the proposed 40 km/h school zones are not currently available. It is assumed that the will be implemented on the roads adjacent to Marsden Park New Primary School, in accordance with NSW Government Guidelines.

# 4. Traffic Assessment

## 4.1 Traffic Generation

As stated previously the Marsden Park New Primary School is expected to have a population of 1,000 students.

As detailed in Section 1.6, the following assumptions have been made re the proposed Marsden Park New Primary School in the Richmond Road Study:

- The school will have a population of 500 students
- 45 percent of trips to school are made by car (0.45 trips per students)
- 60 percent of car trips to the school come from within the Marsden Park Precinct. The remaining 40 percent come from within the wider North West Growth Centre

Based on the above assumptions, it was assumed that Marsden Park New Primary School would generate 153 trips in the AM and PM peak hour, as summarised in Table 1-2.

As stated in Section 1.1 a temporary school may be required on site with a population of 500 students. It is noted that in accordance with the above data, the Richmond Road Report captures the vehicle activity associated with a student population of this size.

GHD have completed Traffic Assessments for a number of public primary schools in Sydney, including:

- Waitara Public School
- Epping Public School
- Greenwich Public School

For each of the above schools, manual traffic surveys were undertaken to identify:

- The number of students being dropped off and picked up by their parents or guardians by private vehicle and the occupancy of these vehicles.
- The number of vehicles accessing and egressing the school car parks.

Additionally, in order to identify data about the current mode of transport used by students to access and egress each of the schools, an online questionnaire was sent out by the school for parents to complete. A copy of the questionnaire is included in Appendix D.

The data was collected and reviewed to determine a bespoke trip rate for each school. A summary of these trip rates is displayed in Table 4-1.

**Table 4-1 – First Principle Peak Hour Trip Rates (car trip)**

| Trip Rate | AM Peak Hour (per student) | PM Peak Hour (per student) |
|---|---|---|
| Waitara Public School | 0.55 | 0.42 |
| Greenwich Public School | 0.34 | 0.41 |
| Epping Public School | 0.51 | 0.53 |
| **Average** | **0.47** | **0.45** |

The data in Table 4-1, indicates that the three schools have:

- An average AM peak hour trip rate of 0.47 trips per student
- An average PM peak hour trip rate of 0.45 trips per student

This data suggests that the peak hour rate of 0.45 trips rate used in Marsden Park New Primary School is consistent with other schools in Western Sydney.

It is noted that the Richmond Road Study assumed that 40 percent of trips came from outside the Marsden Park Precinct to access the proposed school. Data provided by School Infrastructure NSW indicates (see Section 3.2) that as little as ten percent of students are expected to reside in areas outside of the Marsden Park Precinct.

Accordingly, a significant portion of trips generated by the school are expected to be “pass-by” trips. Pass-by trips are a portion of trips to or from a site that are a result of diversions from existing trips which would already be travelling on roads adjacent to the site. They are considered to be trips that are already part of the existing traffic on a road network.

With respect to Marsden Park New Primary School, the pass-by trips would consist of parents dropping their kids at school then continuing on towards Richmond Road in order to access their places of employment.

To provide a conservative estimate of the peak hour trips for the proposed school, traffic generation detailed in the Richmond Road Report is assumed to be correct.

The Marsden Park New Primary is expected to have a population of 1,000 students, corresponding to 306 vehicle trips in AM and PM peak hour periods, as follows:

- AM peak – 180 inbound and 123 outbound
- PM peak – 123 inbound and 180 outbound

As detailed in Section 2:

- A school bus pick-up / drop-off facility is proposed on the proposed northern road to accommodate future bus services.
- The Marsden Park Precinct will be designed to create a pleasant and comfortable pedestrian and cycling environment. The proposed road network will encourage active transport for trips to and from the proposed school within the Marsden Park Precinct.

Accordingly, it is expected that a significant portion of students will walk, cycle or catch public transport to the proposed school.

## 4.2 Trip Generation Analysis

The peak hour data for the developments (expected to utilise the intersections of Richmond Road / Elara Boulevard and Richmond Road / Access Road 1, see Figure 1-4) accounting for the additional trips associated with the Marsden Park New Primary School (based on 1,000 students) is displayed in Table 4-2.

### Table 4-2 – Updated Trip Generation Data

| Development | No Dwellings | AM Peak | | | PM Peak | | |
|---|---|---|---|---|---|---|---|
| | | In | Out | Total | In | Out | Total |
| Clydesdale | 2,230 | 192 | 768 | 960 | 783 | 196 | 979 |
| School (originally included in study, based on 500 students) | - | 90 | 63 | 153 | 63 | 90 | 153 |
| Stockland Elara | 1,843 | 350 | 1,401 | 1751 | 1,460 | 365 | 1,825 |
| Winten's Newpark | 350 | 67 | 266 | 333 | 277 | 69 | 346 |
| ***Sub-Total*** | ***4,423*** | ***699*** | ***2,498*** | ***3197*** | ***2,583*** | ***720*** | ***3,303*** |
| Additional School Trips | | 90 | 63 | 153 | 63 | 90 | 153 |
| **Total** | **4,423** | **789** | **2,561** | **3,350** | **2,646** | **810** | **3,456** |
| Percentage of Additional School Trips | | | | 4.6% | | | 4.4% |

The data in Table 4-2 indicates that the additional trips associated with 1,000 students will constitute an additional 4.4 percent – 4.6 percent, compared to the land uses accounted for in the Richmond Road Report.

As detailed in the Richmond Road Report:

- Based on a left in / left out arrangement at Access Road 1, both the Richmond Road / Access Road 1 and the Richmond Road / Elara Boulevard intersections are expected to operate with a poor LoS.
- The traffic estimates and modelling confirm that a traffic signalised access is required at Access Road 1 intersection and would operate acceptably in the near future, and has been accepted by the Roads and Maritime in principle.
- The planning for Richmond Road Upgrade should consider sufficient network capacity to accommodate the anticipated traffic volumes, given a six-lane facility is insufficient to cope with the traffic demand as early as the year 2021. This planning should also consider the effects of such developments as Marsden Park (North) which require additional traffic capacity to be provided.
- The traffic estimates indicate Richmond Road would require four through lanes in each direction to sufficiently accommodate the anticipated traffic volumes in the peak hours.

Given that the trips generated by the proposed Marsden Park New Primary School constitute such a minor portion of total trips at the two intersections of interest, any upgrades will be required regardless of whether the school is in operation. Particularly as a significant of portion of trips generated by the school at the intersections on Richmond Road will be pass-by trips and already part of existing flows on a road network.

Accordingly, it is recommended that the Access Road 1 / Richmond Road and the Elara Boulevard be upgraded as required to account for the vehicle activity associated with the wider Marsden Park Precinct and the expected through traffic on Richmond Road.

## 4.3 Travel Demand Management

Travel demand management (TDM) is a term for strategies that encourage a shift from single occupant private vehicles trips and provide solutions for improving transport efficiencies while reducing negative impacts associated with the use of private motor vehicles.

A key element of TDM is the development of a School Green Travel Plan (GTP), which is a package of initiatives aimed at reducing car travel, particularly single occupant trips (this is also referred to as a School Travel Management Plan). In the case of GTPs for schools, their intent is to encourage greater use of public transport, walking and cycling by staff, students and visitors to a school, with the aim of reducing traffic and parking impacts within communities.

Some of the key tasks associated with the preparation of a GTP for Marsden Park New Primary School, include:

- Establish a Workplace Travel Plan Working Group to coordinate specific actions and track the progress of key initiatives.
- Nominate a GTP Coordinator
- Set SMART targets (specific, measurable, achievable, relevant, and timed) i.e. 50 percent of the new students will walk / cycle to school by 2020
- Provide information to students, teachers and parents / guardians of public transport options and services.
- Develop an action plan that details strategies to address barriers to active transport utilisation at the proposed school.
- Become involved in activities / program such as the National Walk Safely to School Day, TravelSmart and Ride2School.
- Run classroom and curriculum activities to promote active and safe transport.
- Establish a monitoring and review mechanism i.e. six monthly travel surveys.

A Preliminary Green Travel Plan for the proposed school is provided in Appendix D.

It will not be possible to develop a full travel plan until the school is operational and has a teacher, student and parent population to engage with.

# 5. Summary and Conclusion

## 5.1 Background

This Transport and Accessibility Study has been prepared by GHD Pty Ltd on behalf of SINSW. It accompanies an Environmental Impact Statement (EIS) in support of State Significant Development Application (SSD-9809) for the proposed Marsden Park New Primary School at the corner of Northbourne Drive (to the east) and a proposed future road (to the north) within the Elara Estate, Marsden Park.

## 5.2 The Proposed Development

The proposed Marsden Park New Primary School will cater for 1,000 primary school students at completion. The proposal seeks consent for:

- Construction Stage 1 (Temporary School): a temporary school facility constructed within the western portion of the development site located on the future sports grounds. This temporary school facility is to accommodate a maximum of 500 students at any given time. Should the permanent school progress as per the program, the temporary school will not be required.
- Construction Stage 2 (Construction of Permanent School Facility): a permanent consolidated two storey courtyard building with capacity to accommodate a maximum of 1,000 students. This new school building is to comprise
  - 40 teaching spaces and ten administration staff
  - A canteen
  - Library
  - Multipurpose hall
  - Office and administration space
  - Staff and student amenities
  - Out of school hours care accommodation

A summary of the proposed access arrangements for Marsden Park New Primary School is as follows:

- The main pedestrian access will be provided along Northbourne Drive, with additional pedestrian access points provided on the proposed northern road and Enmore Street.
- Vehicle pick-up and drop-off activity will occur on Northbourne Drive
- School bus pick-up and drop-off activity will occur at the proposed bus stop to the north of the school site, on the proposed northern road.
- Access to the teachers parking area will be provided in Enmore Street
- Waste collection will occur via Enmore Street. Waste collection vehicles will be required to manoeuvre within the car park to collect the waste containers.
- Emergency services vehicles will access the school from the proposed northern road. The gate to the school will typically be closed and locked

In accordance with an instruction from Council, both the pick-up / drop-off facility on Northbourne Drive and the proposed bus stop at the proposed northern road will be indented.

## 5.3 Public Transport

The nearest public bus stops from Marsden Park New Primary School are located along Elara Boulevard, located approximately 800 m from the proposed school.

Based on discussions with TfNSW for this project (see Appendix A), the following has been identified:

- Bus services at Marsden Park will continue to expand and evolve in response to new development as part of the North West Growth Area.
- Marsden Park and Elara Estate are on the very rural-urban fringe and current bus routes are only interim services pending the construction and opening of new roads that will enable the future permanent bus network to be delivered in coming years.
- Bus links to Mount Druitt, Penrith, Blacktown, Schofields, Riverstone, Tallawong, Rouse Hill and the future Marsden Park Town Centre are being taken into account in planning future bus services in the area.

Details about potential school bus services at Marsden Park New Primary School are not currently available. However, St Luke's Catholic College is served by four school bus services and there are potential efficiencies in extending these services to Marsden Park New Primary School. It is recommended that the DoE advocate to TfNSW for the provision of school bus services.

## 5.4 Active Transport

A safe and walkable active transport network will be required on the road network within the Marsden Park Precinct to facilitate the safety of students, their parents / guardians and other pedestrians.

Within the Marsden Park Precinct:

- Collector roads such as Northbourne Drive will provide 1.5 metre wide footpaths for pedestrians and 2.5 metre wide shared pathways for both pedestrians and cyclists (see Figure 2-7).
- Local streets will be designed to slow residential traffic in order to improve safety to pedestrians and cyclists (see Figure 2-8).

In summary, as specified in the DCP, the Marsden Park Precinct will be designed to create a pleasant and comfortable pedestrian and cycling environment. Amenity and safety will be maintained by restricting speeds through traffic calming measures and intermittent parking with landscaping will also be provided on both sides of the street.

The proposed road network will encourage active transport for trips to and from the proposed school within the Marsden Park Precinct.

## 5.5 Parking and Servicing

The Blacktown City Council Growth Centres DCP (2016) states that parking should be provided at the following rates for both primary and secondary schools:

- 1 space per staff member
- 1 space per 100 students

The Marsden Park New Primary School will have 40 teachers, ten administration staff and up to 1,000 students.

The proposed car park will provide 48 parking spaces, including one parking space for the mobility impaired.

As detailed in Section 4.3, it is expected that travel demand measures will be implemented at Marsden Park New Primary School to encourage teachers to utilise sustainable modes of transport or car share.

The provision of 48 provision spaces is consistent with the DoE Guidelines, provides a parking for the majority of the expected teachers / staff and is considered to be sufficient to accommodate typical parking demand associated with Marsden Park New Primary School.

Other than waste collection vehicles, the school is expected to generate negligible volumes of service vehicle activity. Waste collection is proposed within the teachers' car park.

It is expected that a 10.5 metre front loading waste collection vehicle will be used at the school. A swept path analysis, shown in Figure 3-4, indicates that the waste collection vehicle will need to cross some of the parking spaces to access and egress the school.

It is noted that there may be other service vehicle activity associated with the delivery of food and supplies to the school. These deliveries are likely to occur via van, occur outside of school peak periods and will park for a short period i.e. the time required to unload their goods.

## 5.6 Network Operation

The Marsden Park New Primary is expected to have a population of 1,000 students, corresponding to 306 private trips in AM and PM peak hour periods, as follows:

- AM peak – 180 inbound and 123 outbound
- PM peak – 123 inbound and 180 outbound

SIDRA traffic modelling undertaken for the previous Richmond Road Report identified the following:

- Based on a left in / left out arrangement at Access Road 1, both the Richmond Road / Access Road 1 and the Richmond Road / Elara Boulevard intersections are expected to operate with a poor LoS.
- The traffic estimates and modelling confirm that a traffic signalised access is required at Access Road 1 intersection and would operate acceptably in the near future. This proposed intersection arrangement has been accepted by the Roads and Maritime in principle.
- The planning for Richmond Road upgrade should consider sufficient network capacity to accommodate the anticipated traffic volumes, given a six-lane facility is expected to be insufficient to accommodate the expected traffic demand by the 2021 horizon year. This planning should also consider the effects of such developments as Marsden Park (North), which require additional traffic capacity to be provided at intersections along Richmond Road.

Analysis indicates that the additional trips associated with 1,000 students will constitute an additional 4.4 percent – 4.6 percent, compared to the land uses accounted for in the Richmond Road Report.

Given that the trips generated Marsden Park New Primary School constitute such a minor portion of trips at the two intersections of interest, any upgrades will be required regardless of whether the school is in operation. Particularly as a significant of portion of trips generated by the school at the intersections on Richmond Road consist of "pass-by" trips, which will already be part of existing traffic flows on the surrounding road network.

Accordingly, it is recommended that the Access Road 1 / Richmond Road and the Elara Boulevard be upgraded as required to account for the vehicle activity associated with the wider Marsden Park Precinct and the expected growth in traffic on Richmond Road.

## 5.7 Conclusion

The overall conclusion from the investigations is that the traffic and parking arrangements for the proposed school are satisfactory and there are no traffic and parking impediments to the development.

# Appendices

# **Appendix A** – Stakeholder Communications

**From:** Mark Lucas
**To:** "Pahee.RATHAN@rms.nsw.gov.au"
**Cc:** "Zhaleh.ALAMOUTI@rms.nsw.gov.au"; "Richard Sheraton"
**Bcc:** 2128414
**Subject:** RE: Marsden Park Public School
**Date:** Wednesday, 3 July 2019 2:05:00 PM
**Attachments:** image001.png

Hi Pahee,

As per the email below could you please provide any data you have for the Intersection of Richmond Road and Elara Boulevard as quickly as possible, we are on a very tight timeframe. Model outputs and traffic surveys would be ideal.

Can you also confirm if Roads and Maritime have any plans to signalise the proposed intersection to the north of Elara Boulevard and Richmond Road, and if so when might it be constructed?

Kind Regards,


**Mark Lucas**
**Senior Transport Planner**

**GHD**
T: +61 2 9239 7141 | V: 217141 | M: 0428 269819 | E: mark.lucas@ghd.com
Level 15 133 Castlereagh Street Sydney NSW 2000 Australia | www.ghd.com

WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION



---

**From:** Mark Lucas
**Sent:** Tuesday, 2 July 2019 11:07 AM
**To:** 'Pahee.RATHAN@rms.nsw.gov.au' <Pahee.RATHAN@rms.nsw.gov.au>
**Cc:** 'Zhaleh.ALAMOUTI@rms.nsw.gov.au' <Zhaleh.ALAMOUTI@rms.nsw.gov.au>; 'Richard Sheraton' <Richard.Sheraton@ontoit.com>
**Subject:** Marsden Park Public School

Pahee,

Thanks for your time this morning. I have just been sent a copy of the letter.

If you have any model outputs or data to facilitate the intersection analysis, please forward onto me.

Cheers,

**Mark Lucas**
**Senior Transport Planner**

**GHD**

## Mark Lucas

**From:** Mark Lucas
**Sent:** Friday, 12 July 2019 9:14 AM
**To:** 'Pahee.RATHAN@rms.nsw.gov.au'
**Cc:** 'Zhaleh.ALAMOUTI@rms.nsw.gov.au'; 'Richard Sheraton'; 'Hussein Najdi'; Jayme Akstein
**Subject:** RE: Marsden Park Public School

**CompleteRepository:** 2128414
**Description:** Marsden Park Public School Traffic Assessment
**JobNo:** 28414
**OperatingCentre:** 21
**RepoEmail:** 2128414@ghd.com
**RepoType:** Job

Hi Pahee,

Can you please provide any relevant data you may have to facilitate the assessment of the intersections on Richmond Road for the Marsden Park New Primary School Transport and Accessibility Study.

The report is due on the 17th July so a quick response would be appreciated.

Kind Regards,

**Mark Lucas**
**Senior Transport Planner**

**GHD**
T: +61 2 9239 7141 | V: 217141 | M: 0428 269819 | E: mark.lucas@ghd.com
Level 15 133 Castlereagh Street Sydney NSW 2000 Australia | www.ghd.com



---

**From:** Mark Lucas
**Sent:** Monday, 8 July 2019 12:53 PM
**To:** 'Pahee.RATHAN@rms.nsw.gov.au' <Pahee.RATHAN@rms.nsw.gov.au>
**Cc:** 'Zhaleh.ALAMOUTI@rms.nsw.gov.au' <Zhaleh.ALAMOUTI@rms.nsw.gov.au>; 'Richard Sheraton' <Richard.Sheraton@ontoit.com>; 'Hussein Najdi' <hussein.najdi@det.nsw.edu.au>; Jayme Akstein <Jayme.Akstein@ghd.com>
**Subject:** RE: Marsden Park Public School

Hi Pahee,

I have not heard back from you re the request below.

We are on a critical path for the delivery of the Transport and Accessibility Report. Could you please respond as soon as possible, it would be greatly appreciated.

Kind Regards,

**Mark Lucas**
**Senior Transport Planner**

**GHD**
T: +61 2 9239 7141 | V: 217141 | M: 0428 269819 | E: mark.lucas@ghd.com
Level 15 133 Castlereagh Street Sydney NSW 2000 Australia | www.ghd.com

WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION



---

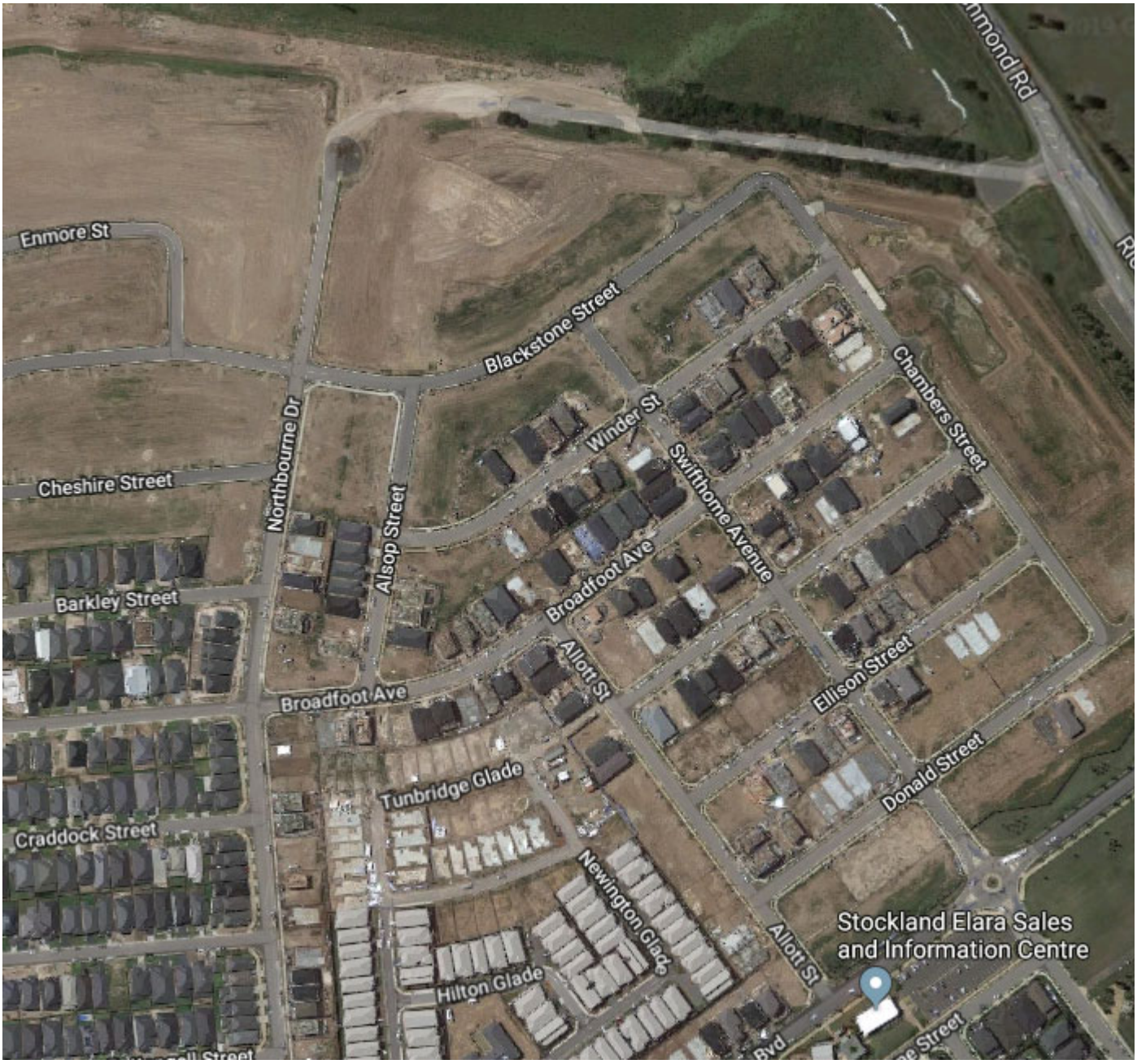
**From:** Mark Lucas
**Sent:** Wednesday, 3 July 2019 2:05 PM
**To:** 'Pahee.RATHAN@rms.nsw.gov.au' <Pahee.RATHAN@rms.nsw.gov.au>
**Cc:** 'Zhaleh.ALAMOUTI@rms.nsw.gov.au' <Zhaleh.ALAMOUTI@rms.nsw.gov.au>; 'Richard Sheraton' <Richard.Sheraton@ontoit.com>
**Subject:** RE: Marsden Park Public School

Hi Pahee,

As per the email below could you please provide any data you have for the Intersection of Richmond Road and Elara Boulevard as quickly as possible, we are on a very tight timeframe. Model outputs and traffic surveys would be ideal.

Can you also confirm if Roads and Maritime have any plans to signalise the proposed intersection to the north of Elara Boulevard and Richmond Road, and if so when might it be constructed?

Kind Regards,




**Mark Lucas**
**Senior Transport Planner**

**GHD**
T: +61 2 9239 7141 | V: 217141 | M: 0428 269819 | E: mark.lucas@ghd.com
Level 15 133 Castlereagh Street Sydney NSW 2000 Australia | www.ghd.com



---

**From:** Mark Lucas
**Sent:** Tuesday, 2 July 2019 11:07 AM
**To:** 'Pahee.RATHAN@rms.nsw.gov.au' <Pahee.RATHAN@rms.nsw.gov.au>
**Cc:** 'Zhaleh.ALAMOUTI@rms.nsw.gov.au' <Zhaleh.ALAMOUTI@rms.nsw.gov.au>; 'Richard Sheraton' <Richard.Sheraton@ontoit.com>
**Subject:** Marsden Park Public School

Pahee,

Thanks for your time this morning. I have just been sent a copy of the letter.

If you have any model outputs or data to facilitate the intersection analysis, please forward onto me.

Cheers,

**Mark Lucas**
**Senior Transport Planner**

**GHD**
T: +61 2 9239 7141 | V: 217141 | M: 0428 269819 | E: mark.lucas@ghd.com
Level 15 133 Castlereagh Street Sydney NSW 2000 Australia | www.ghd.com

## Mark Lucas

**From:** Mark Lucas
**Sent:** Tuesday, 2 July 2019 9:27 AM
**To:** 'Zhaleh.ALAMOUTI@rms.nsw.gov.au'; 'Pahee.RATHAN@rms.nsw.gov.au'
**Cc:** 'Hussein Najdi'; 'Richard Sheraton'; Jayme Akstein; 'Tim Fleming'
**Subject:** Marsden Park Public School - Transport and Accessibility
**Attachments:** SSD 9809 SEARs .pdf

**CompleteRepository:** 210921588
**Description:** Marsden Park Public School
**JobNo:** 09215
**OperatingCentre:** 21
**RepoEmail:** 210921588@ghd.com
**RepoType:** Proposal
**SubJob:** 88

Dear Zhaleh and Pahee,

GHD have been commissioned to undertake The Transport and Accessibility Report for the proposed Marsden Park New Primary School in accordance with the attached SEARs.

One of the requirements in the SEARs is:

*the impact of trips generated by the development on nearby intersections, with consideration of the cumulative impacts from other approved developments in the vicinity, and the need/associated funding for, and details of, upgrades or road improvement works, if required (Traffic modelling is to be undertaken using SIDRA network modelling for current and future years)*

We note that the Marsden Park Precinct Indicative Layout Plan accounts for the proposed school and it is assumed the Precinct's road network has been designed to account for the expected school activity.

I would appreciate the opportunity to discuss the SEARs with you. I will call this morning to discuss.

Thank you in advance.

Kind Regards,

**Mark Lucas**
**Senior Transport Planner**

**GHD**
T: +61 2 9239 7141 | V: 217141 | M: 0428 269819 | E: mark.lucas@ghd.com
Level 15 133 Castlereagh Street Sydney NSW 2000 Australia | www.ghd.com

**From:** Edward Osiowy
**To:** Mark Lucas
**Subject:** RE: Marsden Park Bus Services
**Date:** Thursday, 20 June 2019 8:46:18 AM

---

Hi Mark,

Bus services at Marsden Park will continue to expand and evolve in response to new development as part of the North West Growth Area. Marsden Park and Elara Estate are on the very rural-urban fringe and current bus routes are only interim services pending the construction and opening of new roads that will enable the future permanent bus network to be delivered in coming years.

Bus links to Mt Druitt, Penrith, Blacktown, Schofields, Riverstone, Tallawong, Rouse Hill and the future Marsden Park Town Centre are being taken into account in planning future bus services in the area.

Please email if you need more info.

Regards,

**Edward Osiowy**
**Planner**
Services
Greater Sydney Division
**Transport for NSW**

**T** 8265 8445
Level 2, Tower A, Zenith Centre,
821-823 Pacific Highway CHATSWOOD NSW 2067
(Locked Bag 6501, ST LEONARDS NSW 2065)

---

**From:** Mark Lucas [mailto:Mark.Lucas@ghd.com]
**Sent:** Wednesday, 19 June 2019 13:40
**To:** Edward Osiowy
**Cc:** Hussein Najdi; Richard.Sheraton@ontoit.com
**Subject:** Marsden Park Bus Services

Hi Edward,

GHD has been commissioned to undertake a traffic assessment for a proposed public school in Marsden Park.

Can you please inform me if TfNSW have any plans to improve bus services in the area as the Marsden Park Precinct and the Marsden Park North Precinct are developed?

Kind Regards,

## Mark Lucas

**From:** Mark Lucas
**Sent:** Tuesday, 30 July 2019 9:26 AM
**To:** 'Abdun Noor'
**Cc:** 'Richard Sheraton'; 'Hussein Najdi'; Owen Peel; 'Conor Brown'
**Subject:** Marsden Park New Primary School

**CompleteRepository:** 2128414
**Description:** Marsden Park Public School Traffic Assessment
**JobNo:** 28414
**OperatingCentre:** 21
**RepoEmail:** 2128414@ghd.com
**RepoType:** Job

Abdun,

Thanks again for your time.

Based on our discussions the following is noted:

- The pick-up/drop off facilities at the frontage to the school on Northbourne Drive should be indented
- The school should provide a 1 m strip on the northern road to facilitate the provision of a future additional travel lane
- Roads and Maritime have requested that the Clydesdale Development construct a major new intersection on Richmond Road to the north of the school. If there is any information you could provide about this? It would be extremely helpful.

With respect to the northern road, it is currently proposed to provide a pedestrian crossing between the two roundabouts. Key advantages of this include:

- It accounts for key desire lines between the proposed medium density area and the school. There is a potential issue that if the crossing does not follow the desire line that children will engage in unsafe crossing activity.
- Austroads indicates that roundabouts with splitter islands with pedestrian storage are not appropriate for schools.
- There is approximately 100 m between the roundabouts. Assuming vehicles exit the roundabouts at 30 km/h, the Crossing Sight Distance of 50 m (based on Austroads Guidelines) can approximately be achieved. The distance between the west roundabout and the proposed priority intersection is only about 50 m.

Your point re the potential widening of the northern road to provide two travel lanes in each direction and the need for a signalised crossing in this circumstance is noted. However, if this does occur in the future the roundabouts may need to be signalised to prevent weaving issues. This would provide an opportunity to provide signalised pedestrian crossings near the school.

I am happy to discuss this matter further.

Regards,

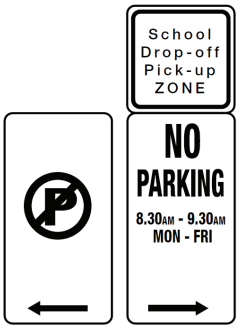
**Mark Lucas**
**Senior Transport Planner**

**GHD**

# **Appendix B** – TfNSW Safety Initiative

# School Drop-off and Pick-up
# Organising the initiative

## What is a school Drop-off and Pick-up zone?




Some schools and councils use No Parking areas, signed as Drop-off and Pick-up, Kiss and Ride, or Kiss and Drop zones.

These areas are always on the school side of the road and are designated by “No Parking” signs.

They provide a safe spot for parents and carers to drop off and collect their children from school by car.

Drivers may drop off and pick up passengers legally within a two-minute timeframe.

## What is a school Drop-off and Pick-up initiative?

This strategy allows the efficient use of the Drop-off and Pick-up area during busy times at the beginning and end of the school day.

A driver pulls into the kerb and remains in control of the vehicle while an identified supervising adult from the school community assists students to exit or enter the vehicle.


Kids and Traffic
Safety Door sticker
RTA45091021K

## What must be planned?

The school community needs to:

- Consult with the local council to consider whether the traffic environment outside the school would support the initiative without disrupting traffic flow.
- Consider existing school access points and school entry and exit procedures.
- Confirm school community support for the initiative.
- Fully understand all legal issues regarding liability in respect of students and volunteers.

## How to implement the initiative

The school community needs to:

- Consider relevant insurance policies and child protection guidelines.
- Determine the operating times of the initiative.
- Develop a system for matching the child to the correct vehicle at pick-up times.
- Develop a roster of those adults approved by the school community to supervise students as they exit or enter a vehicle.
- Communicate details of the initiative’s operation and safety procedures to drivers, students, supervising adults and the general school community.
- Keeping our kids safe around schools has information for principals, parents and members of the school community. Order Safety Door stickers from our online catalogue.

**roadsafety.transport.nsw.gov.au**



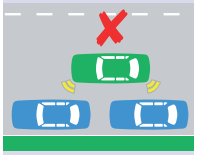
NSW GOVERNMENT | Transport for NSW
Centre for Road Safety

# **Appendix C** – School Safety Brochure

# Parking and traffic rules in school zones

You need to take extra care when driving and parking in school zones. Make sure that you and your child understand the road rules. If you break the traffic rules in a school zone you are putting not only your child but other children at risk. The parking and traffic rules around our schools are there to protect your children. If you break the rules you will be fined. **Please choose safety over convenience.**

## QUICK REFERENCE GUIDE TO IMPORTANT SAFETY TRAFFIC RULES

| ZONE | WHAT DOES IT MEAN? | WHY IS IT THERE? | PENALTY | DEMERIT POINTS* |
|---|---|---|---|---|
|  | You cannot stop in a **NO STOPPING** zone for any reason (including queuing or waiting for a space).  | Keeps clear sight lines between drivers and children / pedestrians. | EXCEEDS **$330**  | (School Zone) **2**  |
|  | You can stop in a **NO PARKING** zone for a max. of two minutes to drop off and pick up passengers.<br>If no spaces are available you cannot queue on the road way or in any other zones while waiting for a space. You will need to drive away and park elsewhere, only returning when there is space to pull up.<br>You must stay within 3 metres of your vehicle at all times and cannot leave your vehicle unattended. | Provides a safe place for children / pedestrian set down and pick up. | EXCEEDS **$183**  | (School Zone) **2**  |
|  | You must not stop or park in a **BUS ZONE** for any reason (including queuing or waiting for a space) unless you are driving a bus.<br>If times are shown on the sign, you are not allowed to stop during those times. | Provides a safe place for large buses to set down and pick up school children. | EXCEEDS **$330**  | (School Zone) **2**  |
|  | You must not stop on or within 20 metres before a **PEDESTRIAN CROSSING** or 10 metres after a crossing unless there is a control sign permitting parking. | So drivers can clearly see pedestrians on the crossing. | EXCEEDS **$439**  | (School Zone) **2**  |
|  | **DOUBLE PARKING**<br>You must not stop on the road adjacent to another vehicle at any time even to drop off or pick up passengers. | Double parking blocks visibility and forces other cars to go around you. | EXCEEDS **$330**  | (School Zone) **2**  |
|  | You must not stop on any **FOOTPATH** or **NATURE STRIP**, or even a **DRIVEWAY** crossing a footpath or nature strip for any reason. | You could easily run over a child or force pedestrians onto the road to get around you. | EXCEEDS **$183**  | (School Zone) **2**  |

**Please note:** The above information is current as of 1 December 2017.
Penalties set by NSW State Government and reviewed on 1 July each year.

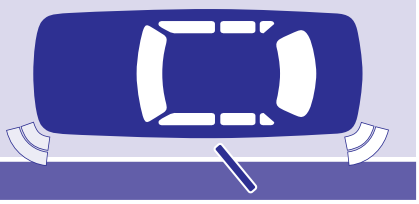
City of Ryde

NSW Police Force

HORNSBY SHIRE COUNCIL

# Safety tips for school zones:

## EXITING THE CAR

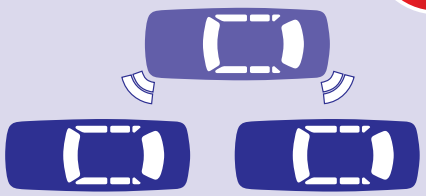


Make sure children use the footpath-side door when getting in and out of a car.

## APPLY BRAKE

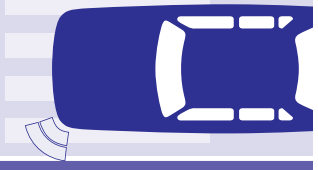
Make sure the park brake is applied when the vehicle is stationary.

## PARKING



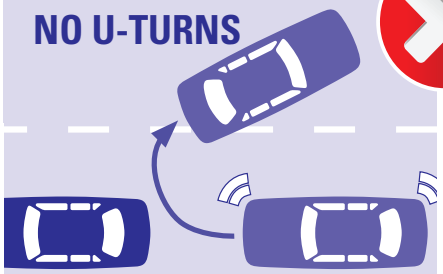
NEVER double park.

## CROSSING



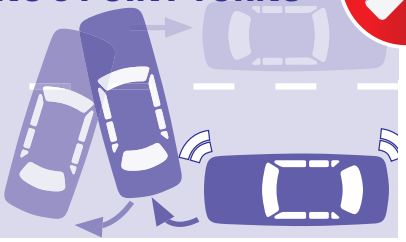
NEVER park across a pedestrian crossing.

## NO U-TURNS



NEVER undertake a U-turn in close proximity to the school.

## NO 3 POINT TURNS



NEVER undertake a three-point turn in close proximity to the school.

# Safety tips for students:

## BUCKLE UP

Stay buckled up until the vehicle has stopped.

## STORE ITEMS

Make sure your school bag and other items are in a safe position

## BE READY

Be ready to get out of the car with your belongings when the car has stopped and you have unbuckled your seat belt.

## EXIT SAFELY

Always get in and out of the back seat through the safety door - the rear foot path-side door.

# Demerit Points:

* The **Demerit Points** Scheme is a national program that allocates penalty points (demerits) for a range of driving offences. A driver who has not committed any offences has '**zero**' points. If you commit an offence that carries demerit points, the points are added to your driving record.
If you incur the threshold number of demerit points within a three-year period, a licence suspension or refusal is applied. The three-year period is calculated between the dates the offences were committed. It ends on the day your most recent offence was committed.

For further information regarding demerit points please visit: **rms.nsw.gov.au/roads/safety-rules/demerits-offences/**

# **Appendix D** – School Survey Questionnaire

1. How many of your children attend Waitara Public School

- ◯ 1 Child
- ◯ 2 Children
- ◯ 3 Children
- ◯ 4 or more Children

2. What are the ages of your child/children?

Child 1

Child 2

Child 3

Child 4

3. How far did your child/children travel to school today?

- ◯ 0 km – 1 km
- ◯ 1 km – 2 km
- ◯ 2 km – 3 km
- ◯ 3 km – 4 km
- ◯ Greater than 4 km.

4. Which mode of transport did your child/children use to travel to school this morning?

- ◯ a.) Private vehicle - dropped off outside school gates
- ◯ b.) Private vehicle – parked and then walked to school grounds
- ◯ c.) School Bus
- ◯ d.) Public Bus
- ◯ e.) Walked to school
- ◯ f.) Cycled to school

Other (please specify)

5. Did you accompany your child/children to school today?

- a.) Yes
- b.) No

6. If Yes, is your child's/children's trip to school part of another journey i.e. to work or shopping?

- a.) Yes
- b.) No
- c.) N/A

7. Which mode of transport did your child/children use to travel from school this afternoon?

- a.) Private vehicle – picked up outside school gates
- b.) Private vehicle - parked and then walked from school grounds
- c.) School Bus
- d.) Public Bus
- e.) Walked from school
- f.) Cycled from school

Other (please specify)

8. Do you accompany your child/children from school today?

- a.) Yes
- b.) No

9. If Yes, is your child's/children's trip from school part of another journey i.e. from work or shopping?

- a.) Yes
- b.) No
- c.) N/A

# **Appendix E** – Preliminary Green Travel Plan

# School Infrastructure NSW

Marsden Park New Primary School

Green Travel Plan

September 2019

# Table of contents

# 1. Introduction

## 1.1 Overview

This Green Travel Plan has been prepared GHD Pty Ltd on behalf Schools Infrastructure NSW (SINSW) (the Applicant). It accompanies an Environmental Impact Statement (EIS) in support of State Significant Development Application (SSD-9809) for the Marsden Park New Primary School at the corner of Northbourne Drive (to the east) and a proposed future road (to the north) within the Elara Estate, Marsden Park (the site). The site is legally described as Lot 2889 in Deposited Plan 1230906. The development footprint does not include a portion of the site to the west as this is reserved for a future alternative use.

The proposed Marsden Park New Primary School will cater for 1,000 primary school students at completion. The proposal seeks consent for:

- Construction Stage 1 (Temporary School): a temporary school facility constructed within the western portion of the development site located on the future sports grounds. This temporary school facility is to accommodate a maximum of 500 students at any given time. Should the permanent school progress as per the program, the temporary school will not be required.
- Construction Stage 2 (Construction of Permanent School Facility): a permanent consolidated two-storey courtyard building with capacity to accommodate a maximum of 1,000 students. This new school building is to comprise of:
  - 40 teaching spaces
  - A canteen
  - Library
  - Multipurpose hall
  - Office and administration space
  - Staff and student amenities
  - Out of school hours care accommodation
- Multi-purpose sporting facilities and outdoor play space
- Associated site landscaping and public domain improvements
- An on-site car park for 48 parking spaces and drop-off and pick-up areas

The purpose of this Green Travel Plan (GTP) is to determine sustainable travel options for staff, visitors and students to choose from when travelling to and from the proposed Marsden Park New Primary School. This GTP provides advice on actions that can be implemented to maximise the potential number of people choosing sustainable transport modes to access the proposed school.

GTPs present a number of interrelated benefits including:

- Improved health benefits
- Reduced traffic congestion, noise and air pollution caused by cars
- Greater social connections within communities
- Cost savings to the economy and individual
- Improved independence for older children i.e. walking or cycling to school
- Changes in travel attitudes of children which can travel behaviour into adulthood

Key elements of a GTP are shown in The Travel Plan Pyramid are shown in Figure 1-1.

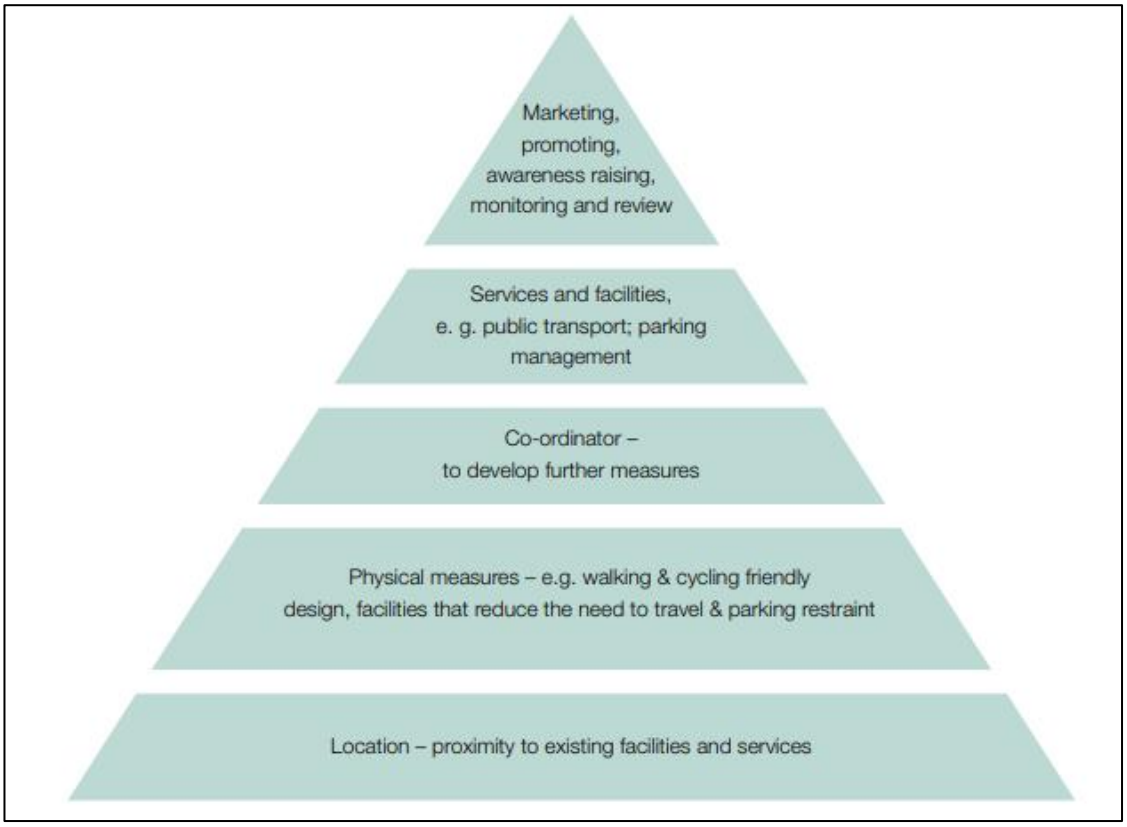



**Figure 1-1 – Travel Plan Pyramid**

*Source: Good Practice Guidelines: Delivering Travel Plans through the Planning Process*

## 1.2 Background

The proposed Marsden Park New Primary School site is located at the corner of Northbourne Drive (east) and a proposed future road (north) within the Elara Estate, Marsden Park approximately 400 m to the west of the Richmond Road / Northbourne Drive intersection as shown in Figure 1-2. It is currently a greenfield site and is being developed in a new predominantly residential precinct, where travel patterns and behaviours have scope to be influenced by physical infrastructure and regulation / policies.


**Figure 1-2 - Subject Site Location**
*Source: Google Maps modified by GHD*

## 1.3 Scope of Works

To achieve the above objectives, GHD has adopted the following scope of works:

- **How can staff and students get to the school?** Review of the existing conditions and networks for walking, bicycle riding and public transport access to the site (refer to Chapter 2 Existing travel options).
- **What is target proportion of people using each mode?** Advise on potential mode share targets (refer to Chapter 3 Mode Share Targets and Monitoring).
- **How can sustainable travel to the school be maximised?** Determine current strategies and physical requirements to facilitated sustainable transport (refer to Chapter 4 Additional Improvements).

# 2. Existing travel options

Following a review of the existing infrastructure and further GHD observations, the current infrastructure and transport service offers the following.

## 2.1 Train Services

Riverstone Station is the closest station to the Marsden Park New Primary School, which is served by the T1 Western Line and T5 Cumberland Line.

Riverstone Station is located approximately 3.8 km from Marsden Park New Primary School, which exceeds a reasonable walking catchment from the school.

The 757 and 6508 bus services operate as a feeder route between the Marsden Park Precinct and Riverstone Station and may provide future utility to teachers seeking to access the school via public transport.

## 2.2 Bus Services

### 2.2.1 Current Bus Services

The nearest public bus stops from Marsden Park New Primary School are located along Elara Boulevard, located approximately 800 m south of the proposed school (see Figure 2-1).

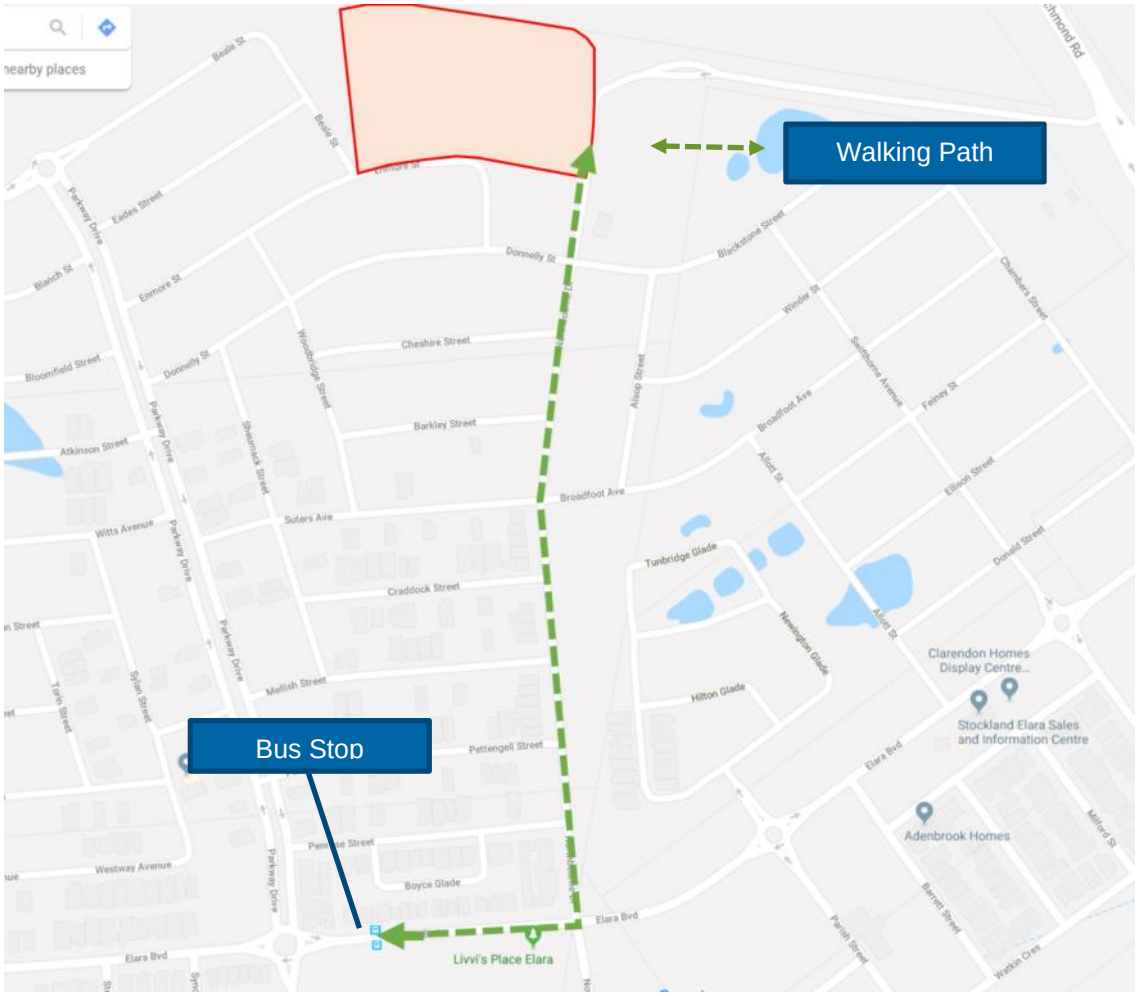



**Figure 2-1 – Walking Distance from Marsden Park New Primary School Site to the Nearest Bus Stop**

*Source: Google Maps modified by GHD*

A summary of the bus routes operating from these bus stops and their approximate frequency are provided in Table 2-1.

**Table 2-1 - Bus Routes and Frequencies**

| Bus Route | Origin – Destination | Frequency (minutes) | |
|---|---|---|---|
| | | Peak | Off-peak |
| 747 | Rouse Hill to Marsden Park via Riverstone | 60 | 60 |
| 757 | Mt Druitt to Riverstone via Rooty Hill Road North and Marsden Park | 60 | 60 |

It is noted that during the morning and afternoon peak hours, a single 757 bus service diverts from its typical route to St Lukes Catholic College and operated as a school service.

The following school bus services also operate at St Lukes Catholic College:

- Bus service 6580 - Australian Christian College to Riverstone Station, one afternoon service
- Bus service 6608 – St Lukes Catholic College to Blacktown Station, one afternoon service
- Bus service 6609 - St Lukes Catholic College to Rooty Hill, one afternoon service

The intersection of Elara Boulevard and Richmond Road has been constructed with a bus lane for buses travelling northbound on Richmond Road.

### 2.2.2 Future Bus Services

The following is identified in the *Blacktown City Council Integrated Transport Management Plan* (2013):

- As part of the NSW Long Term Transport Master Plan, the NSW Government will secure a public transport corridor into Marden Park.
- This public transport corridor will ensure the growing North West continues to have access to quality public transport services.

Future Transport 2056, envisages Marsden Park as a centre being served by a “turn up and go” public transport network.

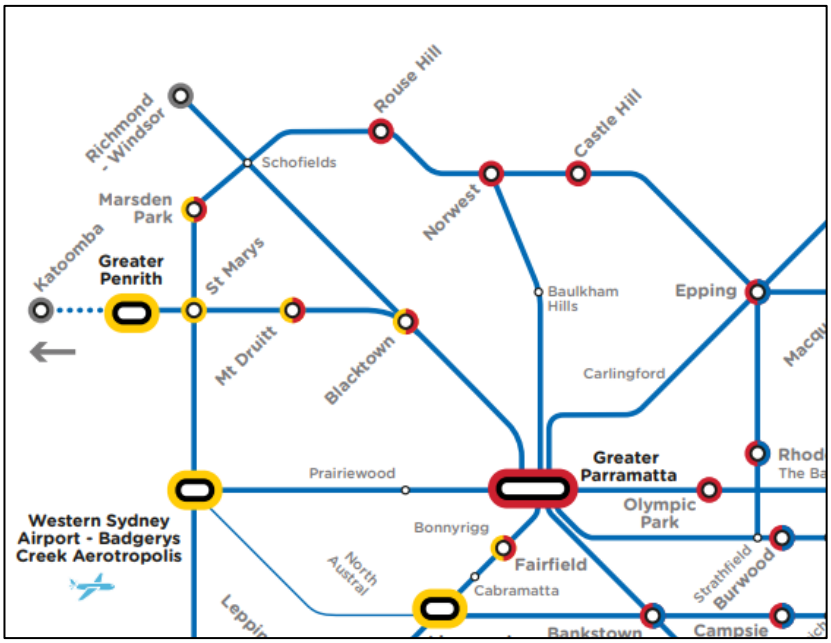



**Figure 2-2 – Proposed "Turn Up and Go" Transport Network**

*Source: Future Transport Strategy 2056*

Based on discussions with Transport for NSW (TfNSW) for this project, the following has been identified:

- Bus services at Marsden Park will continue to expand and evolve in response to new development as part of the North West Growth Area.
- Marsden Park and Elara Estate are on the very rural-urban fringe and current bus routes are only interim services pending the construction and opening of new roads that will enable the future permanent bus network to be delivered in coming years.
- Bus links to Mount Druitt, Penrith, Blacktown, Schofields, Riverstone, Tallawong, Rouse Hill and the future Marsden Park Town Centre are being taken into account in planning future bus services in the area.

### 2.2.3 Bus Stops

Transport for NSW (TfNSW)'s *NSW Bus Stop Guidelines* specifies that at a minimum school bus stops should provide:

- A bus stop pole
- A level stand boarding area
- Footpath connectivity

It is proposed to provide a bus zone to the north of the school site along the proposed northern road.

The implementation of any school bus stops along the school frontage and access to / from the bus stop to the pedestrian entrance of the proposed school, must be designed in accordance with the relevant disability access standards, development control plans and TfNSW Guidelines.

It is expected that the bus zone will be used for school routes only. Bus zone signage should be implemented at the frontage to Marsden Park New Primary School. An example of signage at a school bus zone (at Picton Public School) is shown in Figure 2-3.


**Figure 2-3 – Example of Signage at a School Bus Zone.**

The implementation of the school bus stop should be provided prior to commencement of the school operations.

Details about potential school bus services at Marsden Park are not currently available. It is recommended that the Department of Education (DoE) advocate to TfNSW for the provision of school bus services.

Information included in the *State Transit Bus Infrastructure Guide indicates* that a bus zone for a "long rigid bus" is 35 metres, consisting of:

- A bus length of 14.5 metres
- A draw out length of 6.5 metres
- A draw in length of 14 metres

It is noted that a 14.5 metre bus (with a capacity of 80 passengers) is consistent with the largest rigid bus operated by Sydney Buses.

It has been noted that bus trips from longer distances would be primarily used by teachers and staff at the school, as the majority of students are likely to be drawn from within the Marsden Park Precinct, within an easy walking distance of the proposed school.

## 2.3 Student Eligibility

The following is noted with respect to student eligibility to free public transport to school:

- Kindergarten to Year 2: No minimum walking applies to these students
- Year 3 to Year 6: The straight line distance from their home address to school is more than 1.6 kilometres

An image showing the approximate 1.6 kilometre catchment of the proposed school in the context of the Marsden Park Precinct is shown in Figure 2-4.

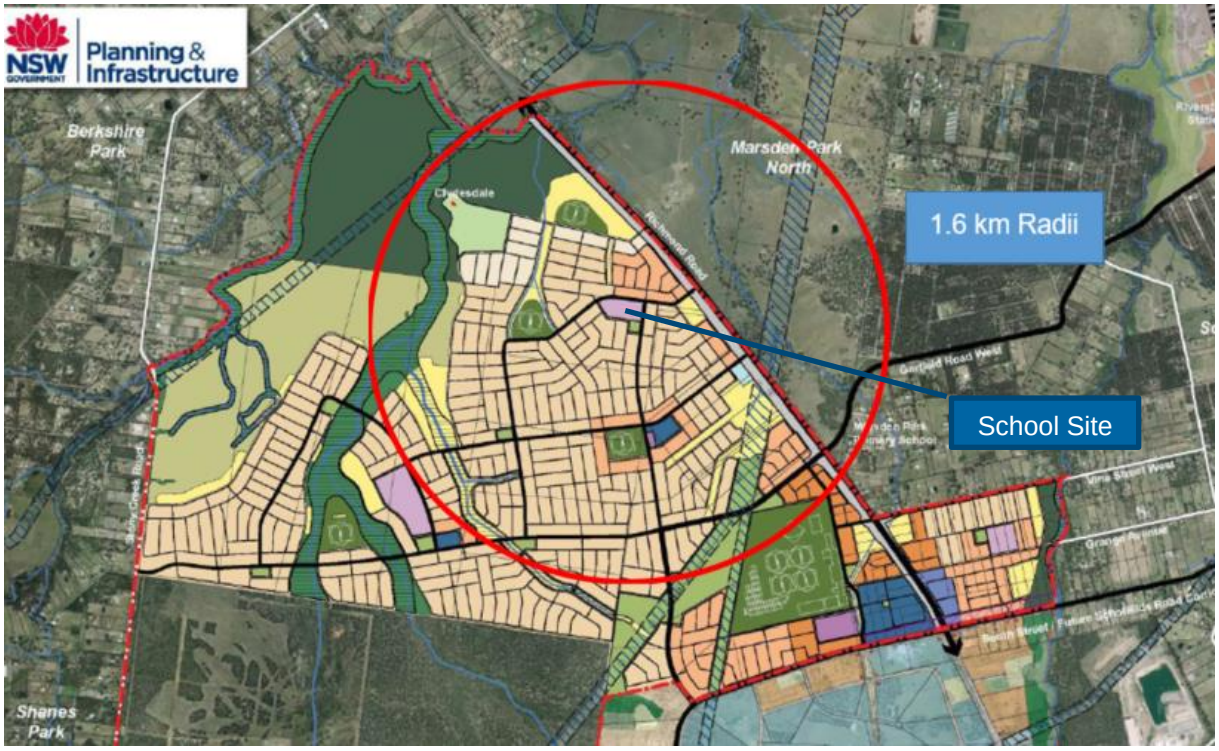



**Figure 2-4 – Student Travel Pass Eligibility Catchment**

*Source: Marsden Park Precinct Development Control Plan (modified by GHD)*

As indicated in Figure 2-4, the majority of the Marsden Park precinct is within the 1.6 kilometre catchment where students will not be eligible for free travel passes, due to their close proximity to the school. However, the road network within the Marsden Park Precinct will provide good walking and cycling paths to facilitate sustainable travel to and from the school (refer to Section 2.4).

## 2.4 Active Transport

### 2.4.1 Existing Pedestrian Facilities

As the Marsden Park Precinct is still undergoing development, there are currently no zebra crossing or signalised pedestrian crossings provided in the vicinity of the proposed school site.

There are currently footpaths on Northbourne Drive south of Donnelly Street.

There are no footpaths on Northbourne Drive north of Donnelly Street or other roads adjacent to the proposed school.

### 2.4.2 Existing Bicycle Facilities

There is currently no bicycle network provided in the vicinity of Marsden Park New Primary School site.

A bi-directional shared path has been constructed on the western side of Richmond Road, south of Elara Boulevard.

The Blacktown City Council Bike Plan identifies Richmond Road as an existing cycleway which is consistent with the provision of the shared path.

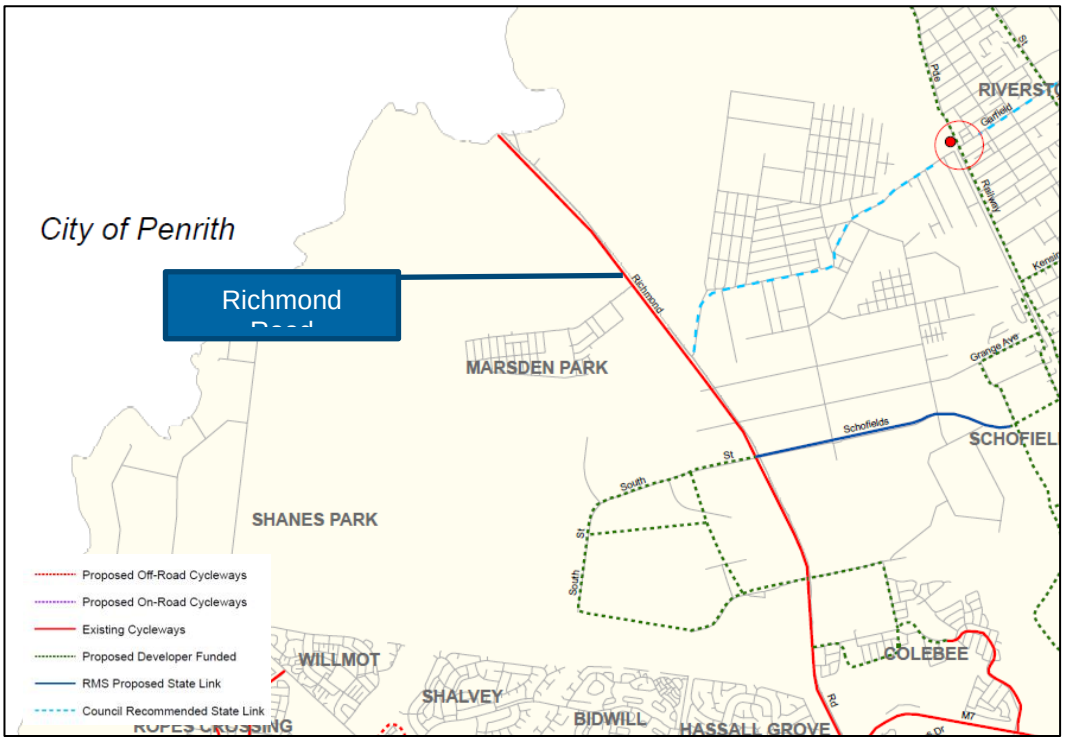



**Figure 2-5 - Blacktown Bike Plan 2016**

*Blacktown City Council 2016 Bike Plan Existing and Future Routes (2016)*

### 2.4.3 Road Network

A safe and walkable active transport network will be required on the road network within the Marsden Park Precinct to facilitate the safety of students, their parents / guardians and other pedestrians.

Within the Marsden Park Precinct:

- Collector roads such as Northbourne Drive will provide 1.5 metre wide and 2.5 metre wide shared paths.
- Local streets will be designed to promote slow vehicle speeds in order to improve safety for pedestrians and cyclists.

Based on information contained in the Marsden Park Precinct Development Control Plan, the precinct will be designed to create a pleasant and comfortable pedestrian and cycling environment. Amenity and safety will be maintained by restricting speeds through traffic calming measures and intermittent parking with landscaping will also be provided on both sides of the street.

The design of the proposed road network will encourage active transport for trips to and from the proposed school within the Marsden Park Precinct.

Pedestrian crossings are proposed at school entry points on the proposed road to the north of the school, Northbourne Drive and Enmore Street.

### 2.4.4 40 km/h School Speed Zones

School zones are implemented outside schools to reduce vehicle speeds where there is an increased potential for conflict between vehicles and schoolchildren. School zones operate on government gazetted school days between 8:00 am – 9:30 am and 2:30 pm – 4:00 pm.

The NSW Government has ensured that every school in NSW has at least one set of school zone flashing lights, to reduce the probability and severity of crashes and protect children on their way to and from schools.

School zones can promote active transport as a result of slower vehicle speeds.

Technical Direction *TD 2003 / RS02 Installation of 40 km/h School Zones on Multi-lane Road and High Speed Road* specifies for roads with a speed limit of 70 km/h or less:

- School zones should have a minimum length of 200 m
- The main school access should be centred within the zone

Drawings showing the locations of the proposed 40 km/h school zones are not currently available. It is assumed that the will be implemented on the roads adjacent to Marsden Park New Primary School, in accordance with NSW Government Guidelines.

# 3. Mode Share Targets and Monitoring

A significant factor in determining how people will access the school is the amount of car parking which is available on-site for staff as well as planned future public transport services and active transport infrastructure.

Table 3-1 provides a summary of the proposed modal split targets for the proposed school. The public transport target is premised on an improvement in bus services in Marsden Park, in accordance with the information provided by TfNSW.

**Table 3-1 – Proposed modal splits- Targets**

| Main method of Travel | Modal Split (teachers) | | Modal Split (students) | |
|---|---|---|---|---|
| | No. | % | No. | % |
| Car (kiss and ride drop off / on-site parking) | 25 | 63% | 350 | 35% |
| Walk | 4 | 10% | 400 | 40% |
| Cycle | 3 | 8% | 150 | 15% |
| Public Transport | 8 | 20% | 100 | 10% |
| **TOTAL** | **40** | **100%** | **1,000** | **100%** |

Note: Kiss and Ride drop offs presume 30 minute window for drop offs and a 3 minute turn around for drop-offs.

To monitor the changes in travel routine over time, it is recommended that travel surveys are undertaken after three months, one year, three years and five years of the school opening.

Mode of Travel Surveys will be released to the school community (staff, students, parent / carers) at these times during the academic year. This can also be undertaken with a ‘hands up’ survey. This involves a survey administrator entering each classroom and having students put their hands up for each travel mode and recording a tally. This method is often a more reliable method as it will achieve the greatest response rate.

The purpose of the survey is to determine whether the GTP is having the desired effect on staff and students' travel patterns and the mode share of trips to and from the school.

# 4. Additional Improvements

To support and encourage the transition in travel towards sustainable choices, the school can consider a range of measures be put in place to ensure the right balance of incentives and disincentives are in place to 'nudge' travel behaviour in the desired direction. As many of these factors are outside the responsibility of the school, it will require the school community (possibly via a 'Green Travel Committee' comprising of interested staff, students and parents) to work with local Government and transport agencies.

A staff member should be designated as a travel plan coordinator to assist in implementing and monitoring of the GTP. A coordinator role will be essential for a GTP to succeed.

## 4.1 Communications

### 4.1.1 Sustainable travel map

A Sustainable Travel Map located in the main foyer of the school, on notice boards and on the website for the School would bring to attention to both staff and visitors, the facilities available for various modes of transport at and to the site, including:

- GTP measures
- Walking/cycling paths
- Bus routes
- Travel distances and times

### 4.1.2 Staff information sessions

Following the initial intake of staff for the new school, a staff session is proposed to outline the travel options and the new facility generally. An additional session will be proposed following final works completion.

It is also recommended that staff inductions should include describing travel options and facilities to and from the site to ensure all staff are made aware on sustainable travel options.

Signage in staffrooms, public notice boards as well as the school website listing travel options are to provide upfront information that can be continually updated as things change.

## 4.2 Walking

The school could actively seek local and State Government support for the following pedestrian infrastructure in the vicinity of the school:

- Wide and good quality footpaths and pedestrian crossing infrastructure along walking routes between the school and key public transport infrastructure (e.g. the bus stops at Northbourne Drive).
- Adequate pedestrian crossing points, including controlled crossing points if necessary.
- Increased attractiveness / amenity of walking routes, through provision of landscaping. This can improve the walking environment through the provision of shade and added greenery which can also provide a buffer between pedestrians and moving traffic.
- Incorporating traffic calming measures, such as reduced posted speed limits (40 km/h School Zone), narrower street widths, speed humps, vehicle slow-point treatments and raised pedestrian crossings.

It is noted that the road hierarchy proposed within the Marsden Park Precinct Development Control Plan is intended to support active travel within the precinct.

Staff initiatives could also be implemented to encourage walking to school. Initiatives such as “10,000 steps per day” – where staff members are rewarded for achieving the 10,000-step goal over a set period – or a workplace walking group – where staff members who live locally are invited to walk together.

A “walking bus” could be implemented within the Marsden Park Precinct, where teachers or parents chaperone students along a set route.

Information regarding these initiatives could be circulated via email, school newsletter, posted on noticeboards or on the school website to promote participation.

## 4.3 Cycling

The school could promote cycling to school through:

- The provision of both end-of-trip facilities within the school (e.g. bicycle parking, locker, showers for staff and bicycle and scooter parking for children).
- Run bicycle skills courses for students.
- Participate in the Ride-to-School day, which is held annually in March.

The school could actively seek local and State Government support for the following cycling infrastructure surrounding the school high-quality cycling infrastructure. For example, on-road separated cycleways, off-road shared paths are both appropriate infrastructure responses for children on roads with moderate traffic. Such cycling infrastructure, that is safe for children, has been proven to be very successful in increasing cycling mode share to schools.

### 4.3.1 A note about End of trip facilities

There are two guidelines that relate to bike parking provision in schools in NSW, as follows:

- NSW Government, 2004, Planning Guidelines for Walking and Cycling
- Austroads, 2017, Cycling Aspects of Austroads Guidelines

The NSW Government’s *Planning Guidelines for Walking and Cycling* recommends the rate for staff and visitor bike parking and the Austroads Guidelines puts forward the recommended rate for student bike parking provision.

| User Group | Rate | No of people | Rate Applicable for Marsden Park New School (spaces) | Guideline Reference |
|---|---|---|---|---|
| Staff | 3-5% of staff are to have bike storage | 40 | 1-2 | NSW Government Planning Guidelines for Walking and Cycling |
| Visitor | 5-10% of visitors are to have bike storage | NA | NA | NSW Government Planning Guidelines for Walking and Cycling |
| Students | 1 per 5 students over year 4 | 284 | 57 | Austroads Cycling Aspects of Austroads Guidelines |

*Green Star – Design & As Built v1.2, Chapter 17 Sustainable Transport* (2014) specifies that secure bicycle parking should be provided for 40 percent of students over grade four.

Assuming the proposed 1,000 students are distributed evenly over seven years there will be 142 students per year and a total of 284 students in grade five and six. To comply with Green Star specifications, bicycle parking for 114 students is required.

It is possible to park two bicycles on a single storage hoop, so a total of 57 hoops are required for students to comply with Green Star standards. The proposed Marsden Park New Primary School will provide 72 bicycle hoops for students, exceeding Green Star and Austroads specifications.

*Green Star – Design & As Built v1.2*, states that bicycle parking for non-residential developments should be provided for 7.5 percent of regular occupants. Based on 40 teachers, three bicycle spaces or two hoops should be provided for teachers.

The Green Star Guide also specifies that include regular occupants working in a building, end of trip facilities, such as showers and lockers, are required. End of trip facilities do not need to be provided for non-staff, such as students.

Based on a teaching staff of 40, two showers and four lockers are required.

The proposed Marsden Park New Primary School will private two hoops for teachers (separate to students), two showers and a minimum of four lockers.

## 4.4 Bus and Train

Some school students are eligible for the School Opal Card via the School Student Transport Scheme. To maximise the use of bus and train, noticeboards and school newsletters could include relevant information to increase awareness of the alternative transport options available. The school could also consider the provision of Opal Cards as part of their salary package to facilitate travel for staff.

## 4.5 Parking

The school could actively seek local government support for increased management of on-street parking surrounding the school, including the monitoring of on-street parking by parking inspectors / rangers i.e. if vehicles park in the pick-up / drop-off area during peak periods of school activity.

It is noted that it is illegal for cars to queue across bus zones, pedestrian crossings or double park. Enforcement of this will quickly stop potential illegal parking behaviour and the school can work with council if it becomes an issue.

## 4.6 Car Pooling

The school could promote staff carpooling to school through:

- The provision of priority designated carpool parking within the staff car park.
- An online carpooling forum could be developed to promote workplace group travel. This forum would provide a platform for people travelling on the same route to form groups. Information could be posted on the staff website, noticeboards or in newsletters.

A summary of key strategies is provided in Table 4-1.

### Table 4-1 – GTP Framework Action Table

| Strategy | Action | Audience | Timeline | Responsibility |
|---|---|---|---|---|
| Travel Plan Coordinator | Nominate a staff member or administration to implement and monitor the GTP | Staff | Prior to school opening | School |
| Car Pooling | Establish a car pooling system to reduce single car occupancy and promote social interaction | Staff | When staff are employed | Travel Plan Coordinator |
| Public Transport | Consider providing Opal Card with monthly allowance to encourage public transport use | Staff | When staff are employed | Travel Plan Coordinator |
| End of Trip | Provide bicycle parking, showers, lockers and change rooms | Staff and students | Upon school opening | School |
| Ongoing Review | Ongoing review of the GTP to introduce additional measures as required | Staff, students and parents | Ongoing | Travel Plan Coordinator |

# 5. Summary

The objective of this Green Travel Plan (GTP) is to determine sustainable travel options for staff, visitors and students to choose from, when travelling to and from the proposed Marsden Park New Primary School. This GTP provides advice on actions that can be implemented to maximise the potential number of people choosing sustainable transport modes to access the proposed school.

GTPs present a number of interrelated benefits including:

- Improved health benefits
- Reduced traffic congestion, noise and air pollution caused by car
- Greater social connections within communities
- Cost savings to the economy and individual
- Improved independence for older children i.e. walking or cycling to school
- Changes in travel attitudes of children which can travel behaviour into adulthood

## 5.1 Conclusion

- The transport infrastructure to the school is currently being developed but is anticipated to be ready to service the school community when the school opens.
- Bus services to the school are likely to be a morning and afternoon service similar to the nearby St Lukes Catholic College.
- The Marsden Park Precinct's internal road network will be designed to support the movement of pedestrian and cyclist.
- End of trip facilities, such as bicycle parking, lockers and showers, will exceed Green Star and Austroads specifications.

## 5.2 Recommended further actions

Following a review of the current roads, transport infrastructure and staff hours, the following items have been determined to be included in a GTP for Marsden Park New Primary School. It is recommended that:

- Communications: A Sustainable Travel Map be developed for display on site and for use in digital communications (including the website).
- Communications: Undertake a staff information session to outline the travel options and the new facility generally.
- Walking and cycling: The school could actively seek local and State Government support for improved walking and cycling safe routes to school.
- Walking and cycling (behaviour change): The school can take part in 10,000 steps per day" challenge (for staff), or cycle to school day (for staff and students).

GHD

Level 15
133 Castlereagh Street
T: 61 2 9239 7100  F: 61 2 9239 7199  E: sydmail@ghd.com



C:\Users\alee3\Desktop\Marsden Park _ Green Travel Plan_Sat.docx

Document Status

| Revision | Author | Reviewer | | Approved for Issue | | |
|---|---|---|---|---|---|---|
| | | Name | Signature | Name | Signature | Date |
| Draft A | A. Lee | O Peel | On file | S Clarke | on file | 17/7/19 |
| | | | | | | |

www.ghd.com

GHD

Level 15
133 Castlereagh Street
T: 61 2 9239 7100  F: 61 2 9239 7199  E: sydmail@ghd.com



Document Status

| Revision | Author | Reviewer | | Approved for Issue | | |
|---|---|---|---|---|---|---|
| | | Name | Signature | Name | Signature | Date |
| 1 | ML | C Platts |  | A Lee |  | 31/07/2019 |
| 2 | OP | J Akstein | On file | J Akstein | On file | 27/08/2019 |
| 3 | OP | J Akstein | On file | J Akstein | On file | 28/08/2019 |
| 4 | ML | O Peel | On-file | J Akstein | On file | 05/09/2019 |

www.ghd.com